PILOT PROGRAM TO CONSERVE THE BRAZILIAN RAIN FOREST

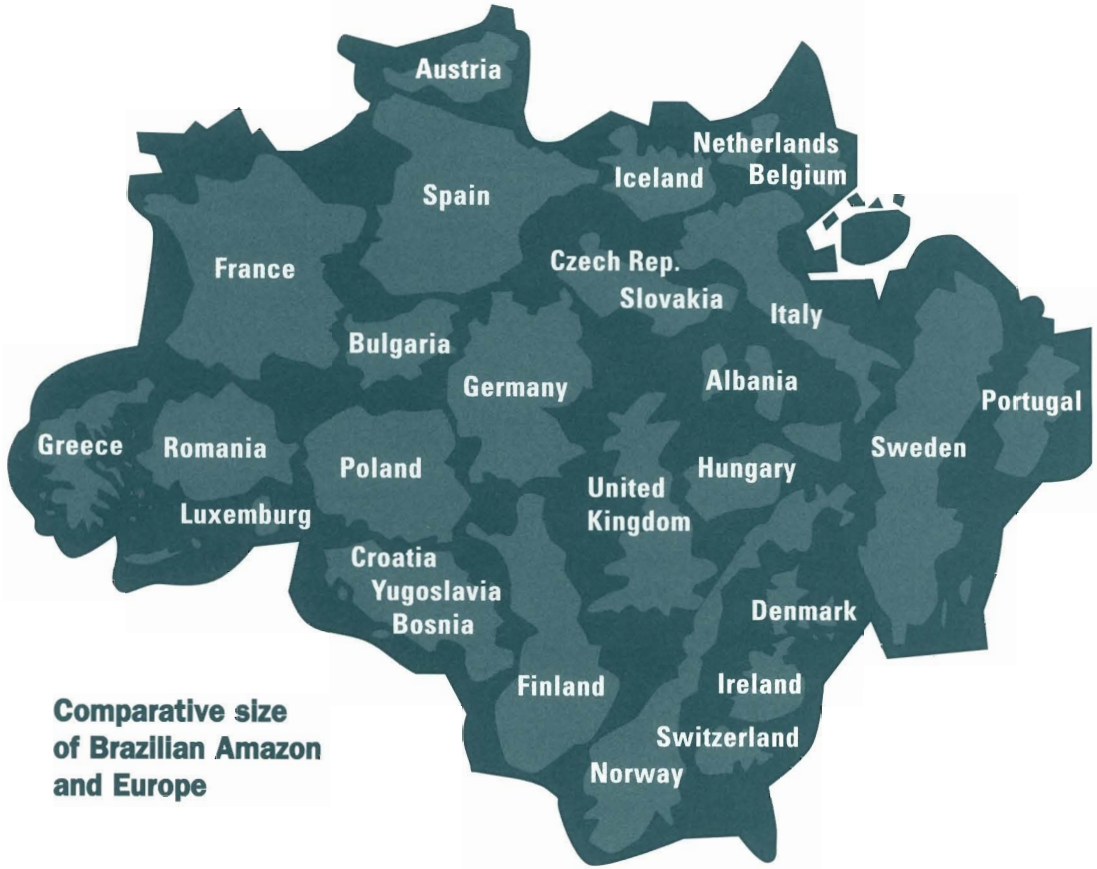
The Pilot Program to Conserve the Brazilian Rain Forest

What Is the Pilot Program?

The Pilot Program to Conserve the Brazilian Rain Forest is a joint undertaking of the Brazilian government, Brazil's civil society, and the international community that seeks to find ways to conserve the tropical rain forests of the Amazon and Brazil's Atlantic coast. For the Pilot Program, *to conserve* means both to protect the forests and to promote sustainable development in these regions—to meet the needs of the current generation without compromising the needs of future generations. The Brazilian rain forests offer significant environmental benefits to Brazil and to the world. The forests harbor a rich diversity of plants and animals, store carbon that if released would contribute to the greenhouse gases in the atmosphere, regulate water cycles, and preserve the region's humid climate. Brazil also has a legitimate interest in using this natural resource for the economic opportunities it represents to the people who live in the forests and to Brazil as a nation. Thus the goal of the Pilot Program is to maximize the environmental benefits of the forests in a way that is consistent with the development goals of Brazil and its people. The program is a unique example of countries working together effectively to solve an international problem involving the global environment.

Why Is the Program Needed?

The Brazilian Amazon occupies more than half of Brazil's territory. It covers about 5 million square kilometers (sq km), a vast area equal in size to about half the continental United States or more than the territories of 25 European countries. One-fifth of the world's fresh water cycles through its river system. The Amazon is the largest remaining tropical forest region in the world. Together with the Atlantic Forest, it contains a diversity of plant and animal life found nowhere else on earth. The huge number of plant species—many still unknown to science—form a living pharmacy of medicinal plants. At least 1,750 more species of fish live in the Amazon than in all of the Mississippi River, and a single tree in the Amazon may harbor more ant species than in all of Great Britain.



Comparative size of Brazilian Amazon and Europe

The forests play other vital roles as well. They help to maintain the local climate, protect watersheds, and provide raw materials for crafts and industry. By storing carbon, they help to control global warming. The Amazon rain forests are also home to millions of people, including rubber tappers, nut gatherers, fishers, small farmers, and indigenous people, who depend on the forest for their livelihood.

Today this natural resource is threatened. Large-scale deforestation in the Amazon began in the late 1960s. By 1996 cutting and burning had destroyed some 517,000 sq km—an area larger than Germany and Denmark combined—or some 13 percent of the original forest area of the Amazon (estimated at 4 million sq km). The pace of deforestation, which had declined from about 21,000 sq km a year in 1978–88 to about 11,000 sq km in 1991, increased again in 1995. In that year alone some 29,000 sq km of forests were cleared, an area almost the size of Belgium. Deforestation slowed

again in 1996, to about 18,000 sq km, and may have fallen to 13,000 sq km in 1997, according to initial estimates by the Brazilian National Space Research Institute. These estimates, the result of an enormous effort to map changes in the Amazon forest cover using LANDSAT images, do not reflect the damage caused by logging and fires occurring beneath the tree canopies, which satellite images do not capture. Recent estimates indicate that such hidden forms of forest degradation occur over an area roughly half as large as the area actually cleared.

Bordering Brazil's prime agricultural and industrial regions, the Atlantic rain forest has been progressively decimated since the 1500s, but the devastation has accelerated over the past 40 years. Today only about 7 percent of the original forest remains. Degradation of this resource is a serious problem because the forest is the richest ecosystem in the world in terms of endemic species (those that occur only in a particular area). Many plants and animals native to the Atlantic rain forest—such as Brazil wood (after which the country is named) or the golden lion tamarin monkey—occur only in the Atlantic Forest. Without decisive efforts to conserve this ecosystem, many plant and animal species could become extinct.

During the 1980s the international community became increasingly concerned about the rapid destruction of Brazil's rain forests. People and organizations in Brazil and around the world called for measures to slow or stop the destruction. Because Brazil views its rain forests both as a natural resource to be protected for humankind and as a source of wealth for its regional population (some 20 million people, or about one-eighth the total population) and the country as a whole, solutions must reconcile protection and sustainable development. The Pilot Program is one of the most significant of these efforts.

How Was the Program Established?

At the summit meeting of the Group of Seven (G-7) industrial countries in Houston, Texas, in 1990, German Chancellor Helmut Kohl called for a pilot program to reduce the rate of deforestation of Brazil's rain forests. Representatives of the Brazilian government, the World Bank, and the European Commission worked together to outline a program. Delegates of the G-7 and the European Union approved the

program in December 1991 and, together with the Netherlands, pledged some $250 million for the program. About one-fifth of the total ($50 million) was to go to a central Rain Forest Trust Fund. The participating countries (the "donors") would provide the remaining funds through supplementary funding (cofinancing) of projects proposed for the program and through their technical cooperation services. Virtually all of the funding was to be made available as grants.

The G-7 asked the World Bank to coordinate the program among the donors and the Brazilian government (the participants) and to administer the trust fund. The World Bank was selected because it is an international organization, not linked to a particular donor, with the experience and technical capacity to guide the design of projects and supervise their implementation.

