TOWARD A GLOBAL CLIMATE CHANGE PROGRAM FOR BRAZIL

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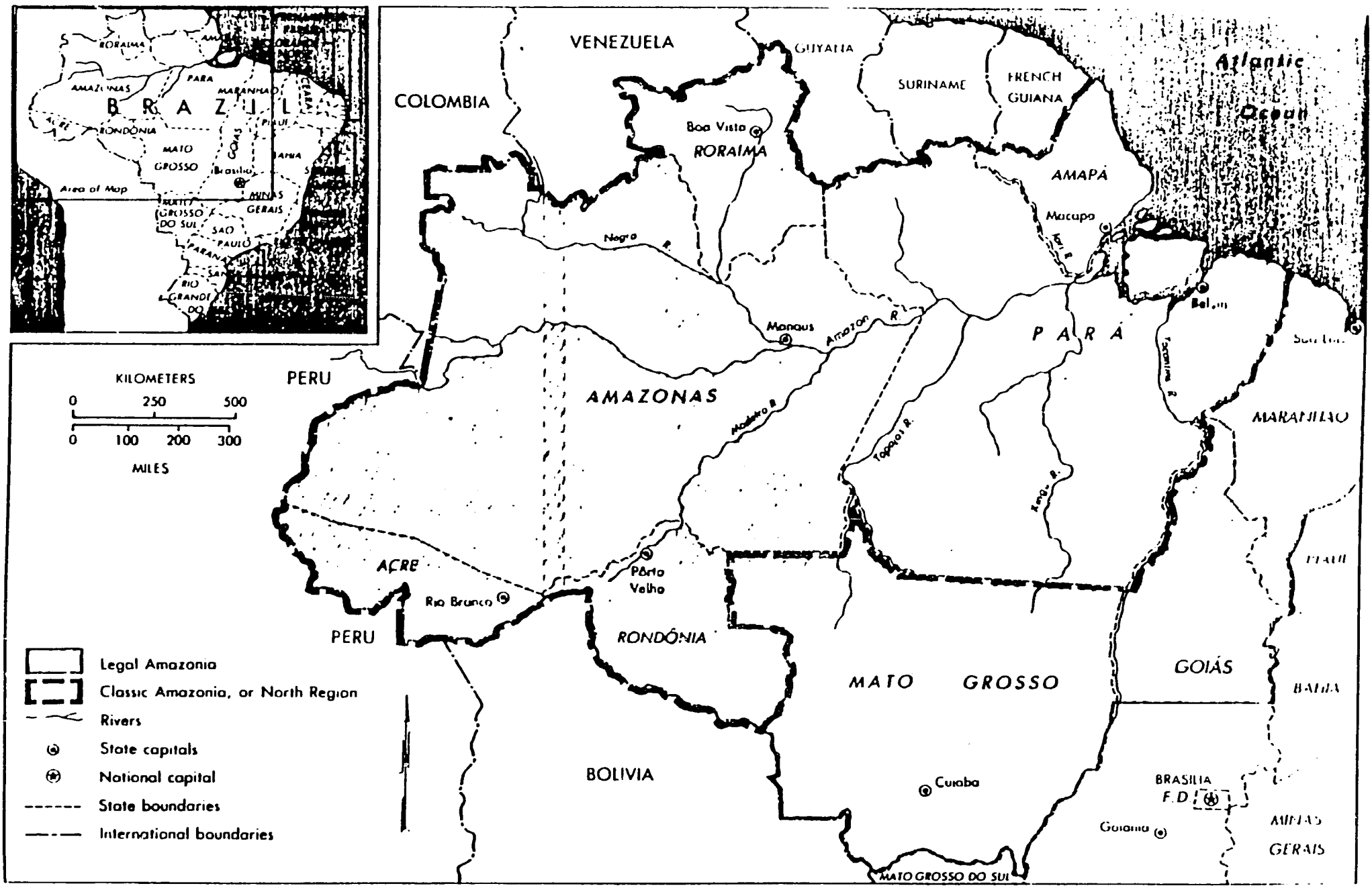

BRAZIL
Area of Map
VENEZUELA
GUYANA
SURINAME
FRENCH GUIANA
COLOMBIA
Atlantic Ocean
Boa Vista
RORAIMA
AMAPÁ
Macapá
Negro R.
Manaus
Amazon R.
PARÁ
Belém
AMAZONAS
Madeira R.
Tapajós R.
Xingu R.
Tocantins R.
MARANHÃO
PERU
ACRE
Rio Branco
Pôrto Velho
RONDÔNIA
PERU
MATO GROSSO
GOIÁS
PIAUÍ
BAHIA
BOLIVIA
Cuiaba
BRASILIA F.D.
Goiania
MINAS GERAIS
MATO GROSSO DO SUL
KILOMETERS
0 250 500
0 100 200 300
MILES
Legal Amazonia
Classic Amazonia, or North Region
Rivers
State capitals
National capital
State boundaries
International boundaries

I. Background, and Strategic Overview

I. A. Background

The goal of this exercise is to formulate a strategy and to frame a programmatic basis for the U.S. to cooperate with Brazil in combatting global climate change. It is in response to the mandate of Congress in the 1990 Foreign Assistance Appropriation Act to support programs on important global climate change issues in "key" countries. The FY '90 Congressional legislation allowing for an A.I.D. global climate change (GCC) program with Brazil, coincides with a sharp reversal in Brazilian policies that places environment and national resource management problems at the top of that country's agenda. This coincidence creates an opportunity for cooperation that has not existed for several decades between the two countries.

Following this mandate A.I.D. formed an inter-agency working group to develop a global climate change program with the "key" country Brazil. What follows is the first product of that process of consultation and a two week field mission to Brazil by senior staff of A.I.D., the U.S. Forest Service, and the Environmental Protection Agency. The team benefited from the extraordinary preparation, support, and enthusiastic participation of USAID/Brasilia. The team has relied almost entirely on what our colleagues in Brazilian governmental, non-governmental, and research institutions shared with us.

The success of this mission was in largest measure due to the very high quality of Brazilian openness, willingness, technical expertise, and understanding of the global problems involved, and of their importance to socio-economic development in Brazil. From the beginning it was recognized that this would be a program of cooperation on problems of mutual interest in which both countries have much to learn and gain.

This combination of efforts has resulted in the formulation of a workable strategy designed to address the following objectives:

1. outlining the strategy and clarify program components for a five year time period (including a range of initial activities);

2. identifying programming vehicles; financial requirements; implementation modes; management and performance measuring capabilities;

The U.S.-Brazil GCC program is designed as one of mutual cooperation and benefit. Both countries will loose if the

dislocation predicted to accompany global warming occur, and both countries will benefit from exchanging technology and experience in addressing the problem. The set of new relationships between Brazilian and U.S. individuals and institutions will be a secondary but important benefit.

Clearly many critical studies need to be done on the problem of deforestation in the Amazon. However, a substantial amount of research exists, much of which has not been disseminated. This is due in part to a lack of communication between research institutions. There is also a failure of communication between researchers and government officials, and between researchers and local communities.

This program will provide support to highly capable individuals and institutions to do a few of the critically needed studies. More significantly, though, the program is designed to build bridges between researchers for the cross fertilization of ideas, between the researcher community and local people so that findings can have practical applications, and between the research community and decision makers so that informed policy decisions can be made. Policies that will acknowledge the waste of natural resources and the environmental costs associated with deforestation, and that will promote more economically beneficial alternatives.

The U.S. government agencies having the most significant role in implementing this program with Brazil, cooperated in its formulation. A coherent inter-agency approach that takes full advantage of what these agencies have to offer is the result.

The program has a five-year time frame, with annual evaluations for further program development and course corrections. The following considerations and constraints were guiding principles in the program's development:

1) As mandated by Congress, the program is limited to activities designed to slow down and eventually reverse the increase in production of "greenhouse" gases by Brazil. However, only activities having beneficial effects, in addition to GCC consideration, have been selected (this follows the U.S. "no regrets policy").

2) U.S. funds available for the program are very modest compared to those being provided by other donor and lending agencies such as the World Bank and the Inter-American Development Bank, both of which have hundred-million dollar projects addressing broader environment and natural resource management issues in the country. Particular attention has, therefore, been paid to the unique strengths the U.S. has to contribute in cooperating with Brazil on GCC issues. These strengths include the ability to work directly with NGO's and the private sector which the MDBs cannot, and the U.S.'s

extensive technological abilities which are respected by the Brazilians.

3) The cutting and burning of Amazonian forests is the greatest CO2-generating activity in Brazil and the primary reason for Brazil's selection as a key country. The program's primary focus is, therefore, on addressing this problem of deforestation. A smaller component of the program is aimed at the promotion of energy efficiency.

4) The level of U.S. funds is not adequate for starting new organizations "de novo". Program funding, therefore, will be to individuals and institutions with existing high capabilities for which modest amounts of money will have a catalytic effect on their programs and efforts.

I. B. The Global Climate Change Problem in Brazil

Several sources have estimated that Brazil is the world's fourth largest contributor to total CO2 emissions (combining deforestation and the burning of fossil fuels). The only larger contributors are the United States, and the U.S.S.R., with China, and India possibly being equal to Brazil (see Annex 1).