The Bank began working with the donor countries, the Brazilian government, and Brazilian nongovernmental organizations (NGOs) in 1992. The first order of business was to set up the institutional arrangements and to prepare an initial group of projects. Coordination of the program and its projects within the Brazilian government became the responsibility of the Ministry of Environment, Water Resources, and the Legal Amazon (MMA). The first projects were approved in 1994 and implemented in 1995. The Rain Forest Trust Fund was also established in 1992 at the World Bank, with founding grants of about $50 million. Germany, the European Union, and the United States have made additional contributions to specific projects, either by setting up other trust funds with the World Bank or by cofinancing. Germany and Canada made generous contributions early on to support the setting up of the program and the preparation of projects.

What Are the Program's Objectives?

The Pilot Program has several specific objectives. It aims to help:

- Demonstrate that sustainable economic development and conservation of the environment can be pursued at the same time in tropical rain forests.
- Preserve the biodiversity of the rain forests.
- Reduce the rain forests' contribution to the world's emission of greenhouse gases.
- Set an example of international cooperation between industrial and developing countries on global environmental problems.

While these objectives guide the program as a whole, it still is very much a pilot program, meant to try out, experiment, and learn about new ways to protect the forests and to make sustainable use of them. The program's success will be judged by how effectively the lessons are learned. Therefore, the program does not claim to be solving the problem of deforestation—and the accompanying loss of biodiversity and release of greenhouse gases—nor to be getting truly sustainable development under way on a large scale. The Amazon and Atlantic rain forests are vast, and many cultural, social, economic, and political realities will need to be addressed on the way to sustainable development.

One lesson already learned is that projects need to be economically and politically sustainable as well as ecologically sustainable. Projects that aim to change the way people use land and natural resources must gain the support of both policymakers and the people affected. Sustainable development efforts should provide benefits for all sides—for current stakeholders (affected or interested groups), for future generations, and for the environment. But sustainable development cannot be imposed; it must be discovered. The challenge is to attract local support by making development that protects global values more attractive than development that does not by generating a higher quality of life. To achieve that, Brazilian policies—legislation, regulations, credit, incentives, sector investment programs—must be consistent and in harmony with conservation and sustainable development. Incentives for unsustainable land use must be removed, and incentives for desirable use may need to be provided.

Making sustainable development more attractive is not enough, however. Land use must be restricted in areas that cannot support development of any kind. This requires zoning regulations, the creation and effective protection of reserves, and the enforcement of restrictions. Again, restrictions cannot simply be imposed. They require political support at all levels of government, especially at the local level.

Developing constituencies of support can help to generate political support and to restrict the unsustainable use of rain forest resources. Such constituencies should include not only the people who live in or near the rain forest and derive their livelihood from sustainable development, but also other sectors of Brazilian society, such as the scientific community, business groups, the media, government officials, and urban residents interested in conserving natural resources. Through projects, policy analysis, and international dialogue the Pilot Program will continue to sharpen its strategy to build constituencies and make sustainable development in the Brazilian rain forests a reality. Already, after five years of Pilot Program activities, there are signs of a wider acceptance of the concept of sustainable development and of increasing participation by civil society—indirect but important achievements of the program.

What Makes Up the Pilot Program?

The program pursues actions along five main lines:

Experimentation and demonstration: to promote practical experimentation by local communities and governments in conservation, sustainable development, and environmental education initiatives.

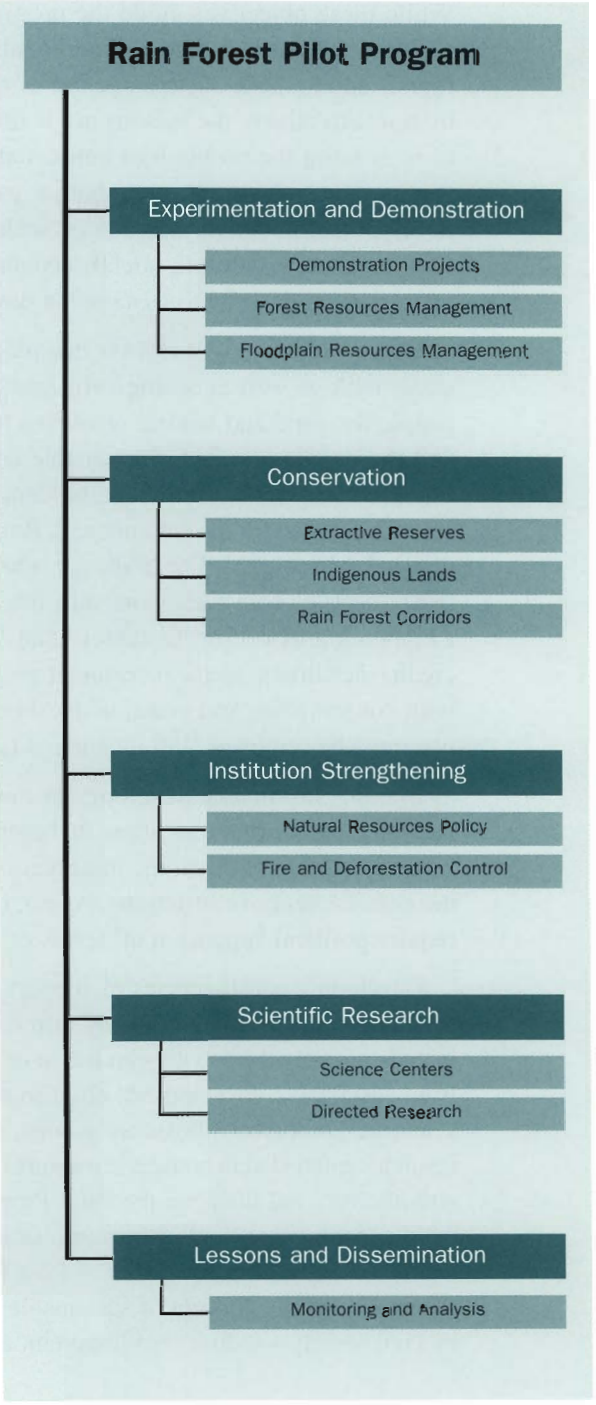
Conservation: to improve management of protected areas (parks and other nature reserves, national forests, extractive reserves, and indigenous lands) and natural resources (forests, aquatic resources, and flood plains).

Institution strengthening: to enable public institutions to shape and enforce sound environmental policies, in cooperation with civic organizations, the private sector, and society at large.

Scientific research: to increase scientific knowledge about tropical forests and their sustainable management and use.

Lessons and dissemination: to make the knowledge gained from the program widely available.

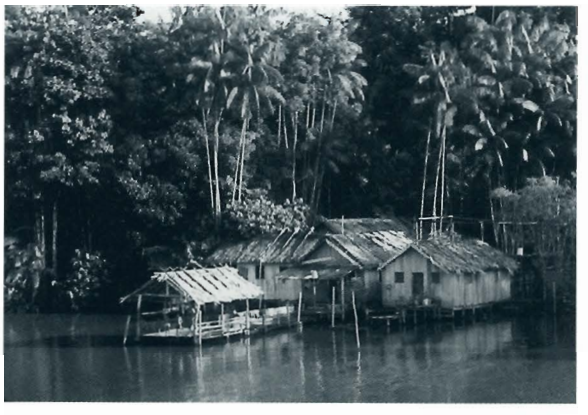
Seven projects are currently under implementation, and three projects are under preparation for implementation in 1998 or early 1999, as shown below (see also pages 18–35 for project descriptions). Increasingly, these projects are being designed to reinforce each other and to form an integrated program.



How Is the Program Organized?

The Pilot Program represents a new model of international partnership. Collaboration on environmental issues of global concern is being strengthened by building and fine-tuning novel institutional arrangements and procedures on an international scale. Together the Brazilian government, the World Bank, and the donors are seeking to make this innovative international partnership work.

The World Bank's Rain Forest Unit in Brasília coordinates the preparation of projects between the Brazilian government (and its agencies) and donors. The unit is responsible for reviewing and approving proposed projects together with donors. It also administers the Rain Forest Trust Fund and oversees ongoing projects. It uses the same standards, rules, and procedures that apply to projects financed by World Bank loans, although it accepts somewhat higher risks because of the pilot nature of the program. The Rain Forest Trust Fund supports the preparation, supervision, and monitoring of these projects, and it funds studies of special interest to the program's objectives.



Projects are prepared by the Brazilian government and its agencies in consultation with stakeholders. A special Inter Ministerial Coordinating Commission oversees and approves all projects, which are implemented by various federal agencies, state governments in the Amazon, and local NGOs. The MMA is the lead ministry for the program through its Secretariat for the Legal Amazon. Within this secretariat, the Pilot Program Executive Secretariat coordinates the work of the technical teams for each project and monitors implementation and results.

Officials from donor countries, the Brazilian government (including state governments), NGOs, and the World Bank meet once or twice a year to assess the Pilot Program's progress, offer guidance, and make recommendations. In addition, an International Advisory Group (IAG) of experts from around the world monitors implementation and provides independent advice and evaluation of the program. The group meets twice a year to make recommendations to improve the program.

Local representatives of all concerned parties meet monthly in Brasília to share information and exchange views on program and project issues, creating a promising new mode of international cooperation at both conceptual and operational levels.

Involving Civil Society: The GTA Story

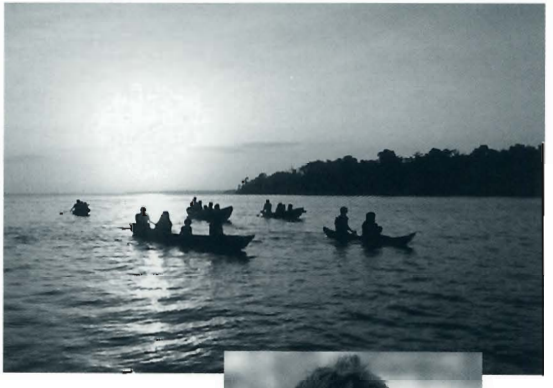
The Amazon Working Group (GTA) is a network of more than 350 community groups, associations of rubber tappers, rural workers unions, and environmental NGOs that work in the Brazilian Amazon. It is the principal dialogue partner for the Brazilian government, the World Bank, and donor agencies supporting the Pilot Program, and has brought an invaluable local perspective to the whole vision of the program.

In 1996 the GTA received two grants ($800,000) from the Pilot Program to strengthen the network and help implement Demonstration Projects. Halfway through the three-year grant, promising results are already apparent. The GTA has doubled the number of staff in its central Brasília office, installed computers and communication equipment in its 14 regional offices, and held more regular board and regional planning meetings. It has effectively disseminated information on the Demonstration Projects, begun to provide technical assistance to grantee organizations, helped prepare and design new projects under the Pilot Program, undertaken strategic planning and fundraising efforts, and organized a large fair on the Amazon and nontimber forest products. The GTA has also taken an active role in the dialogue on Amazonian policy by publishing policy papers and by helping to negotiate additional funds and credit from government agencies for small-scale producers.

These meetings are attended by representatives of the MMA, the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), the Ministry of Science and Technology (MCT), the National Indian Foundation (FUNAI), the Amazon Working Group (GTA, an organization of Amazon NGOs), the Rain Forest Unit of the World Bank, and local donor representatives.

Who Else Participates in the Program?

The government of Brazil, donors, and the World Bank are actively involved in the Pilot Program, but they cannot plan and implement the program alone. Every project has key stakeholders who must be involved from the beginning. In the states of Rondônia, Acre, and Amapá, for example, local residents helped prepare the Extractive Reserves Project and are involved in implementing and monitoring its activities. Broadly based consultations with local forest-dwelling communities and other interested groups helped create consensus on the design of the Forest Resources Management Project and increased project ownership by the implementing agencies and local populations. Active participation of stakeholders that brings in their interests and views is essential to the preparation and implementation of projects under the Pilot Program.



Every Pilot Program project has an advisory or executive commission that includes stakeholders. The Consultative Commission of the Indigenous Lands Project, for example, is composed of four government representatives and four representatives of indigenous people. The Project Commission of the Natural Resources Policy Project includes three representatives from the Amazon states, three from NGOs, and three from the federal government. These commissions help ensure that the views of the groups involved in a project are considered and their interests safeguarded.

Representatives of Brazilian society also participate in the Pilot Program. The program places great emphasis on broad representation in all program activities, from project preparation and monitoring to evaluation of the impact of the Pilot Program as a whole. Civil society is represented by various groups. The Amazon Working Group (GTA) is a

coalition of more than 320 NGOs in the Amazon, with offices in regional centers and Brasília. Similarly, the Atlantic Forest Network (RMA) links NGOs in the Atlantic rain forest to the Pilot Program. Both groups are receiving financial support for strengthening their organizations from the Pilot Program.

The private sector, both in Brazil and abroad, must also be involved in the program activities. Private business involvement is important to open worldwide markets for forest-based products, process them, provide seeds and seedlings on a large scale, adopt sustainable forest management practices, produce certified timber, create private nature reserves, fund research, and finance investments. But uncertainty about markets, lack of information about products and technologies, insecure land tenure, and legal and bureaucratic obstacles deter private investment in nature conservation and sustainable development. The Pilot Program is trying to identify and address these barriers in order to open the way to greater private sector involvement.

PILOT PROGRAM FUNDING *(Millions of U.S. dollars)*

Source	Rain Forest Trust Fund[a]	For Projects[b]			Total
		Contracted	*Committed*	*Proposed*	
Brazil	–	24.7[c]	0.6	10.2	35.5
Canada	0.7	–	–	–	0.7
European Union	14.1	33.6	11.0	23.7	82.4
France	–	–	2.0	–	2.0
Germany	19.4	57.6	21.7	45.6	144.2
Italy	3.9	–	–	–	3.9
Japan	6.8	–	–	–	6.8
Netherlands	3.2	–	–	–	3.2
United Kingdom	2.3	6.0	2.0	17.4	27.8
United States	5.5	2.0	8.0	2.0	17.5
Total	**55.8**	**124.0**	**45.4**	**98.9**	**324.1**

a Contributions to the Rain Forest Trust Fund were converted to U.S. dollars at the exchange rate of the date of deposit.
b Project funding includes the estimated value of technical cooperation.
c Contributions to projects at exchange rates in effect in April 1998.

How Is the Program Funded?

About 20 percent of Pilot Program funding comes from the Rain Forest Trust Fund, which has received about $56 million to date (see table). The Trust Fund provides part of the funds (usually a small part) for all Pilot Program projects. Donors, including Germany (the largest contributor), the European Union, the United Kingdom, and the United States, cofinance the projects with the Rain Forest Trust Fund. These bilateral funds are either deposited as dedicated trust funds with the World Bank (such as funds from the European Union or the United States) or made available directly to Brazil by the donor country as cofinancing or technical cooperation. Brazil contributes counterpart funds covering about 10 percent of the cost of the Pilot Program. In addition, government agencies in Brazil use their own infrastructure and personnel to carry out projects. Local communities also make contributions, often in the form of labor.

Most donor countries also support associated bilateral projects. These are part of the Pilot Program and share its objectives, but they are not included in the core program. To date, seven projects, with a total cost of $28.3 million, have been registered officially as associated bilateral projects. More projects are under review and are expected to be recognized officially during 1998.

What Has the Program Accomplished?

The challenge of halting the destruction of the rain forests is a difficult one and cannot be met in the short run. Immediate action has been taken, however, to prevent a recurrence of the fires that destroyed large areas of forest and grasslands in the northernmost state of Roraima in March 1998. The fires started at the end of an exceptionally arid dry season (due to the El Niño phenomenon) and were caused by escaping fires from traditional agricultural practices used to clear land in order to grow food crops and to rid pastures of weeds.

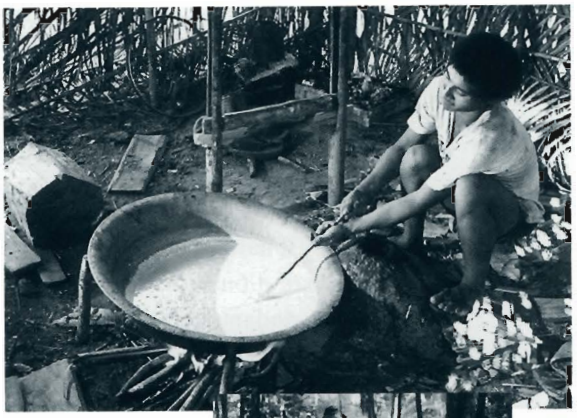
The program has begun to support a campaign to help prevent more large-scale fires from occurring during the 1998 dry season (June to September) in areas of the Amazon that are particularly susceptible to fires. The program financed a study of the types and occurrences of forest fires and of the practice of land clearing through burning. Results of that study now permit the pinpointing of areas most susceptible to out-of-control fires.