In Brazil's case, the extensive clearing and burning of trees in Amazonia results in the forestry sector contributing much more than the energy sector, but the size of Brazil's economy makes the latter a significant player nonetheless.

Brazil's Forestry Resources and Climate Change

The Amazon region in Brazil is experiencing one of the highest rates of tropical deforestation in the world, and may be contributing 2-7 percent of total global releases to the atmosphere from deforestation and biomass burning up to 1980. As a consequence, Amazonia is emitting greenhouse gases at rates and quantities high enough to affect global CO2 and climate cycles.

Current annual emissions from Amazonia alone are estimated at 0.2 to 1.6 billion tons of carbon, or 4 to 25 percent of global CO2 emissions from all sources. If the Brazilian Amazon were completely cleared, 111 billion tons of carbon would be released immediately, augmented by a continuing gradual release that would elevate the total to 62 billion tons. Thus, deforestation in Brazil poses serious global consequences for climate change as well as the much-discussed loss of species diversity.

The situation in Brazil is changing rapidly. Analysis conducted at the Brazilian space Research Center (INPE) found that forest fires covered 20 million ha (77,000 square miles, or 1.5 times the

area of New York State) during 1987, of which 8 million ha were virgin forest. This observation has forced reevaluation of standard mid-1980s estimates of 11.3 million ha deforested for the entire globe's closed and open tropical forests.

Brazil, Indonesia, and Colombia were the largest of the top ten producers of net carbon release from tropical deforestation in 1980, with Brazil emitting 336 million tons of carbon in 1980, and perhaps 454 million tons in 1989, according to one recent estimate.

Brazil's energy use and Global Climate Change

On the surface, it might seem that Brazil contributes little carbon dioxide from its energy sector. During the 1980s the country switched all of its automobiles to alcohol fuels, which contribute no net CO2. In addition 85 percent of the country's electricity comes from hydroelectric facilities.

Despite these factors the sheer size of Brazil's economy results in the country burning the second largest quantity of fossil fuels in Latin America. The nation's energy sector generated an estimated 53 million tons of in 1987, compared to Mexico's 80 million tons. In contrast the booming economy of South Korea generated "only" 44 million tons.

The reliance on hydro-electircity in the power sector is also somewhat misleading: the reservoirs of many of Brazil's existing and planned dams are situated on relatively flat forest land, so that the forest inundated, and therefore the CO2 sink lost, is very high per unit of power generated. In addition, remote sensing data have shown that the construction of roads is an important precursor of deforestation, and new roads must be built to enable construction of remote hydro sites.

I. C. Strategy and Policy Framework

The goal of the Global Climate Change Program is to reduce the build up of green house gases in the atmosphere by increasing the efficiency of the production, transmission, and utilization of energy and to halt the massive, non-sustainable deforestation of the Amazon.

ENERGY SECTOR:

To affect the sources of greenhouse gases in the energy sector, the most important approaches are to increase efficiencies and increase the use of renewable sources of energy. In reviewing the energy sector to determine the most appropriate interventions for A.I.D. to make, it became clear that the transport sector was not

appropriate because of the success that the country has had in switching to alcohol fuels. The power sector, on the other had, offers numerous opportunities:

(1) A.I.D. has extensive experience worldwide in power sector efficiency programs, including in the sub-area of technologies for producing electricity from renewable biomass, a subject of interest to Brazil;

(2) A select group of Brazilians, including the new Secretary for Science and Technology, have performed significant research on the potential for efficiency improvements and have initiated programs in the last five years;

(3) The World Bank and the IDB have been under increasing pressure to tie a portion of their energy sector loans in Brazil to efficiency programs. Relatively small infusions of funds from A.I.D., therefore, could build on existing interests and leverage larger expenditures and activities.

It is also important to point out that efficiency improvements in the power sector will have a positive effect on Brazil's economy. More than one-fourth of Brazil's external debt is based on loans to the power for capacity expansion. to the extent that the growth of electricity demand can be dampened while simultaneously productivity is improved, the debt problem is somewhat ameliorated.

The strategy for A.I.D. assistance, then, is to work with interested persons in both the government and the private sector to establish a non-governmental organization (NGO) that is dedicated to efficiency improvements in the power sector. although at least two important governmental agencies already exist to work in this area, it was the opinion of those consulted in Brazil that an NGO, collaborating with the government whenever possible, was critically needed to complement such work.

In the energy sector we will support the newly created Energy Efficiency Institute through the provision of specialized technical assistance for policy development in the areas of: energy pricing, incentives, regulations and monitoring; training of energy users; information to energy users on the cost implications of greater efficiency; and promotion of investment in projects that improve energy efficiency (see Annex III)

FORESTRY SECTOR:

In the forestry sector we will support Amazon based efforts at policy analysis and actions aimed at: eliminating incentives for reforestation; creating parks, protected areas, extractive reserves and sustainably managed forests; generating effective information

on ecologically sustainable and economically viable land use options; and strengthen linkages between scientists,non-governmental organizations, and key people in the private and public sector involved in the formation, implementation and evaluation of policy (see Annex II).

Other strategic choices were made in the course of developing the program include:

1. Leverage opportunities have priority. Given the modes size of these resources and the large investment which will be made by the Brazilian government, multi-lateral institutions and other bi-lateral agencies.

2. Focus policy at improving the effectiveness of these investments. Never has the government of Brazil been so open to suggestions for improving the management of the environment and natural resources.

3. Build on existing technical and institutional capacity. The urgency of the problems and immediacy of opportunities for solving them require an emphasis on individuals and institutions that can get results now within their existing capacities (see Annex 2).

4. the bulk of support should go to non-governmental organizations and individuals in the Amazon region and should when possible be built on existing linkages between U.S. and Brazilian institutions. This is due to the prolonged delays involved in creating new formal agreements.

I. D. Conservation and Sustainable Use in the Amazon

Never before has the government of Brazil been so committed to the conservation and sustainable utilization of the Amazon. They are asking all the right questions about what mix of conservation and utilization is appropriate, at what cost for different amazonian ecosystems and have embarked on a program of agro-ecological zoning to begin this process.

A.I.D. Administrator Roskins has identified policy dialogue and technology transfer as the highest priority for Agency action in the environment, and these are the areas that offer the greatest opportunity to maximize the impact of the modest resources available for the program because of this willingness on the part of the government.

Given this openness and willingness, a key constraint becomes the availability of information about sustainable systems of land use

in the Amazon. The program will reduce that constraint by synthesizing, packaging and communication existing information on the ecological and economic sustainability of comparative land use systems; identifying critical gaps in available knowledge; supporting applied research aimed at learning what is required.

Communication will be enhanced by linking key researchers, research institutions, non-governmental organizations and state and local government in a process of policy dialogue, workshops, and seminars to review lessons learned about what works, what dose not, why, and to discuss policy alternatives.

The judicious selection of subjects for comparative analysis and the facilitation of collaboration among quality researchers from a variety of institutions will lead to the production of information valuable to policy-makers. The program has identified measures to make these processes effective which will: include local interest groups with the researchers from the outset through NGO participation in the research; accent the role of researchers as participants in the policy process; and support enhanced communications between researchers, NGO activists, policy makers, and other influential individuals and groups.

Program components have been identified at the national and regional (Legal Amazon) levels, and instituted through a combination of public agencies and NGOs. The program will build on the network of researchers from various institutions who have a long range interest in seeing important problems addressed. The GCC program will emphasize the direct involvement of these individuals with resource users and policy makers. Emphasis is given to linking research institutions with NGOs acting at the community level.

II. Program Components

The program will be implemented in four main areas: Brasilia (national level); Belem (Eastern Amazon); Rio Branco (Western Amazon) and Manaus (Central Amazon).

II A. Policy Analysis and Action Program: National Level

A number of critical information requirements have been identified and approaches to addressing them are being developed by key groups of researchers and NGOs based in Belem, Rio Branco, and Manaus. They include such areas as the economics of extractivism, non-traditional forest products, private sector sustainable timbering technologies, natural forest management, restoration of degraded lands, managing parks and protected areas, etc.

1. Natural Resources Macro-Economic Policy Work

A workshop in Brasilia under the aegis of the Secretaries for Science and Technology and Environment would bring together a select group of leading natural resource macro-economists (e.g., Theo Panayutu, Harvard U., Malcolm Gillis, Duke U., Robert Rapetto, World Resources Institute, Alvaro Umana, former Natural Resource Minister of Costa Rica, Hans Gregersen, U. of Minnesota, Herman Daly and Jeremy Wofford, World Bank) to meet with leading Brazilian macro-economists. The meeting would review state-of-the-art theoretical and methodological efforts to analyze natural resources. This meeting would be followed by post-doctorate training in the U.S. for several influential Brazilian economists. Collaboration on specific problems as well as periodic interchanges would result. The activity responds to clearly expressed feelings among Brazilians at all levels about need to better analyze environmental issues from an economic perspective.

At the National level there are also proposed for later years of the program both policy workshops, and activities designed to institutionally strengthen and increase the networking between national and local NGOs.

2. Energy Efficiency Institute (IEE)

A.I.D. proposes to collaborate with exisiting agencies of the Brazilian government (the Secretary for Science and Technology, the National Electiricity Conservaton Program, and the National Development Bank's financing program, PROEN) to establish a new NGO -- the Instititute for Energy Efficiency. Support will also be solicted from the World Bank, the Inter-American Development Bank, and other bilateral donors. The Institute will solicit funds from the government and from industrial associations but will be expected to develop marketable programs so that the program can be largely self-sustaining after approximately three years.