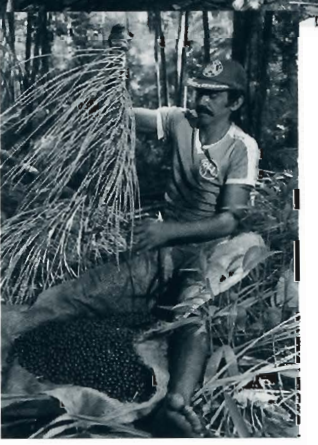
This study helps address an imminent problem. But the goals of the Pilot Program will not be achieved in the short term. Too many practices still cause destruction, and not enough is yet known about sustainable development practices, about what works and what does not. Nevertheless, in the five years since the program's inception, some noteworthy successes have been achieved:

Involving Indigenous People in Land Demarcation: The Indigenous Lands Project

After years of waiting, the indigenous people of the upper and middle Rio Negro in Brazil are finally having their lands legally recognized—thanks partly to the Pilot Program's Indigenous Lands Project. The 106,000 sq km area is home to 19 ethnic groups. What is especially satisfying to everyone concerned is that the project is supporting an alternative way of demarcating the land. The regional indigenous organization (FOIRN) and a national nongovernmental organization (ISA) are actively involved in the process, as are all the indigenous communities who live there.

The main goals of the project are to help secure indigenous lands and improve the well-being of indigenous people in the Amazon. The project is committed not only to legalizing indigenous lands but also to improving the way in which legalization is achieved. Observers have long agreed that active involvement of the indigenous people in determining and establishing their borders is vital to their longer-term territorial control of the area. The legal recognition process by the nation state is an exercise of formal surveying and precise delineation that is somewhat foreign to the way indigenous people define their lands. Indigenous peoples should thus be fully involved when the lines are drawn on the map. Given the expansion of the economic frontier in the Amazon, it is also critical that indigenous people be fully aware of their legally defined territories and rights. They must also be actively involved in protecting their lands from illegal users.





- Strong support of NGOs by the Pilot Program helped create an active *network of such organizations* in the Amazon and Atlantic rain forests. These organizations help interested groups and communities obtain and trade information, participate actively in the discussion and formulation of policies, contribute to the design of the program and its projects, and exchange successful project ideas among themselves, thus building a political constituency for conservation and sustainable management of natural resources. Today, NGOs are well-accepted and appreciated dialogue partners of the government in Brazil.

- Funding of *demonstration projects* has allowed some 100 communities and organizations to experiment with new approaches to using and conserving natural resources in the rain forests. These approaches focus on the establishment of agroforestry systems, the enrichment of forests with useful species, the rehabilitation of degraded areas and reforestation, the sustainable management of forests for timber, and the setting up of living pharmacies of medicinal plants, among other sustainable strategies. The communities and the program are learning from these experiences. Not all these experiments will succeed, but even those that do not will contribute valuable lessons about community processes and participation.

- Four *extractive reserves* have been established and consolidated in the Amazon. In these conservation areas, families of rubber tappers and Brazil-nut gatherers are both protecting this environment and using it to make a living—without recourse to clearing the forest. The fact that associations have been formed in these reserves, that a unique and successful model of sharing the management of reserves between the associations and the government has been established, and that new products and production methods have been adopted in the reserves is a remarkable achievement of the program.

- Program efforts have helped legalize the lands inhabited by *indigenous people*, as mandated by the Brazilian Constitution. Since the program's inception, 11 Amazon

indigenous areas have been identified and 29 demarcated, giving more security to the Amerindian people. Some areas have been demarcated with the active participation of the indigenous people themselves and of specialized NGOs. These activities are scheduled to continue until a majority of all indigenous lands in the Amazon has been demarcated and legally registered.

- Management of natural resources and implementation of environmental law have traditionally been functions of the federal government. The Brazilian Constitution of 1988 made these functions a matter to be shared among federal, state, and municipal governments. Since the federal government is not in a position to carry out all of these functions effectively, and since states and municipalities are, in principle, better suited to take care of local environmental concerns, the states are to assume increasing responsibility in this area. These lower levels of government, however, have been ill-equipped to take on this responsibility, often lacking human resources, training, equipment, efficient organization, and political support. Under the *Natural Resources Policy Project*, state governments have begun to organize and coordinate the activities of the various agencies that play (or should play) a role in environmental management. These include federal environmental and land settlement agencies, police and public attorneys' offices, municipal governments, land use planning offices, NGOs, and local communities. The *Integrated Environmental Management Projects* have brought these parties together to discuss and plan natural resource use, resource management, and law enforcement in selected priority areas in each state—by no means a minor feat. Though success has been greater in some states than in others, the scene is now set in all states for joint action among various levels of government and the local population to improve the stewardship of natural resources.
- The program has helped to modernize two important *scientific centers* in the Amazon: the Emílio Goeldi Museum in Belém and the National Institute for Amazon Research in Manaus. The centers have been supporting many eminent scientists and their research over decades but had fallen behind in physical infrastructure, access to outside knowledge, and internal management. The program has enabled them to create a more productive work environment for the scientists and to protect their unique collections from irreparable damage. The program is also funding 23 research projects being carried out by Brazilian researchers and institutions. This research will increase knowledge about the diverse Amazon environment and the use of its natural resources. Support of more research of this type will continue with new donor funds.
- The program was instrumental in introducing and gaining wide acceptance for the concept of *rain forest corridors*, networks that link protected areas and the

buffer zones around them, thus creating wider spaces for dispersal of species and genetic flux. Under this new model, conservation of biodiversity will be managed on a regional scale rather than through individual conservation islands of protected areas. In 1999 the corridor concept will be implemented in two corridors in the central Amazon and the north-central part of the Atlantic forest.

- The program has begun to create a *singular model of international and national cooperation*. While some fine-tuning is still needed in defining roles and responsibilities and in coordinating activities, the program has shown that global and local needs and opportunities related to tropical rain forests can be integrated effectively. The exchange of ideas at the 1997 Program Participants Meeting in Manaus—among representatives of donor governments, federal and state government officials, the World Bank, NGOs and civil society in the rain forest regions, rural worker and rubber tapper movements, the private sector, and the press—reveals the program's success in bringing together a wide array of groups and interests seeking to find better ways to conserve the rain forest and to make sustainable development a reality.

The Pilot Program may be the single most important initiative to date for implementing Agenda 21 of the Rio Conference on the Environment. A statement at the summit of the G-7 countries in Denver in 1997 noted that: "We welcome the progress made in implementing the Brazil Pilot Program initiated in Houston and see it as an example of practical international cooperation."

What Are the Program's Prospects?

Based on current projects and plans, the Pilot Program would come to a close around 2003. But plans for a second phase were introduced during the 1997 Paris Participants Meeting, to build on the successes of the Pilot Program.

At the 1996 Participants Meeting in Bonn, participants had agreed that the program must first and foremost be effective in generating lessons for Brazil and other countries about programs, policies, and forms of international cooperation that will help to conserve rain forests and use their natural resources sustainably. The program would be judged by its success in generating lessons about what does and what does not work, and why. Participants also agreed that the program must help to build lasting political support for such policies and programs in Brazil and that there should

Improving Living Standards with Sustainable Agroforestry Methods: The SABIÁ Demonstration Project

Small farmers in the hilly uplands of the agreste region of Pernambuco State struggle hard to make a living on the poor and exhausted soils of the Atlantic Forest belt along Brazil's northeastern coast. As crop yields of traditional products like manioc, corn, and beans have dwindled, many families in the region have given up on farming, migrating to the industrial cities of São Paulo State. These farmers learned the hard way that the agriculture methods they used are not sustainable.

One farmer in the region, Dona Cecília, has managed to turn things around on her land. Years ago her husband moved to Cubatão, São Paulo, leaving her with a young son and a few hectares of land. On just 7,000 square meters of land, she now grows almost every fruit and vegetable crop known in the area. Dona Cecília grows more than enough to feed her family, selling the rest.

She admits that she was very doubtful in the beginning, when volunteers from the Recife-based SABIÁ group first visited her. SABIÁ implements an agroforestry project with local small farmers in the agreste and coastal forest regions of Pernambuco, funded as a demonstration project under the Pilot Program. The project does not bring back the rain forest as it was. But agroforestry takes some pressure off the remaining fragments of forest, introduces more sustainable forms of production, and uses, in this case, the natural process of forest regeneration, enhancing the biodiversity of the local environment.

The SABIÁ volunteers told Dona Cecília that there was a simple way to recover this exhausted land, which traditional production methods had stripped of organic matter and soil nutrients. What was needed, they said, was to grow many different kinds of crops, such as fruit trees, palms and other perennials, pineapples, oilseeds, sugarcane, herbs, peppers, and medicinal plants, together with her traditional crops. "Follow some rules about which plants should go first, which should come later, and which grow better next to each other, just like a forest grows back. "Cut unwanted growth," they said, "but leave it to rot on the ground. Don't take anything from the plot, except for the harvest. You don't need costly chemical fertilizers and pesticides. All you need are seeds and seedlings of useful plants and trees and your own labor."

Dona Cecília's initial skepticism gave way once she saw the results of the new farming techniques. Thanks to her hard work and the efforts of this successful demonstration project, she has been able to remain on her land.

be greater integration between the program and other Brazilian policies affecting the rain forests—roads, land reform and settlement, forestry and logging, and agricultural research.

At the 1997 Participants Meeting in Paris, participants accepted the idea of a second phase of the program that would build on the lessons of the first phase, involve more participants (other donor countries, multilateral agencies, the private sector), and bring in other sources of funding, including greater financial participation by Brazil.

Between the meeting in Paris and the one in Manaus in late 1997, the World Bank and the Brazilian government drafted an approach to phase II of the Program, based on emerging Brazilian policies such as "Towards Agenda 21," an "Agenda 21 for the Amazon," and the "Integrated National Policy for the Amazon." Donors, Amazon state governments, and important NGOs were also consulted. The approach was then discussed at the Participants Meeting in Manaus.

The Vision

The approach to Phase II incorporates a vision for the Amazon defined by Brazil and endorsed by the international community. It spells out in conceptual terms what the Amazon would look like decades from now and Brazil's vision for conserving biological diversity, maintaining the forest cover (for carbon storage), and ensuring the economic and social well-being of the Amazonian population.

The Amazon region would be broadly divided into three major zones:

- Several rain forest corridors or networks that include protected areas, buffer zones around them, and connecting lands, where conservation of biodiversity and forest cover are the main goals, although compatible activities such as agroforestry, extractivism, and ecotourism would not be excluded in the nonprotected areas of the corridors.
- Several development and transport corridors along major roads and rivers, where development of environmentally friendly economic activities (low impact industry, agriculture, and agroprocessing) would be concentrated and associated infrastructure would be created.
- Intercorridor spaces, where tree cover would be maintained and economic activities could take place and where forests would be used without destroying them, such as through extractivism, agroforestry, seed production and nurseries, sustainable forestry, fishing, fish culture, ecotourism, and food processing.

Realizing this vision will require a careful analysis of the economic and social trends likely to affect the region, macro-zoning of the region, adjustments in current policies

and programs, and creation of new ones. Economic activities in and around the forests will have to benefit from new technologies that are competitive, environmentally friendly, and sustainable. Greater responsibility for environmental management would be transferred to state and local governments and responsibilities would be clearly shared among federal, state, and local governments, NGOs, and local populations.

Transition to a Second Phase

The Manaus Participants Meeting did not establish a start date for Phase II. Rather, participants agreed on the need for a transition period, during which the Pilot Program must show strong implementation and results, consolidate the lessons learned, and play an increasingly catalytic role in integrating the many policies affecting the Amazon region. Participants also endorsed the development of a special program for the Atlantic Forest, independent of the decision about a Phase II Program. Thus several tasks lie ahead for the transition years:

- Implement all projects of the current Pilot Program.
- Secure additional financing for the transition, through the expansion of existing projects.
- Implement a strategy for involving the private sector.
- Learn the lessons of the Pilot Program and monitor its implementation and impact.
- Feed lessons learned into planning and designing a second phase.
- Redirect current and new projects to support the vision and its three objectives.
- Expand Pilot Program projects into larger programs.

PROJECTS IN THE PILOT PROGRAM

Demonstration Projects *(ongoing)*

Background

In recent years growing numbers of Brazilians have come to realize that increased development in the Amazon and Atlantic rain forests generates short-term benefits but long-term costs related to the destruction and degradation of these complex ecosystems and the irrevocable loss of biodiversity. At the same time, increasingly vocal regional populations are demanding improved standards of living. Building the

capacity of local communities to develop, adapt, and implement environmentally sound forms of resource use is an essential strategy for attaining the Pilot Program's goal of promoting sustainable development in the region. Yet until recently, financial and human resources available to community-based groups have been limited. The Demonstration Projects provide such resources as a means of promoting, testing, and disseminating a wide range of community-based initiatives.

Objectives

The Demonstration Projects aim to promote, test, and disseminate community-based conservation and development initiatives in the Amazon and Atlantic rain forest regions that are environmentally, economically, and socially sound and can be replicated elsewhere.

Activities

Begun in 1995, the Demonstration Projects have supported a diverse range of almost 100 small-scale community-based projects with an average grant of $140,000 each. Projects are selected by an executive commission that includes representatives of the public sector and civil society organizations. Many of these projects experiment with new forms of sustainable resource use, including the processing and marketing of nontimber forest products, such as fruits and nuts. Other projects involve local communities in addressing the conservation of small but biologically diverse areas, such as public and private protected areas. Still other projects are restoring degraded lands by establishing agroforestry systems using native tree species together with annual food crops and other perennial crops. Dissemination of best practices and lessons learned from the many projects is an integral part of the project. It will rely primarily on networks established by nongovernmental organizations (NGOs) and the media, following a strategy currently being designed.

A new component scheduled to begin in 1998 will support environmental education initiatives aimed at nature conservation, sustainable use of natural resources, and dissemination of local know-how. Eligible initiatives include training of social agents for environmental education, use of media and distance learning, and development of educational materials. Partnerships among community groups, NGOs, and government agencies will be encouraged.

A new indigenous Demonstration Projects component is in an early stage of planning. This component will support initiatives by indigenous groups that promote sound resource management and environmental protection on their lands, thus contributing to their physical and cultural integrity. Germany and the United Kingdom have expressed interest in supporting this new component.

Also under discussion is a new line of grants for "directed" or area-based demonstration projects. These grants would promote community or municipal initiatives, especially in areas of the Amazon and the Atlantic rain forests in which other projects of the Pilot Program, such as the Natural Resources Policy Project or the Rain Forest Corridors Project, are or will be active. Directed or area-based demonstration projects would supplement those projects and provide incentives to local governments and local communities to cooperate in environmental management or nature conservation. The European Commission and the United Kingdom have expressed interest in funding this component.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); NGOs and community groups.

Financing

The financing for Demonstration Projects ($25.7 million) reflects combined contributions from the German government, the European Commission, the Rain Forest Trust Fund, and participating local groups. Additional funding from the German and French governments, in the order of $10.4 million, is being processed. The environmental education component, hopefully to be launched in 1998, has secured financing of $8.5 million from the European Commission and the Rain Forest Trust Fund. Early preparatory work has begun on the indigenous and area-based components for which several donors have expressed interest in providing support.

Forest Resources Management *(ongoing)*

Background

The Brazilian Amazon is a major source of tropical hardwoods, gross sales of which generate an estimated $1 billion a year. The region's share of the world hardwood market has risen greatly over the past decade, rising from 2 percent in 1989 to 8 percent in 1995. With the depletion of timber stocks in Southeast Asia, the Amazon is expected to become the major provider of tropical timber in the coming decades, and large international logging companies have already begun operations there.

Despite the strategic importance of the forestry sector in the Brazilian Amazon, most timber extraction occurs in an unplanned and often illegal fashion. A typical timber extraction operation removes less than 10 percent of the wood in a particular lot, but damages more than half of the remaining trees. Unplanned timber extraction also opens large gaps in the canopy and leaves considerable amounts of debris, which makes normally fire-resistant rain forests susceptible to burning. Instead of using

renewable resources in a sustainable fashion, timber companies are emerging as a major cause of rain forest destruction in the Amazon. The unsustainable approaches to commercial timber management reflect inadequate forest sector policies and incentives, an ineffective forestry regulatory system, poor institutional capacity for enforcement of existing regulations, and a shortage of initiatives that demonstrate the feasibility of sustainable forest management, especially on a commercial scale.

Objective

The Forest Resources Management Project aims to support the development and adoption of sustainable forest management systems in the Amazon region by means of strategic actions and pilot experiments in priority areas.