Potential exists in Brazil for efficiency improvements at various stages of the power sector -- from generation through tansmission and distribution to end uses in the industrial, commercial, and residential sectors. Cost-effective measures could be taken that would be economic for energy users (greater productivity in the industrial and commercial sectors) and also would reduce the need for foreign exchange and thus assist with Brazil's debt problem.

The purpose of the Institute will be to render advice to the government on relevant policy matters (pricing, investments, regulations, and icentives, etc.), to provide pertinent technical and economic information to users of energy technology, to train private and public sector persons on efficient technologies and

management, and to promote investments in such technologies.

A.I.D. proposes to provide technical assistace in each of these areas and in developing a marketing program for making the institute self-sufficient. A majority of A.I.D.'s assistance would be with regard to end-use efficiency, although A.I.D. expertise in certan other areas, including efficient technology for converting bviomass to electiricity, also would be avialable. A more detailed explanation of the scope of work is included in Annex 3.

A.I.D. would solicit collaborative technical assistance form the U.S. Department of Energy and the U.S. Environmental Protection Agency in a number of these areas.

II B. Comparative Analytical Policy work and sustainable Use Experiments

In Belém, because of the concentration of talent, and in Rio Branco, where young, innovative people are forging new alliances to be able to work effectively, poles of attraction for policy impacting research and experiments demonstrating sustainable use of forest resources will be promoted. We will also build on the Manaus based program between the Smithsonian and INPA aimed at applied research and training. Networking between the groups will also be stimulated. In each case, talent is drawn from multiple organizations. Resources are provided to permit the researchers to be effective despite constraints within their institutions. Inter-institutional research will be conducted that cut across disciplines and reaches from research to beneficiaries through community based organizations. An accent will be on bringing the researchers to play advocate and extension roles directly or through the linkages. Support to the process will be provided by World Wildlife Fund: EPA and USDA/FS will collaborate by offering technical cooperation, training and visitor exchange possibilities. In each case, linkage to U.S. technical centers of excellence or individual researchers will occur as appropriate.

1. Belém Group

A policy analysis and action steering committee will be made up of persons of varying disciplines from such institutions as: EMBRAPA/Cpatu (agroforestry research); UNAMAZ (an international NGO bringing together universities of the Amazon Basin); Museo Goeldi (botanic garden); IDESP (state social and economic planning organ); University of Pará; and additional local NGOs. Activities identified include:

a. comparative analysis of alternatives for sustainable forest use: Woods Hole Research Center (WHRC) with EMBRAPA/Cpatu;

b. comparative analyses for: sustainable use of tropical forests (will not duplicate WHRC work); management systems for sustainable logging (both on private lands and through licenses for national forests); alternative forest products for an extractive reserve in Amapá (see complementary work under NGO strengthening below) and; WWF with the Belém Group;

c. an experiment in private management of timber for sustainable logging in Paragominas, Pará (with 2-3 carefully selected sawmills that have been operating in the area for many year. This would be complemented by a satellite effort in Rondonia through IPHAE, a local NGO.

2. Rio Branco

The participating institutions in the PESACRE group include: FUNTAC (autonomous parastatal for promoting sustainable use of natural resources): IMAC (State Environmental Regulatory Agency); EMBRAPA; CNS (The National Rubber Tappers Council); the State Agricultural Service; INPA (National Institute for Amazon Research); the University of Acre and others. Activities include:

a) analyses for policy impact, demonstration experiments and training through linkage with the University of Florida (a preliminary list of activities has been provided and is being revised and prioritized by the PESACRE group which will submit a proposal shortly through the University of Florida);

b) work with IMAC through WWF on addressing problems relating to effectiveness of environmental impact assessments;

c) funding for a proposal in progress from UCLA for comparative analytical work on agricultural uses of forest lands (this would not occur until 1991).

3. Manaus

The Smithsonian/INPA forest fragments research group will be expanded to include applied research on forest regeneration and training. Nationally and internationally INPA is the largest center for amazonian scientific research.

4. Collaborative work between the 3 Groups

The three will collaborate in comparative analytical work and sustainable use experiments being initially:

a) a program through WWF to seek innovative, non-formal approaches for increasing adherence to environmental laws where enforcement capacity is lacking;

b) a co-financing arrangement with the Ford Foundation on appropriate processing technologies for selected tropical forest products (açaí, babassu, brazil nuts); this work will be accomplished through International Development Enterprises, a U.S. NGO;

II C. Institutional Linkages

2. Environmental Protection Agency (EPA)

EPA is discussing a long term technical cooperation relationship with Brazilian officials. The scope includes a broad range of environmental and pollution control issues as well as the GCC concerns which are the subject of this strategy. Brazilian officials expressed very positive positions on this relationship during the team visit.

EPA also has a major role in developing technical analyses and U.S. positions on global climate change. It is a lead player for the U.S. in the Inter-Governmental Panel on Climate Change (IPCC). It is conducting a program of policy analyses to contribute to U.S. and international understanding of climate change, impact on various sectors, and possible response strategies. These analyses involve work with other countries to assess international aspects of climate change. EPA attaches importance to fostering its relationship with Brazil. Because of the importance of Brazil, in terms of the role of the Amazon as both a source and sink of green hose gases, the significant contribution of the energy sector to climate change, and the contribution of Brazilian scientists to the understanding of climate change issues.

The principal linkage within Brazil is with the Secretary of the Environment. A memorandum of understanding (MOU) has been approved by EPA and SEMA and is presently under review by Brazil's Ministry of External Relations.

Several activities are on-going. In January, EPA sponsored a conference in São Paulo with IBAMA and the University of Sao Paulo to consider the greenhouse gas cycle implications of deforestation

rates. One outcome was an agreement to do further work assessing the potential to slow deforestation and increase reforestation in 7-10 countries, including Brazil. This effort is led by U.C. Berkeley in the F-7 forestry network.

Two applications of remote sensing technology to forest degradation offer important potential: the first (E-MAP) involves cooperation of SEMA and EPA with NASA and INPE and others to use remote sensing methodologies and sample grid techniques to monitor tropical deforestation rates. The second involves EPA support for work by U.S.NASA and INPE in Brazil on remote sensing of biomass burning for both tropical forests and cerrado (savannah); EPA is working with NASA to encourage development of an international research strategy in which INPE and IBAMA would collaborate and might play a significant role in transferring this technology to other tropical countries.

There are also a number of workshops of international importance which EPA and SEMA might sponsor jointly. Secretary Lutzenberger (SEMA) expressed interest during the White House Conference on Global Climate Change in hosting a meeting to explore elements of a global forestry protocol among the Agricultural and Forestry Subgroup of IPCC. A workshop might be proposed on reforestation within Brazil as an option to offset carbon dioxide emissions by U.S. and Brazilian utilities. Also, a workshop might be held looking at implications for Brazil of the EPA International Climate Change Effects Project (impact on river basin management, agriculture, tropical forest ecosystems and sea level rise). Climate change will affect Brazil's resources as well as those of other countries and this aspect should be an integral part of policy assessment.

Several of the areas targeted by EPA for study fit right into the comparative analysis priorities of this exercise (work could be accomplished through the same regional groups):

- -- changes in cerrado and forest management and harvest systems to reduce greenhouse emissions;
- -- slowing biomass burning by introducing appropriate agricultural and agroforestry systems;
- -- analyses on bioenergy plantations and markets for non-timber products;
- -- quantification of the value of standing forests as carbon sinks.

EPA is also supporting activities in the energy sector which are relevant to GCC. These include:

-- support of the Vermont biomass gasification/advanced gas turbine demonstration project in which Brazilian officials have expressed great interest;

-- support to a project in Brazil to improve electricity end-use efficiency through implementation of appliance efficiency standards and an energy efficiency study funded by ELECTROBRAS;

-- conduct of a series of energy case studies in key countries, including Brazil, which will be followed by an analysis of measures to achieve energy efficiency in the residential sector.

3. USDA Forest Service

USDA/FS collaboration with Brazil is founded on the basis of strong mutual interests. Benefits to USDA/FS include: access to technologies and forest-use policies which may be applicable to tropical forest areas in the U.S. (ie. Puerto Rico, Virgin Is., Hawaii, and the Western Pacific territories); opportunities to further USDA/FS technology transfer to other tropical countries; and increased knowledge of Amazon forestry issues and practices that will further cooperative work between USDA/FS and international organizations (ie. FAO, ITTO, IBRD, IDB). Also, the emerging experience in Brazil on tropical agroforestry, social forestry, sustainable multiple-use management, non-timber extractive management techniques and byproduct and industrial uses of forest products, may be relevant to the management of U.S. national forests.

USDA/FS brings to Brazil: access to specific technologies of likely application, such as geographic information systems, wildfire prevention and suppression, and wood products engineering. Also, relevant to Brazil is USDA/FS experience in the organization and management of national forests, land management planning, environmental impact assessment, etc. Finally, Brazil will benefit from exposure to U.S. experience with federal assistance to State agencies and private enterprises. USDA/FS will also facilitate access by Brazilian organizations to U.S. groups such as the National Park Service (see Annex 4), the Fish and Wildlife Service, and the Bureau of Land Management.