Activities

The five-year project will begin in mid-1998. It includes activities to support effective participatory management and conservation of the Tapajós National Forest Reserve, with emphasis on social forestry activities; promising initiatives by community groups, NGOs, and private firms designed to test new approaches to sustainable forest management; testing of alternative approaches to surveillance and enforcement of forest policies in two pilot areas; and strategic analysis and recommendations for policy reforms and incentives for the forestry sector in the Amazon. Through these strategies, the Forest Resources Management Project is expected to promote sound practices and policies, pointing the way to sustainable timber production in the region.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA); and NGOs, private sector organizations, and community groups.

Financing

The $17.4 million project is financed by the German government, the Rain Forest Trust Fund, the British government, and Brazilian counterpart funds.

Floodplain (*Várzea*) Resources Management *(in preparation)*

Background

Because the floodplains along the banks of the Amazon River and its tributaries are subject to annual flooding, their ecosystem is well-adapted to both aquatic and terrestrial conditions. The floodplain encompasses interacting water and land habitats that are home to a diverse array of uniquely adapted plant and animal species.

Involving Local People in Forest Zoning: The Forest Resources Management Project

Relations between the federal environment agency and the 16 communities that reside in the Tapajós National Forest have been contentious since 1974, when the land was taken over by the federal government. The Pilot Program's Forest Resources Management Project found a way to involve these communities in the design of a sustainable management plan for the forest. Several workshops were held with the communities to help them participate directly in the design of a sustainable management plan for the forest. Community members also helped implement the zoning called for by the plan, which designates areas of the national forest for strict conservation, for extensive use, for intensive and semi-intensive logging, for administrative purposes, and for use by the people living there.

A few people from each community were trained in basic concepts of mapping and interpreting satellite images. The trainees were also instructed on how to work with their communities to collect data from the families there. With the help of magnified satellite images, they were able to identify each area of land used by families in their communities and indicate how each area is used. Information for each community was then compiled into a composite map showing the actual use of the entire zone reserved for the communities.

A final workshop was held with the communities to discuss how land use might best be organized by the communities in the future by delimiting areas for agriculture, gathering of forest products, hunting, and population growth. A land use plan was then adopted by the communities for the management of their part of the national forest.

This process is probably the first example of participatory zoning in the Amazon. It led to a much better relationship between IBAMA and the communities. The process made the people in the area understand that they can participate in decisions about their future and the future of their environment.

The floodplain is also an attractive area for human settlement because of the dominance of river transportation in the region, the abundance of aquatic wildlife, and some of the most fertile soils in the Amazon region. Traditionally, inhabitants of the floodplain practiced subsistence farming, but today their main source of livelihood is fishing. Larger commercial fishing firms also operate in the area, exerting increasing pressure on local fisheries, usually with little or no regulation by government agencies. There is growing evidence that populations of the most sought after fish species are in serious decline.

For many decades cattle raising has been a dominant economic activity in many parts of the floodplains. In recent years large-scale water buffalo ranches, rice plantations, and logging operations have exerted environmental pressures on the floodplains. Raising crops and livestock requires clearing the floodplain forests, and cattle and buffalo grazing compete directly with the aquatic wildlife by destroying habitats for fish feeding and reproduction, such as flooded forests and floating meadows. These threats require urgent measures to promote environmentally sound forms of natural resource management and better environmental monitoring and enforcement.

Objective

The Floodplain Resources Management Project aims to promote the conservation and rational use of this ecosystem, with an emphasis on fisheries and other aquatic wildlife.

Activities

Scheduled to begin in late 1998, this five-year project will support three types of activities. First, strategic studies under the project will contribute to improved policies and regulations for the floodplain. These studies will focus on key issues, such as the communal management of fisheries, the dynamics and impact of ranching and farming in the floodplain, and the identification of priority areas for conservation. Second, the project aims to promote promising initiatives for sustainable management of floodplain natural resources by financing local conservation and development projects carried out by NGOs and grassroots organizations. Both the strategic studies and the promising initiatives components will provide a basis for developing appropriate policies and resource-use practices for the floodplain. Finally, the project will test new approaches to monitoring resource use and enforcing environmental policies in this critical ecosystem. Among the new approaches tested will be efforts to encourage greater involvement of local fishing communities in protecting the floodplain resources upon which their livelihood depends.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA); state environmental agencies; diverse research personnel and institutions; and NGOs, private sector organizations, and community groups

Financing

The estimated cost of about $15 million is likely to be financed by the Rain Forest Trust Fund, the German government, the British government, and Brazilian counterpart funds. The European Commission may also contribute to the project. Financing commitments are expected to be finalized by mid-1998.

Extractive Reserves *(ongoing)*

Background

Creation of extractive reserves is a relatively recent approach to conservation. These reserves are based on the premise that traditional communities that gather forest products can also provide sound stewardship of natural resources, thereby avoiding the environmental impact of more intensive types of land use, such as cattle ranching. Beginning in the 1970s rubber tapper leader Chico Mendes helped organize a popular movement to protect the rights of forest people who depend on nontimber forest products, such as rubber and Brazil nuts, for their livelihood. In 1985 these people (collectively known as extractivists) formed the National Rubber Tappers Council (CNS), which argued that their land merited protection from expanding agricultural and cattle frontiers.

In 1989 the Brazilian government recognized extractive reserves as a new type of direct-use conservation unit, in which traditional communities receive long-term concessions to live and use the natural resources in exchange for sound stewardship. In 1992 the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA) created the National Center for the Sustainable Development of Traditional Populations (CNPT) with a mandate to establish and assist in maintaining extractive reserves. Since 1995 the Extractive Reserves Project has provided support to the first and largest extractive reserves established in Brazil. These reserves encompass 21,600 sq km—an area half the size of Switzerland.

Objective

The Extractive Reserves Project aims to develop and test appropriate approaches to the social, economic, and environmental management of four extractive reserves based on refinements of the knowledge and traditional practices of the

local population. These reserves are the Chico Mendes and Alto Juruá reserves in the state of Acre, the Rio Ouro Preto reserve in the state of Rondônia, and the Rio Cajari reserve in the state of Amapá.

Activities

Begun in 1995, the four-year project provides support to help complete the establishment and legalization of the four reserves, strengthen community organizations, improve subsistence and commercial production, and improve the management of natural resources.

Considerable progress has been made toward completing the legalization of the reserves, strengthening local community organizations, installing needed infrastructure, and improving subsistence and commercial production. The project is helping to introduce a variety of new products and production techniques, including use of medicinal plants, development of ecotourism, cultivation and use of natural vines, production of handicrafts, and use of fallen timber for small-scale wood processing. All four reserves have now approved natural resource utilization plans and are in the process of completing longer-term development plans. Since its inception the project has been highly participatory, and local participants show a strong degree of ownership of the project. Already the project represents one of the best examples of shared management between government and local populations of conservation areas in the Amazon region. The project's first phase will close in April 1999, but discussions are under way on a four-year follow-up phase.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); the National Center for the Sustainable Development of Traditional Populations (CNPT) at IBAMA; the National Rubber Tappers Council (CNS); and local reserve associations and community-based groups.

Financing

The $9.4 million project is financed by the Rain Forest Trust Fund, the European Commission, and Brazilian counterpart funds. The European Commission recently announced that it will fund an additional $7.7 million for a second four-year phase, which would begin in 1999.

Indigenous Lands *(ongoing)*

Background

Indigenous people in the Amazon have long used the rain forest ecosystem without causing major environmental degradation. Their specialized knowledge and stewardship

Fulfilling the Vision of Chico Mendes: The Extractive Reserves Project

The idea of extractive reserves was originally proposed by the Amazonian rubber tappers in the state of Acre in the 1970s. The forest-dwelling population who derive their livelihood from forest resources—known generically as rubber tappers throughout the Amazon, although they practice mixed livelihoods and use other forest products, such as Brazil nuts—were increasingly threatened because of the expansion of other frontier activities, such as cattle ranching. To protect their interests, rubber tappers from all over the region organized themselves into the National Rubber Tappers Council (CNS). They carried out peaceful demonstrations, sometimes forming human barriers to physically block the advance of developers' bulldozers. They advocated the creation of extractive reserves in which local populations could be ensured unfettered access to natural resources in order to continue their livelihoods and help conserve and manage the forests.

The rubber tappers movement gained worldwide visibility when its leader, Chico Mendes, was assassinated in 1988 by a gunman hired by a neighboring cattle rancher. His legacy, however, lived on, as support for creating extractive reserves grew. A year after his death, the Brazilian Congress approved the creation of extractive reserves as one kind of conservation unit.