Several targets of opportunity were identified:

1) to collaborate with IBAMA on national forest organization, planning, administration, and management;

2) to foster scientific exchange and high quality cooperative research between USDA Forest Service units and Brazilian centers such as FUNTAC and IMAC in Acre; EMBRAPA/Cpatu, Museo Goeldi and IDESP in Pará; and INPA in Amazonas;

A Dwelling in the Varzea Forest

Terra-Firma Forest

3) to participate in analytical studies and policy dialogues with Brazilian NGOs such as: the Belém Group, PESACRE and possibly community based NGOs;

Most current USDA Forest Service cooperation with Brazil takes place under the U.S.-Brazil commission for Science and Technology, or through FAO or the World Bank. Cooperation with these organizations will continue. In addition, where desireable, close coordination will be established with WWF in cooperative work with Brazilian institutions.

In building linkages with Brazilian institutions, the USDA/FS will begin by bringing persons to the U.S. from the key institutions, to familiarize them with USDA/FS and solicit their inputs for areas of cooperation. This will include: study tours to USDA/FS headquarters, national forests, and research centers. This would then be complemented by exchange of technical personnel for long-term or short term on-the-job work experience: seminars, workshops, short courses in the U.S. or Brazil; and the development of joint research projects.

Particular emphasis will be given to establish formal cooperation with IBAMA. Focus will be on IBAMA's critical need to upgrade the technical and managerial skills of personnel, especially at the field level. USDA Forest Service assistance would also be invaluable in the managing of national forest lands for protection purposes and for sustainable harvesting of wood and other products.

3. World Wildlife Fund and Other NGOs

The World Wildlife Fund (WWF) is the first U.S NGO involved in the planning and proposed execution of the program. Other other NGOs, contractors, and institutions are expected to become involved as the program further develops.

WWF support will include cooperation with SEMA and IBAMA and NGO strengthening activities. SEMA and IBAMA need assistance for meetings in which they bring together key persons from within and outside their institutions to prepare to use resources for environmental programs. This is not a line item for funding recurrent costs; it would be flexibly used for specific events based upon a planning process administered by WWF with the two agencies.

NGO strengthening activities fall into three distinct groups:

a) The program is not supporting the creation of research/policy NGOs, but is fostering the work of

groups interested in their formation. Should the NGOs form and demonstrate they have the characteristics to become viable institutions, NGO strengthening support will be a priority (communications infrastructure, training, facilitation of specific events, etc.);

b) institutional strengthening for Amazon based NGOs; communications, infrastructure (phone, fax, telex, xerox, typewriters), workshops, short training courses and institutional exchanges on practical subjects (project identification, proposal writing, fund-raising, administration and management, computer operation, information management and technical themes related to agroforestry) and occasional recurrent cost support for special needs. This group of NGOs includes SOPREN (Belém), GEDEBAM (Belém), SOS Amazonas (Rio Branco), SOS Tapajos, IPHAE (Porto Velho), CNS (Rio Branco), UNI (National Association of Indigenous Populations, Goiania) and possibly Fundaçao Vitoria Amazonica (Manaus). Training may be provided in collaboration with non-environment NGOs, e.g., IBASE (Brazilian Institute for Economic and Social Analysis, Rio de Janeiro; IBASE operates a national NGO network);

c) selective programs with national NGOs which will include: Instituto dos Estudos Amazonicos (IEA, Curitiba), FUNATURA (Brasilia), SOS Mata Atlantica (São Paulo) and REBRAF (Rio de Janeiro). These institutions exercise influence with the Federal Government. Helping them to become more professional will increase their effectiveness at the federal level, reinforcing work within the Amazon region. These institutions will complement their advocacy roles with broader collaboration with Government.

WWF will also seek to strengthen CNS in Amapá as a prelude to its activities in a new extractive reserve. WWF will assist IEA in its collaboration with CNS on legal issues related to land rights and on community organization. WWF assistance will include: limited equipment and operating support for CNS in Amapá; training of young leaders for CNS (not limited to Amapá) and support for community organization. The preliminary work would test the feasibility of a more intensive program. In parallel, there would be a linkage between the activities of CNS/IEA in Amapá and the Belém Group who could carry out comparative analytical work related to sustainable use alternatives on the reserve.

II D. Other Activities

1. Fundaçao Vitoria Amazonica (FVA) environmental education and ecotourism

Manaus is a growing center for nature-oriented tourism. About 1.5 million tourists visit the region annually, but the infrastructure for ecotourism is minimal. A significant potential exists for tourism to contribute to environmental education and to revenue for environmental organizations.

FVA is a promising NGO based in Manaus which is well placed to become an important conservation organization. This is especially important in because Amazonas because it contains the largest area of undisturbed forest and has little NGO activity.

FVA's longer term goals focus on environmental education, protection of bio-diversity and research/policy work. They have an important immediate ecotourism opportunity. FVA has been given the use rights by IBAMA of a national forest 30 kilometers north of Manaus. This site is not only a beautiful undisturbed forest, but the holding area for the animals rescued from the Balbina hydroelectric plant when the area behind the dam was flooded.

Ecotourism will be carried out as a revenue generating activity, for environmental education and as a way to demonstrate to others in the region how to integrate environmental education messages into eco-tourism.

There is strong interest among U.S. environmental organizations in this project. ST/FENR, LAC and the Office of Private Enterprises within AID will explore ways to work together to promote this activity leveraging resources which might be made available through U.S. environmental groups.

II E. Monitoring and Measuring Program Performance

Monitoring provisions must be made from the outset to permit the program to demonstrate that it is having an impact on the problem. These must provide for periodic overview by those who can most critically affect direction so that adjustments can be made in a timely manner.

A contract will be let with an individual or firm to establish baseline data on the various activities, to track information and to interpret results so that others will have the information to make judgments about performance. A critical problem will be identification of "benchmarks" and performance targets. This will be accomplished by the contractor working with the various implementing institutions from the outset to establish the basis for monitoring and the indicators of performance.

The preparers of this program should constitute a continuing review team. At least once yearly (beginning in about ten months) and as needed, they will visit Brazil (or occasionally hold meetings with the AID Representative and implementing institutions in Washington) to assess progress, constraints, problems and areas calling for redirection. The contractor shall submit an initial baseline report with benchmarks and performance targets, and annual progress reports thereafter. This process will facilitate AID/W's formal tasks of program oversight and reporting to the Congress.

III. Program Implementation Considerations

III A. Issues

1. Will constraints impacting upon Brazilian institutions compromise their ability to perform?

SEMA is still in its formative stages as a Secretariat and it is facing problems of management and planning. The assistance proposed is both limited and responsive. IBAMA, as the executing agency of SEMA, has major problems in its: institutional capacity to manage forest areas under its control; inability to enforce forest regulations; absence of funds for recurrent costs; and the problem of assistance in planning and staff development. GCC program assistance is through institutional exchanges and limited help in planning.

Federal and State research institutions suffer from problems of discontinuity and underfinancing including for recurrent costs and maintenance. These result in inconvenience and the disruption of work in progress by competent researchers. At INPA, The Secretary for Science and Technology is giving priority to mobilizing core support to turn it into a center of excellence (a large sum). Support to individual researchers, to their working together, and to training young researchers was uniformly felt to be the best opportunity. This support would help to generate more funds making reform easier within the institutions.

2. Will the program leverage resources for GCC priorities?

Large resources will be forthcoming from multi-lateral and some bilateral donors and from GOB counterpart funding; application may be influenced constructively in three ways:

a) the inter-institutional collaboration will make better Brazilian expertise available and in turn facilitate preparations for the use of these resources;

b) comparative analytical work will contribute to better definition of where resources should be applied;

c) the U.S. - Brazil institutional linkages will facilitate preparations for institutional reform.

3. Should the program be concentrated in fewer and larger activities?

There is one core program focus but numerous sub-activities. One cannot shortcut the need to both:

a) move quickly to start work that will have prompt results in order to have the greatest impact on sustainable forest use in the medium term, and;

b) make the front line institutions more effective while doing so. The GCC program accomplishes this, unavoidably, by careful selection of multiple quality opportunities. Reliance is placed on competent U.S. institutions with highly qualified researchers. The level of Brazilian talent dedicated to the activities identified as priority by the GCC team is very high. WWF has considerable experience in accomplishing the types of activities included.

4. Is the program manageable in an ADC and are OE resources available to assure proper oversight?

The Office of the AID Representative will hire a senior program specialist (FSN) and a senior U.S. environmentalist (PSC) for this project. The former has been selected and several outstanding candidates have been identified for the latter. Strong support is also provided within the Embassy from the Science Attache. It is not expected that further staff would be required during the first year of the program. The assessment next year should review the workload generated. The Mission has a proven track record in administering the kinds of events proposed. The FY89 Action Plan Review approved the level of staffing and the OE resources required. Even though OE resources are stressed, it is expected that this requirement will be met. Also full advantage will be taken of the legislation permitting program funds to pay for environmental expertise.

First line management responsibility has been placed upon U.S. intermediary institutions. WWF will be the core executing agency and will staff accordingly. A full time resident program manager will be recruited: a second person will be added to the staff in Washington and will make frequent and relatively long trips to Brazil; both will be under the oversight of WWF's present competent staff working on Brazil.