Within the next few years four reserves were created in the states of Acre, Rondônia, and Amapá (Chico Mendes, Alto Juruá, Rio Ouro Preto, and Rio Cajarí). The Pilot Program's Extractive Reserves Project has been providing support to these reserves since 1995. The project is directly helping to transform Chico Mendes' dream into reality by strengthening the local reserve associations and providing support for the development of new agroforestry crops and forest products and sustainable production techniques.

of natural resources are considered by many scientists to be exemplary and could provide a foundation for the development of more sustainable approaches to rain forest use and management.

As a result of colonization, warfare, and disease, the number of indigenous people in Brazil has fallen from an estimated 8 million in the 1500s to about 300,000 today. In addition, there are believed to be 2,000 or more indigenous people living in isolated tribes who have not yet had any significant contact with Brazilian society.

Since the beginning of the twentieth century, Brazilian law has accorded legal recognition to the rights of indigenous people to their lands, which constitute about 82 million hectares, or 16.4 percent of the Legal Amazon. Legalization of indigenous lands requires that they be formally identified, delimited, demarcated, decreed, and registered. When the Pilot Program's Indigenous Lands Project was prepared in 1994–95 only 50 percent of 556 indigenous lands recognized by Brazil's National Indian Foundation (FUNAI) had been legalized.

Objective

The Indigenous Lands Project aims to enhance the well-being of indigenous people and promote the conservation of their natural resources by completing the legalization and assisting in the protection of approximately 121 indigenous areas in the Amazon.

Activities

Begun in 1996, the project has supported activities that promote the legalization and protection of indigenous land. It has also sponsored targeted studies and capacity building.

After a slow start-up, the pace of project work accelerated in 1997, when fieldwork was completed on 11 identifications and 29 demarcations. Seventeen indigenous areas under the project are close to becoming fully legalized. The project has also strengthened the control of indigenous people over their territories by encouraging their active participation in land legalization and protection. With technical assistance from NGOs under the supervision of FUNAI, the project has supported a number of alternative approaches to demarcation carried out by indigenous people themselves. These approaches involve the indigenous people in protecting their own lands.

The Indigenous Lands Project has been supporting work designed to improve all steps in the land legalization process. It has, for example, funded studies that have resulted in adding environmental diagnostics to the procedures. This new procedure will help identify the full range of natural resources and microenvironments used by indigenous people during an annual cycle and help ensure that mapping does not artificially cut or disrupt important livelihood activities.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); Ministry of Justice; National Indian Foundation (FUNAI); and various NGO and indigenous organizations.

Financing

The $22 million project is financed by the Rain Forest Trust Fund, the German government, and Brazilian counterpart funds. The German government is also providing technical cooperation. Additional financing is likely to be provided for 1999 and beyond.

Rain Forest Corridors *(in preparation, formerly known as* **Parks and Reserves***)*

Background

Brazil is an enormous reservoir of biodiversity. The number of flowering plants, fish, amphibians, birds, and primates is unsurpassed anywhere in the world, placing Brazil among a select group of countries notable for their megadiversity.

Despite the richness of this resource, however, efforts to protect it have been insufficient. Brazil's parks and reserves, which cover about 4.5 percent of the country, are widely scattered, and virtually all of them are understaffed. Until very recently, people living in and around protected areas were treated as interlopers rather than as potential allies—a practice that undermined local support for these areas. As a result, parks and reserves throughout Brazil have been affected by hunting, logging, agriculture, and mining.

The Rain Forest Corridors Project proposes a new approach to biodiversity protection in seven large rain forest "corridors" or "bioregions" located in the Amazon and Atlantic rain forest regions. They include areas of exceptional biodiversity and encompass many of the existing protected areas, including federal, state, and municipal conservation units; private reserves; and indigenous lands.

Linking official conservation units, private reserves, and indigenous lands within larger rain forest corridors could improve the ecology of these areas, for three reasons. First, the new approach would enhance what biologists call the genetic flux among populations of species over larger, contiguous areas. This is especially important for isolated populations of large mammals, which require extensive ranges in order to avoid inbreeding. Second, concentrating widely scattered parks and reserves into a few rain forest corridors could strengthen the effectiveness of understaffed environmental agencies. Finally, by seeking the participation and support of local populations for their establishment and protection, these corridors could help build new constituencies for biodiversity protection.

Objective

The Rain Forest Corridors Project aims to conserve biodiversity by creating rain forest corridors in the Amazon and Atlantic rain forest regions.

Activities

Scheduled to begin in early 1999, the five-year project will focus initially on two large rain forest corridors. One, in the central Amazon, encompasses 245,500 sq km, the size of the United Kingdom. The other, in the northern Atlantic Forest, measures 77,500 sq km, an area larger than Ireland. A variety of incentives and regulations may be used to increase the size of protected areas and the connecting areas between them. The project will also seek to improve the management and protection of existing national, state, municipal, and private protected areas of all kinds within the corridors and stimulate the creation of additional public and private protected areas within the corridors. In addition, the project aims to increase the connectivity of forest cover between protected areas by promoting the conversion of private lands into conservation areas, supporting sound resource management and rehabilitating local communities in strategic locales, as well as formulating policy recommendations that provide economic incentives for conservation. The project will seek to coordinate these actions through participatory and decentralized project management that encourages cooperation among federal, state, and municipal government agencies, research institutions, community and other civil society organizations, and private landowners.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA); concerned state governments; corridor project units collaborating with public and private stakeholders; and civil society organizations and community groups.

Financing

The cost of the project has not been finalized; it may be around $40–45 million. Financing is likely to come from the Rain Forest Trust Fund, the German government, the European Commission, the British government, and Brazilian counterpart funds.

Natural Resources Policy *(ongoing)*

Background

The conservation and sustainable use of tropical rain forests are a matter of public concern. Government actions—including establishment of land-use guidelines, surveillance and enforcement to ensure that existing laws and guidelines are respected,

and programs and incentives that encourage lawful behavior by resource users—are needed if these resources are to be used appropriately. Capable governmental institutions are also needed to implement those actions.

Until recently the definition and implementation of environmental policies in the Amazon region were the responsibility of Brazil's federal government. Since the 1988 Constitution came into effect, responsibility has been shared by federal, state, and municipal governments. Over time responsibility should become increasingly decentralized to local agencies.

Unfortunately, state and local governments—especially in the nine states of the Amazon region—are ill-equipped to take on this responsibility, often lacking the human resources, training, equipment, organizational structure, and political support needed to be effective. These state and local government institutions urgently need to be strengthened to carry out their jobs. In addition, state-level legislation, programs, and incentives need to be reviewed and made consistent with federal policies. There is also a need for increased political support from local constituencies to empower state and local governments in their new role.

The Natural Resources Policy Project (or subprogram) helps the nine Amazon states address these problems of policy, institutions, and coordination. It is by far the largest project in the Pilot Program, and it is critical for the program's success. The project has recently been reformulated to reorient it toward the solution of specific problems and the achievement of specific results.

Objective

The project aims to support the sustainable use of natural resources by defining and implementing appropriate models of integrated environmental management for Brazil's Amazon region. Specifically, the project will:

- Help state and local governments and federal agencies jointly implement environmental management activities (such as zoning, monitoring, licensing, and law enforcement) to address specific environmental problems in selected priority areas.
- Strengthen state environmental agencies and improve their legal framework.
- Integrate the various state-level environmental agencies to make policies compatible and to respond adequately to environmental issues.
- Promote increased awareness and understanding of environmental issues by the public and encourage participation of local stakeholders in formulating environmental policy.

Activities

The project's main thrust is the implementation of Integrated Environmental Management Projects in each state of the Amazon. These projects are based on a state-level environmental plan that defines critical problems and identifies strategic actions to address those problems in priority areas. These projects are then discussed, refined, and agreed on at the local level. The main ingredients of the projects are:

- Ecological and economic zoning, which defines guidelines for the use of natural resources in specific zones within priority areas, including zones for sustainable use, conservation, preservation, or rehabilitation.
- Monitoring of key environmental variables (such as forest cover, wildlife, soil erosion, and pollution) in priority areas for compliance with target levels or legal limits.
- Enforcing environmental laws and regulations—including surveillance (with local community help) and the licensing of economic activities in the area—in a coordinated way.
- Strengthening state and local governmental agencies through staffing, training, improved organization, and equipment purchases.
- Reviewing and improving environmental laws and regulations and introducing economic incentives.
- Promoting citizen awareness through educational campaigns.