EPA and USDA/FS will have increasing activity within Brazil,

wholly integrated within this program. They will provide advice and insights to AID Representative as well as collaborating closely with WWF.

The scientific institutions who will manage research programs with the Belém Group, PESACRE and INPA all have long standing relationships with the local executing institutions and experience with AID grants. These activities parallel those in other program areas for which AID has a proven track record. Also, WWF will be working with the groups on overall performance effectiveness.

III B. Phasing in of Activities

The timing for start up of activities within individual grants will vary considerably. Outlined below are activities which would begin right away, come later in the first year, or be deferred to the second year or beyond:

1. Activities for early initiation:

- WWF support to SEMA/IBAMA on meetings/preparations;
- EPA and USDA/FS exchanges of visits and collaborative efforts;
- support to Energy Efficiency Institute;
- Workshop on Natural Resource Macro-economics;
- WWF and WHRC work with Belém Group on alternatives for sustainable forest use;
- U. of Fla. work with PESACRE on a few themes to be selected;
- WWF and USDA/FS collaboration with FUNTAC on technology applications for use of forest products;
- WWF work with IMAC on environmental impact analysis;
- Smithsonian Institute/INPA forest fragments research/training;
- Ecotourism project with Fundaçao Vitoria Amazonica;
- Putting in place of baseline data and monitoring system.
- Continuing implementation of EPA GCC projects.

2. Activities to be initiated later with FY 90 funding

- WWF and USDA/FS collaboration with FUNTAC;
- trial implantation of technology for sustainable logging with research component (Belém Group); satellite activity in Rondonia;
- preparations for extractive reserve in Amapá with research component (Belém Group);
- follow-up activities and participant training for Brazilian economists in natural resource macro-economics;
- WWF work with IMAC and U. of Amazonas on non-formal approaches to increasing adherence to environmental laws;
- WWF work on institutional strengthening of NGOs.

3. Activities to begin in FY 91 and beyond:

- o full scale collaborative programs involving EPA and USDA/FS;
- o institutional strengthening support for Amazon policy NGOs;
- o co-financing with Ford Foundation on processing technologies for forest products;
- o UCLA/PESACRE comparative analysis/policy work on agricultural uses of forest lands;
- o possible involvement in extractive reserve in Amapá;
- o possible endowment for the Energy Efficiency Institute or an Amazon policy NGO.
- o possible stimulation of a policy research group in Manaus.

III C. Budget Allocation

Since neither levels of available resources nor cost of proposals are firm, the schedule below is illustrative:

Institution	FY90:ST	LAC	FY91:ST	LAC
OTHER				
EPA				n/a
USDA/FS				n/a
WWF	0.4	0.5	0.5	1.0 match
EEI	0.2	0.2	0.3	0.2
UFla		0.3		0.3
WHRC	0.2		0.2	
NatResEconGp.	0.1		0.2	0.3
Smithsonian	0.13			
UCLA				0.2
FVA	0.02	0.08		PRE match
Total	1.05	1.08	1.2	2.0

III D. Programming Vehicles

EPA and USDA/FS will finance their own activities. Only in FY 1991 will there be the preliminary results necessary to determine whether AID resources would be necessary and appropriate for the continuation of these programs. At that time EPA, USDA/FS, and A.I.D. will explore appropriate joint projects and funding shares for implementation.

EEI will be financed through buy-ins with ST and LAC resources to a centrally funded energy project.

Grants to U. of Fla, WHRC, Smithsonian and UCLA would all be made under the Handbook 14 procedures for non-competitive selection on the basis of unsolicited proposals.

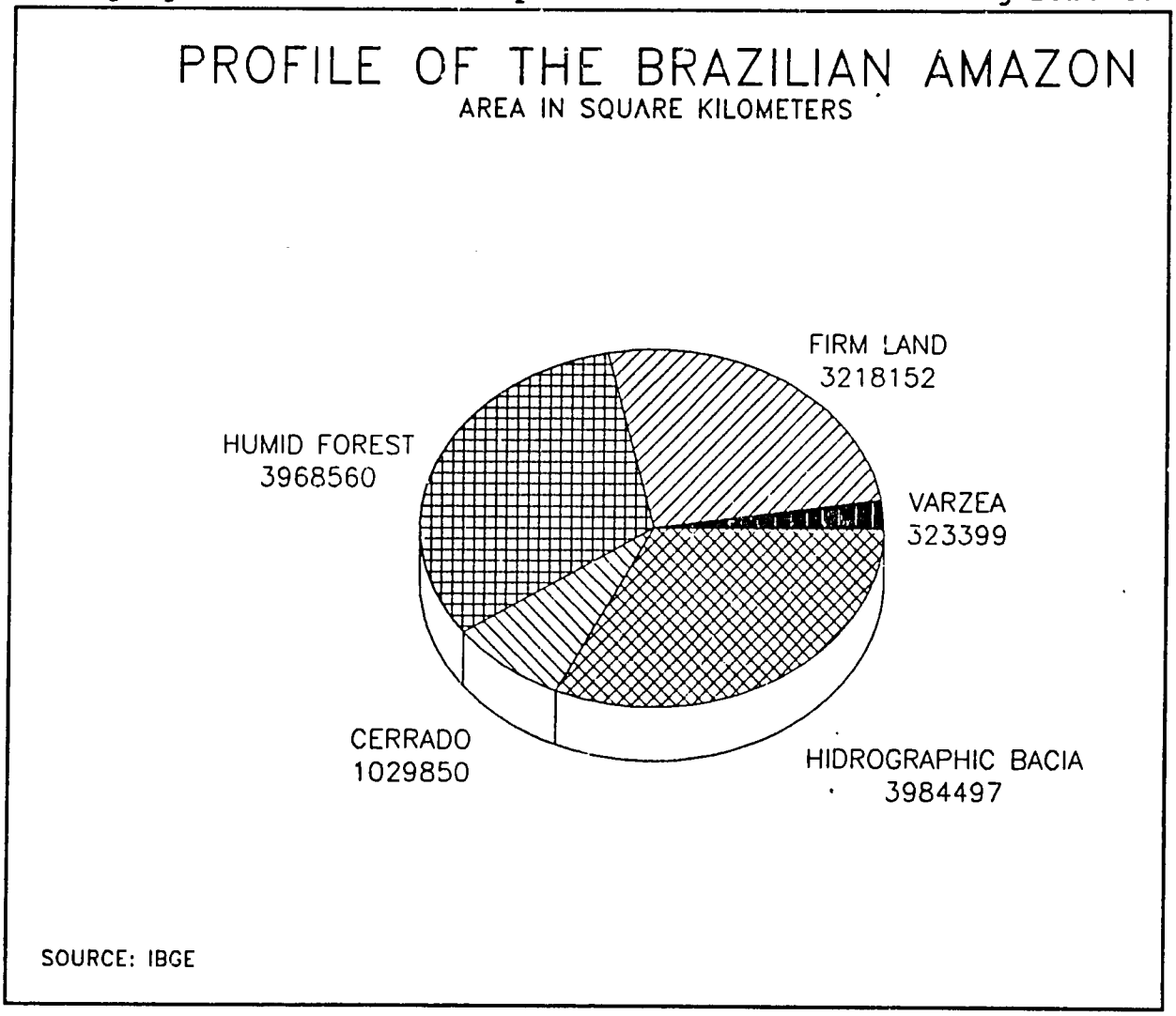
Funding for FVA would be on a matching grant basis with U.S. NGOs; AID contributions from ST, LAC and PRE will be sought. The NGO community will need to organize amongst themselves and suggest the most appropriate mechanism; one possibility could be through buy-in to the ST biodiversity project.

ST funding for WWF will be through buy-in to the Biodiversity project. LAC funds will be provided through a matching grant arrangement (as has been the practice in the past). It is proposed that collaborative mode be used since so much of the design work will be accomplished as the program proceeds. Collaborative mode is now permissible for NGOs; non-competitive selection will be justified on the basis of predominant capability.

Finally, funding will need to be provided for environmental analyses related to the activities in this program. This should be an integral part of the design process, but an independent specialist will need to work with the designers to provide objective analytical work.

Annex 1 -- The Global Climate Change Problem in Brazil

The Amazon forest represents 58.8% of Brazil's land mass. At one time, it sustained a population of about 5 million people who survived from forest products in ecological balance with the natural resources. In the nineteenth and early twentieth centuries the Amazon forest was the major supplier of the world's rubber and this product provided the region with a booming economy. The rubber tappers came to live in relative harmony with the rainforest and developed a series of other renewable forest products. Today, they are among several diminishing groups of poor, marginalized forest peoples who defend the preservation of the standing forest.



About thirty years ago, Brazilian policy toward the Amazon took a radical -- and now recognized to have been erroneous -- shift. The Brazilians saw the Amazon as a resource to be mined both for its mineral potential and for what could be harvested, the short term return to the national economy, overriding concerns about impact upon the region and its peoples. This led to:

(a) clearing of vast land tracts that quickly degraded, resulting in extremely low soil fertility and crop yields;

(b) high land concentration in landholders who had little interest or affinity with the region. The potential economic value lost in land clearing was given no intrinsic value, and;

(c) epidemic levels of corruption with state and local officials manipulated by special interest groups.