The project also provides technical assistance to the environmental agencies in each of the nine states in the Amazon and supports regular meetings of a permanent working group comprised of representatives from those agencies. Oversight is provided by a project commission made up of representatives of federal and state agencies and NGOs.

Participants

A technical secretariat at the MMA coordinates project execution by the states and provides a link to donors and the World Bank. In each state a working group—comprised of state and federal agencies responsible for environment, planning and zoning, land reform, settlement, mining, indigenous affairs, and other relevant areas—formulates and supervises execution of the Integrated Environmental Management Projects. Municipal governments, NGOs, and other organizations of civil society also participate in the projects. Each state has a state environment council, which is responsible for discussing and recommending environmental policies and overseeing the execution of the projects.

Financing

The $83 million project is financed by the Rain Forest Trust Fund, the German government, the European Commission, and state government counterpart funds. The German Technical Cooperation Agency (GTZ) and the British Department for International Development (DFID) are making technical assistance available to seven of the nine states.

Fire and Deforestation Control *(in preparation)*

Background

Until the 1960s the Amazon rain forest remained essentially intact with a minimum of human interference. This situation has changed drastically in the past two decades. During 1994–95 deforestation reached a peak of 29,000 sq km per year. By 1996 some 517,000 sq km, or 13 percent of the original forest cover, had been deforested. The worst deforestation continues to occur in the states of Mato Grosso, Pará, and Rondônia, which together account for 83 percent of total deforestation in 1996.

Fire is commonly used to clear land in the Amazon. To prepare agricultural plots farmers first fell, dry, and burn the forest, thereby enriching the soil with nutrients. Ranchers often burn pastures every few years to stimulate regrowth of grasses and control weeds. These fires are difficult to contain; when combined with the effects of conventional logging or unusually dry weather (such as that induced by El Niño), they can devastate extensive areas of pristine forest, as they did in Roraima in early 1998. Today uncontrolled burning represents one of the greatest threats to the Amazon forest.

Objective

The Fire and Deforestation Control Project aims to improve the surveillance and control of deforestation, burning, and forest degradation in selected areas of the Amazon.

Activities

This five-year project, scheduled to begin in 1999, will help both federal and state environmental agencies in the Amazon develop and implement a unified surveillance system for monitoring deforestation, burning, and forest degradation, while strengthening local capacity to control illegal deforestation and fires. The project will focus on priority areas selected by the states for activities under the Natural Resources Policy Project. It will also support training and acquisition of critical equipment for surveillance and enforcement. This timely project should enhance the technical capacity of federal and state environmental agencies to address the growing threats of deforestation, burning, and forest degradation in the Amazon.

Participants

The Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA), state environmental agencies, and NGOs.

Financing

The project cost has not yet been finalized. Financing is likely to come from the Rain Forest Trust Fund, the German government, and Brazilian counterpart funds. The British government and the European Commission may also fund the project.

Science Centers and Directed Research *(ongoing)*

Background

Although tropical rain forests contain most of the earth's biological diversity, they remain one of the least understood ecosystems in the world. Brazil has a long tradition of supporting science and technology, but its investments in the Amazon region represent only about 4 percent of its total investments. Moreover, the country's overall scientific research capacity has declined since the 1980s, mainly because of reduced funding levels. These cutbacks have meant that little funding has been available to support research on environmental issues affecting the Amazon and Atlantic rain forests. This lack of resources combined with the low level of equipment at research institutions in the Amazon has significantly hampered the pursuit of scientific research in the region. The Science Centers and Directed Research Project was designed to fill this gap by increasing scientific knowledge about tropical forests and their sustainable management and use and thus to contribute to the potential success of all other Pilot Program activities.

Objective

Begun in 1995, this five-year project aims to promote the generation and dissemination of scientific knowledge relevant to conservation and sustainable development activities in the Amazon region by supporting competitive grants for scientific research and strengthening two established research institutions, the National Institute for Amazon Research (INPA) in Manaus and the Emílio Goeldi Museum (MPEG) in Belém.

Activities

The competitive scientific grants program provides funding of almost $6 million for 23 research projects in three areas: ecosystem studies, sustainable management and technology development, and socioeconomic and cultural studies. Examples of currently funded projects include research on the dynamics of forest fragments in the state of Amazonas (carried out by INPA); agroforestry systems in the state of Roraima

(carried out by the Brazilian Enterprise for Agricultural Research, EMBRAPA); and logging activities in the state of Pará (carried out by the Institute for Man and Environment in the Amazon, IMAZON).

Institutional strengthening at the two research centers has included construction and renovation of buildings; improvement of electrical, telecommunications, computer, water, and sanitation systems; upgrading or purchase of scientific equipment; strengthening of institutional management and administration; institutional strategic planning; scientific exchange and specialized training; and improved dissemination of research results. This phase of the project is scheduled to be completed in March 1999.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA); Ministry of Science and Technology (MCT); Agency for Financing Studies and Projects (FINEP); and the National Institute for Amazon Research (INPA) in Manaus and the Emílio Goeldi Museum (MPEG) in Belém. The open nature of the grant competition also facilitates the participation of a wide range of scientists and other experts in the targeted research activities.

Financing

The $25.5 million project is financed by the Rain Forest Trust Fund, the European Commission, the U.S. government, and Brazilian counterpart funds. The British government is making technical experts available to the project. The U.S. government is considering donating an additional $8–$10 million to fund the directed research program.

Monitoring and Analysis *(ongoing)*

Background

The 1992 resolution establishing the Rain Forest Trust Fund affirmed that learning and applying lessons could be the Pilot Program's most significant accomplishment. The resolution recommended setting up a program-level monitoring and evaluation system that would provide rapid feedback to project managers and disseminate critical lessons for other initiatives involving tropical forests in Brazil and worldwide.

While each of the Pilot Program projects has its own system for monitoring and evaluation, these functions have yet to be carried out systematically at the program level. Part of this delay has been due to the program's emphasis on getting other, larger projects prepared and under way. The varied nature of Pilot Program projects has also made designing a single monitoring and evaluation system for the entire program difficult.

Objective

The Monitoring and Analysis Project aims to promote learning about the Pilot Program and application of its strategic lessons. These lessons will be especially relevant to managers of other Pilot Program projects, but they should also help guide resource users and decisionmakers. Although the Monitoring and Analysis Project is the smallest in the program, it is the only project that crosscuts the entire Pilot Program. The learning and lessons it promotes should therefore be of profound importance to the Pilot Program's future.

Activities

Scheduled to begin in mid-1998, the three-year project will focus on three sets of activities. First, it will establish an integrated monitoring system that will provide project managers with rapid feedback on program and project performance. This user-friendly system will store and make accessible information related to indicators monitored by other projects and (in rare cases) by the project itself.

Second, the project will carry out studies designed to generate strategic lessons about key issues related to the Pilot Program. Case studies, for example, will document promising practices and strategies related to tropical forest conservation and development, as revealed by ongoing initiatives (such as the Demonstration and Extractive Reserves Projects). Other studies will evaluate the performance of projects in relation to the three main objectives of the Pilot Program—promoting sustainable development, protecting biodiversity, and reducing carbon emissions. A third set of studies will analyze conditioning factors—ranging from local organization to regional development trends—that can play a major role in the success or failure of Pilot Program projects.

Finally, the project will disseminate lessons learned to target audiences, including project managers and donors associated with the Pilot Program and similar initiatives; decisionmakers at national, state, and local levels in Brazil; and residents of the Amazon and Atlantic rain forest regions who depend on natural resources for their livelihood. Dissemination will take place through such vehicles as technical publications or the Internet and—in collaboration with other projects and external agencies—through mass media, such as radio and television programs.

Participants

Ministry of Environment, Water Resources, and the Legal Amazon (MMA) in collaboration with all Pilot Program projects; diverse research personnel and institutions.

Financing

The $2.6 million project is financed by the Rain Forest Trust Fund and Brazilian counterpart funds, as well as by support from the German Technical Cooperation Agency (GTZ).

ADDITIONAL INFORMATION

For additional information about the Pilot Program, please see the *Rain Forest Pilot Program Update*, the World Bank's quarterly newsletter of the Pilot Program (in English or Portuguese), or contact the World Bank Rain Forest Unit at either of the following addresses:

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You may also contact the Pilot Program Coordination Unit of Brazil's Ministry of Environment, Water Resources, and the Legal Amazon (MMA):

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Pilot Program To Conserve
The Brazilian Rain Forest

Rain Forest Unit
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