The Amazon has also attracted many migrants. The majority arrived without the funds nor the skills to manage fragile resources. Predominantly from the northeast, those who didn't come to the frontiers went to the cities of the Amazon despite the lack of infrastructure. During the past 20 years, these migrants were joined by persons from the South who had been displaced by high land concentrations. Many of these settlers arrived in search of fast returns or without resources, choosing to exploit the resources of the forest without regard for sustainability.

The overriding impact was: clearing of vast land areas for pasture and farming which were quickly degraded and abandoned; devastation of forest areas for timber production that yielded only a few species with commercial value for which they were poorly paid; and the contamination of rivers through the use of mercury in gold mining (there are an estimated 500,000 miners). These practices were strongly promoted through government incentive policies that included: fiscal incentives, tax reductions, subsidized credit, and colonization schemes. Land titling criteria stimulated deforestation since burned land was considered by law as sufficient proof of productive use. These settlers also stressed the carrying capacity of the land, brought epidemic diseases and caused the dislocation and decimation of indigenous populations. Large conflicts over land use rights have arisen, but instruments for clarifying rights and the mechanisms for land disputes are still primitive and often violent.

Many of those who migrated into the region to raise cattle, farm and work as extractivists in the forest have been forced by adverse economic circumstances to abandon their activities and to flee to the cities. These marginalized urban populations place increasing burdens on already stressed social services and are catered to by politicians making more difficult the election of those who back sustainable forest use.

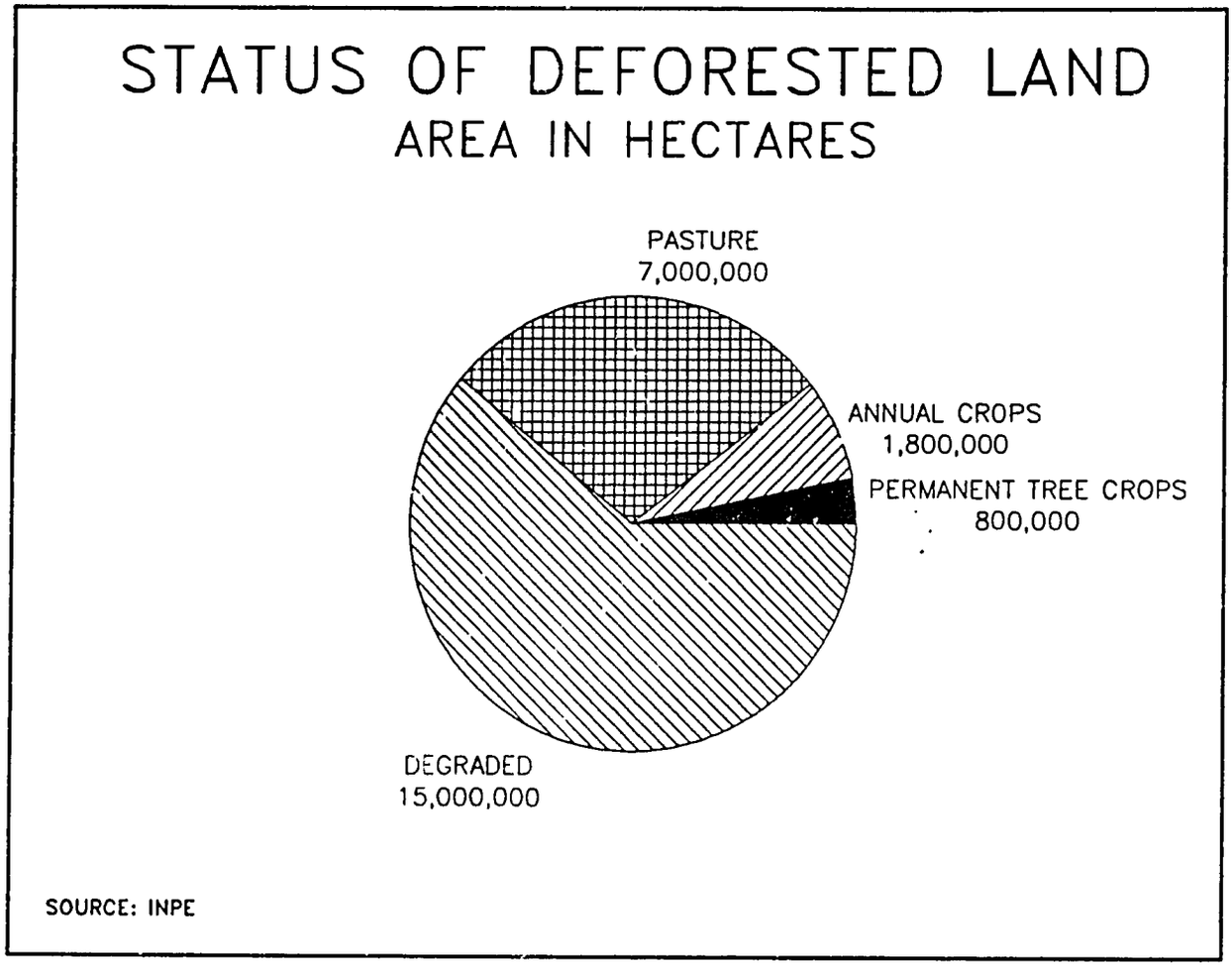
Government sponsored and directed development projects in the region have proved to be disastrous. A major component of these projects has been the introduction of roads, which have been shown to have a devastating effect far greater than other interventions. Hydro-electric facilities have taken their ecological toll where the unit of power generated per unit of land area flooded must be the lowest in the world. Finally, agricultural and colonization projects, such as Polonoreste, provided incentives for the misuse of precious natural resources and accelerated the destruction of fragile ecosystems. These activities create a legacy which will not go away. Even today, under the guise of better planned development, there is great pressure to complete highway BR-364 running from Porto Velho, Rondônia, through Rio Branco, Acre, to Peru and Pacific ports. Also, the World Bank's recently prepared Rondonia Natural Resource Management Project and several pending, very large hydro-electric projects have generated concern from the world's ecological community for their negative effects.

Today, somewhere between 25,000,000 and 60,000,000 hectares have been deforested (the lower estimate is provided by Brazil's Space Agency (INPE); the higher by the World Bank). The present use of the deforested land based on the INPE data is shown in the figure on the next page.

Brazil's last Government was passive, at best, on the issue of the Amazon, showing very high sensitivity to external criticism, characterizing it in terms of an attack on the nation's sovereignty. In the last year of President Sarney's administration, however, an important initiative was taken. The Government announced the "Our Nature Policy", which unified the responsible Federal agencies and, because of leadership, gave credibility to an incipient environmental policy.

Since the inauguration of the new Collor government there has emerged a radical shift of position in the environmental arena. Brazil has begun work on a new five year plan for the environment that reflects new attitudes about development and the Amazon basin. The new Brazilian position is rooted in a philosophical shift in the basic assumptions concerning progress that emphasizes sustainable ecological development. The Brazilian idea is not to radicalize ecology but to harmonize it with development, leading to appropriate actions. Brazil intends to factor into the creation of all development projects an environmental analysis that will include an emphasis on the sociological implications of development and a re-calculation of the real value of natural resources. The Government understands that they have a storehouse of valuable natural resources that they are willing to consider protecting but want also to be able to use them to produce economic return. Their view is that the best defense includes sustainable economic use.

There remain three dominant obstacles to rational development of the Amazon:



1) the country's macro-economic model has stimulated inequity, has not met social needs and is continuing to drive persons to the region. High birth rates in the region (8.33 live births per family compared to about 2.5 per family in Brazil and 5.4 for the northeast) put population pressure on the very land for which sustainable use is being sought;

2) incapacity of government to be effective within the region. IBAMA, for example, has 1.5 million ha. of forest lands and is considering increasing their holdings to 22 million (to license extractive use). There is not, at present, the administrative capacity to plan and enforce resource use on these lands or to maintain the forests;

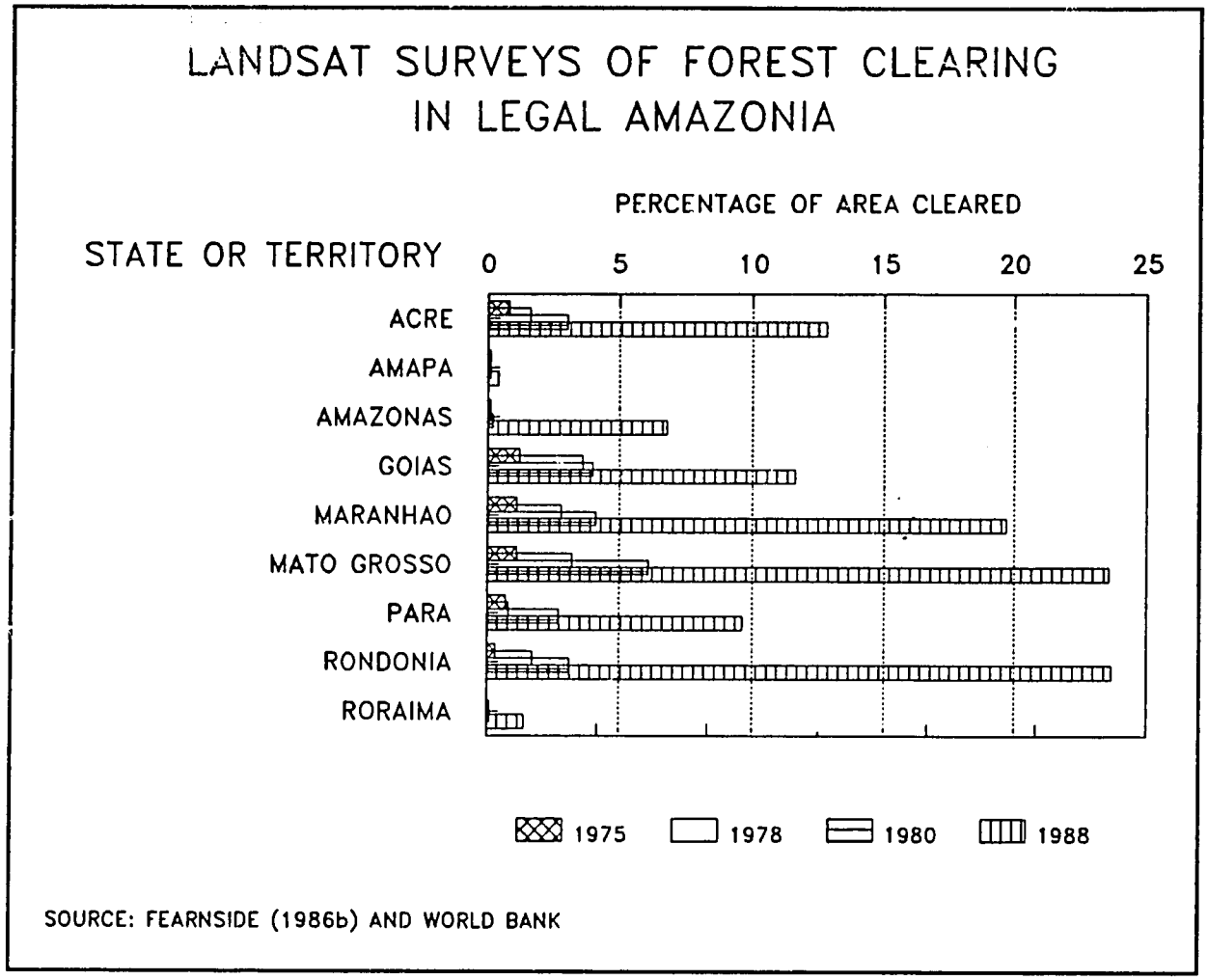
3) the entrenched political interests in State governments and their high susceptibility to influence by special interest groups creates a climate in which it is difficult to sustain environmentally and economically balanced development. Even in less corrupt areas such

as Pará and Acre, there is the constant threat of discontinuity as Governors, legislators and mayors change.

During 1987 and 1988 it is estimated that 4 million hectares of land were lost to fire. On the average, another million hectares each year are put into pastureland. Below is a table showing areas of forest cleared in the different states of the Amazon, indicating the pace at which destruction is occurring.

Finally, there is lack of consciousness within the Amazon region about the immediacy of forest destruction. It is estimated that within ten years an economically viable sustainable forest use must be made acceptable. The challenge is to find technical solutions and to put them into practice in order to shift the balance toward forest rather than agricultural use and to reinforce appreciation that some areas need to be protected. It will also be necessary to address the causes which place population pressures on the forest areas. Finally to be overcome is the political inertia. Only through the building of local response mechanisms will all of this become possible.

External pressure on national environmental policies has made a difference in Brazil. In time, forces within Brazil, too, must be generated to control state directed development. If they are to be influential, they must mobilize support in the real power centers of the country which are outside of the region. There isn't yet a feeling of need for this even among the enlightened within the region. More optimistically, leadership in Government and NGOs involved with environmental issues are working together toward strengthening the role of society in guiding state controlled development.



Annex 2 -- Brazil's Posture, Institutions and Preparedness

a) Brazil's Public Institutions and NGOs Involved in GCC

SEMA is the lead institution. It has the policy, planning and normative responsibilities, is spokesperson in the international community and oversees the work of IBAMA (presumably its executing agency).

The Brazilian Institute for the Environment and Natural Resources (IBAMA) manages the national forests and administers forest regulatory activities. It is a large, complex organization, which will need to undergo internal structural reform and develop capacity for its regulatory and forest management activities. Based in Brasilia, with field offices throughout Brazil, it has 4,100 employees of which there are 280 foresters, 150 agronomists and 60 biologists.

The Secretary for Science and Technology will also play a major role in three areas: zoning, research and training. The Secretaries recently created a Commission for Amazon research (CORPAM) that is preparing a proposed research agency (not limited to tropical forestry).

Other Federal institutions of importance include:

EMBRAPA, the national research agency, is a highly competent organization, which has had a long relation with the U.S., including AID financing of research and training, most recently under four CRSPs. Work with EMBRAPA will concentrate at the agroforestry center in Belém (CPATU);

INPA (National Institute for Amazon Research): the Amazon region's major technical research facility (social sciences are not presently included); it houses many talented scientists, but has not held to a consistent mission because of its dependence on soft funding. The Secretary for Science and Technology is giving priority to finding core funding for INPA and has appointed Eneas Salati, one of Brazil's top scientists, as the new Director.

The Museo Goeldi (a botanic garden/research complex in Belém) does basic research on flora, fauna and human interaction with them. Closely linked with the New York, Missouri and Florida Botanic gardens, it houses a small group of highly qualified researchers who, selectively, will contribute to the comparative analytical work proposed.

The Federal Universities of the north (Pará, Amazonas and Acre) have areas of expertise and house quality researchers, but lack the interdisciplinary breadth and depth of talent of Brazil's leading universities. The University of Pará has a masters program in planning for economic development with an emphasis on the environment. It also contains a research nucleus (NAEA) doing important community based experiments on sustainable forest use. The University of Amazonas has a small group working on practical and legal training needs (CCA). The University of Acre, through linkage with University of Florida, has provided critical training in research methods and stimulated the creation of the PESACRE group.

At the regional level, SUDAM (regional development authority) has been the initiator of some of the criticized colonization and rural development projects and represents an outmoded organizational model. INCRA (land management agency) has the responsibility for determining land use rights and is currently instituting new land titling criteria. Yet many INCRA offices are still insisting on evidence of clearance of 50% of land as basis for fixing use rights. EMATER (agricultural extension service) is weak in the north and has been an instrument principally for larger landholders.

At the State level, only the institutions in Pará and Acre are presented in this document. In Pará, approval of environmental impact assessments curiously is the responsibility of the State Secretary of Health. IDESP, the State economic and planning agency of Pará is responsible for zoning and environmental analyses. In Acre IMAC is the State's regulatory agency. It formulates and enforces laws, evaluates environmental impact analyses. Because staff and resources are limited, it depends on IBAMA/ACRE for on site enforcement. FUNTAC is a fully autonomous parastatal which promotes sustainable use of tropical forests; it uses remote sensing to help forest populations to better use the forest. FUNTAC conducts experiments with use of forest products and by-products.

E. Brazilian Environmental NGOs

Within the Amazon region, NGOs are at an incipient stage and concerned primarily with survival, advocacy and community organization. There are also a very large number of associations, wholly without infrastructure and training. It is difficult to help them to gain support, internal or external.

UNAMAZ, an international NGO, represents the universities of the eight Amazon river basin countries. It holds meetings, is organizing an information base, and would like to expand its role in policy preparatory work.

At the national level, there are stronger organizations active in environment, but only one: Instituto dos Estudos Amazonicos (IEA) (Curitiba) has a specific avocation for the Amazon region. Three others are worthy of mention: SOS MATA ATLANTICA, the most sustainable and effective, whose mission is to defend the Atlantic Rain Forest: FUNATURA (the ProNature Foundation, Brasilia), which does public awareness and environmental education activities; and BIODIVERSITAS (Belo Horizonte) which promotes efforts to protect biodiversity.

In Belém, SOPREN has worked with problems of forest populations and miners; its principal roles have been to organize communities and to make Government aware of the seriousness of problems. GEDEBAM, has focused efforts on the Tapajos forest and river areas, and of late has been especially concerned about the mercury contamination problem. In Acre, the National Rubber Tappers Council (CNS, founded by Chico Mendes) is a key link to the forest peoples, but is devoid of funding, infrastructure and professional staff. CTA, Rio Branco, is a socially oriented NGO which focuses on education and health services and formation of cooperatives. SOS Amazonas is also working on sustainable use of the forest, but its activities are limited to that part of Acre adjacent to Rio Branco. In Porto Velho, a new NGO, IPHAE, is attempting to support sustainable use experiments. In Manaus, the Fundaçao Vitoria Amazonica is beginning with environmental education and ecotourism,

but wishes to serve as a bridge between research and community action. Finally to be mentioned is UNI, the Union of Indigenous Peoples. Headquartered in Goias, it represents a variety of smaller NGOs composed of diverse indigenous peoples' groups.

Note: at present, none of these NGOs is able to be effective at policy impacting research. They do have a growing role, however, in intermediating the resulting information to forest users and to their support groups. There is strong recognition of the need for such policy work and potential that groups forming to respond might be precursors to successful NGOs.

F. On-going Programs and Donor Assistance

In response to the Brazilian government's "Our Nature" program the multilateral and bi-lateral donor community has only just begun to place in execution and pipeline environmental programs. With the assistance of the United Nations Development Programme (UNDP) and with funding by the World Bank, IBAMA has spent two years in the preparation of the Brazil's National Environmental Program (PNMA). In March 1990 the World Bank approved a loan in an amount equivalent to US$ 117 million to support the first three year phase of this plan. The primary objectives for this Project are:

1) for the protection of the most important conservation areas and endangered ecosystems and a reduction of environmental and economic losses in the Pantanal, Amazonia, the Atlantic Forest and the Costal Zone;

2) the strengthening of the national agencies that deal with the environment such as IBAMA, the Brazilian Cooperation Agency (ABC) and State environmental agencies.

The Inter-American Development Bank has a coordinated program of investment in Acre that includes: support for zoning and extractive reserves; funding to help develop the Chico Mendes Extractive Reserve (in conjunction with IEA); and the sponsoring of an TV educational program through UNAMAZ.

The Canadian International Development Agency (CIDA) has recently approved the Amazon Environment Project in Acre that provides support to FUNTAC and CNS.

The British (ODA) will be providing support to IBAMA to maintain three National Forests; a portion of one of them will be turned over to the Museo Goeldi for biological research.

The Federal Republic of Germany has continuing programs with IBAMA and INPA and a planned project in sustainable use of tropical forests in the Amazon with INPA.

FAO has recently begun an extensive project in satellite mapping

of the Amazon for agro-economic zoning purposes.

Annex 3 -- Assistance for the creation of a non-governmental organization (NGO) in Brazil:

INSTITUTE for ENERGY EFFICIENCY

Background

Brazil's requirements for energy in the coming decades will continue to place increasing demands on the country's natural resources. Eighty-five to ninety percent of Brazil's current electric power needs are met through hydroelectric sources and most new energy development probably will be hydro. The development of most hydro resources will have an effect on tropical rainforest areas, directly through reservoir development and flooding and indirectly through deforestration that follows with road building and energy dependent industrialization. Thus, the need for electricity in the country is and important factor leading to a more rapid rate of deforestation, soil erosion, and watershed destruction.

Brazil originally became interested in energy conservation because of its large oil import bill.

In response to the oil price shocks, during the first half of the 1980s Brazil shifted all new automobiles from gasoline to ethanol, produced from sugar cane. Now, with U.S. $10 billion annually in new investment needed to meet new eleectric demand, the limitation of financing to support power sector expansion has led to a drive for more efficient utilization of exsisting capacity. The Brazilians' own initiatives, such as Electrobras' Program for Electricity Conservation (PROCEL) and the National Bank of Economic and Social Development's (BNDES) Energy Conservation Program, are two examples of national commitment to the problem.

This is an opportune moment for USG assistance to the Brazil power sector. Energy is one important element in Brazil's economic activity that offers good opportunity for improvement in efficiency with relatively small investments. Given Brazil's capital shortage and large external debt, there is an immediate need to seek implementation of these opportunities. Energy efficiency improvements make economic sense, and also reduce the environmental impacts of whatever energy resources and technologies are being used.

USAID experience in the creation of energy efficiency centers is extensive. The Agency has provided assistance in Egypt, Pakistan, the Philippines, Morocco, Jordan, Sri Lanka, Costa Rica, and Singapore. Much of this assistance has been directed at <u>end-use</u> efficiency, an area usually ignored by the multilateral development banks and other bilateral donors, but one in which the U.S. Congress has directed A.I.D. to increase its activities.

During the week of April 9, 1990, discussions were held in Brazil between USAID, Office of Energy and key local individuals, including:

Jose Goldemberg, Secretary for Science and Technology and physicist
Jose Zatz, Director, Agency for Energy Applications, CETESB
Nelson Garcez Junior, Technical Chief, Agency for Energy Applications, CETESB
Howard Helman, USAID Representative, Brasilia

Proposal

Arising from these discussions emerged the idea for the creation of the Institute for Energy Efficiency (IEE). This Brazilian NGO will have as its objective the promotion of energy efficiency and will have as its goal economic self sufficiency within two years. IEE will receive technical assistance from the A.I.D. Office of Energy during the start-up period, including help in establishing a market for energy conservation services and an indigenous capability to supply these services, and asssistance in coordinating the activities of international donors to increase the attention paid to efficiency-related activities. Specifically these areas of assistance are the following:

1. Promotion:

   Provide assistance in developing energy conservation and effiency promotional materials. Draw on the extensive information available from U.S. agencies, utilities, private companies, etc. to assist in developing high quality promotion campaigns.

2. Information and Database development:

   Provide technical assistance, training, software, and hardware to develop databases of energy use and efficiency in Brazil, by economic sector. Facilitate the exchange of information on end use efficiency, energy consumption, and energy using equipment from other countries.

3. Technical and Management Training:

   Facilitate access to established Office of Energy training activities that help build technical, managerial, and institutional capabilities by placing participants in academic and technical training programs at universities, private energy companies and national laboratories, particularly in the power and industrial sectors. Carry out field training in Brazil to promote local capabilities in energy efficiency.

4. Technical Assistance:

Provide expert technical assistance to support ongoing activities of the IEE. Provide process and technical specialists to assist the IEE to develop and market its services. Examples of services which appear to offer merit include:

a) Technical audits of industry to improve productivity, save energy, reduce on-peak electricity demand, improve plan reliability, minimize raw material usage and waste, and reduce environmental damages.

b) Equipment "tune-up" services for energy-intensive equipment, such as boilers, furnaces, vehicles, instrumentations & controls, and plant electrical systems.

c) Electrical load management through improved operator control of peak demand and time of usage.

d) Promotion of specific energy-saving measures, such as load reduction, high efficiency equipment, industrial process retrofits, and retrofits in buildings.

e) Advice in the design and construction of new buildings and industrial plants to insure that optimum levels of efficiency are included in new facilities.

5. Special Studies:

Provide technical, policy and management inputs to special studies, including studies on:

Energy and environmental policies and regulations
Equipment energy use standards
Independent (private) power generation
Cogeneration of heat and electric power
Innovative approaches to financing energy conservation
investment, such as shared savings, joint ventures, variable payment loans, etc.

A.I.D. will hold discussions with the World Bank, the Inter-American Development Bank, and interested bilaterals through the Multi-Agency Group on Power Sector Innovation (MAGPI) to encourage collaborative efforts. In particular, it is hoped that preliminary

technical assistance by A.I.D. will leverage large-scale financing by the MDBs.

ANNEX 4. -- POSSIBLE PARK SERVICE INVOLVEMENT IN BRAZIL GCC PROGRAM

United States Department of the Interior

NATIONAL PARK SERVICE
P.O. BOX 37127
WASHINGTON, D.C. 20013-7127

IN REPLY REFER TO:
P86(023)

May 15, 1990

Mr. James S. Hester
Chief, Environmental Engineering
And Science Staff
NS Bureau for Latin American
And Caribbean, RM 2242
Agency for International Development
Department of State Washington, D.C. 20523-0010

Dear Jim:

You have asked for some comments about how the Western Hemisphere Program of the National Park Service can help out in the U.S. AID effort to mitigate the effects of deforestation resulting in global warming. The only way that this can come about is through strong and efficient land management agencies in Brazil. The Brazilians essentially have to do it for themselves and on their own, but there are some areas where we can help:

1. Translate into Portuguese the 1000 page Training Manual for Protected Area Personnel which is published in Spanish.

Translation and editing costs at $60/1000 words =	$15,000.00
Publish 750 copies =	20,000.00
750 Binders at $7.50 ea. =	5,625.00
	$40,625.00

2. Set up a mobile training faculty.

Organize a mobil training team faculty to do short term "en situ" training courses by Region. This formation of teams of people having increased technical land management knowledge working together toward common goals with a common language and an "esprit de corps", is the combination of factors that makes for a dynamic, responsive organization.
A centralized training facility has some inherent advantages and disadvantages, but until its location can be selected using existing facilities or building new ones, the mobile faculty concept is viable. In fact, it may always remain the least expensive and most practical way to train people in a country as large as Brazil for generalized courses. When we start training in some specialized, technical subjects, a centralized facility is a great help. This in no way takes away the need for a University system to train professionals in Wildlands Management; indeed, there should be close collaboration.

The yearly budget and designation of the land management training faculty (including benefits for foreigners) is the following:

1 Land Management Professional & equipment (SEMA)	$ 20,000
1 Land Management Professional & equipment (IBDF)	20,000
1 Land Management Professional & equipment (State)	20,000
1 Training Professional (Federal University System)	20,000
1 National Park Service Professional	50,000
(Benefits, moving costs, equipment, etc.)	90,000
1 Fish & Wildlife Service Professional or Forest Service Professional	50,000
(Benefits, moving costs, equipment, etc.)	90,000
1 Administrative Assistant	15,500
2 Secretaries at 12,000 each	20,000
- Administrative Costs (rental of office space, training equipment, travel, per diem, etc.)	200,000
- Construction program for a National Training Center for Conservation Unit personnel (2 courses of 12 weeks each and 10 short courses of 1-3 weeks per year at 28 persons per course); 1.2 million dollars / year for 3 years.	1,200,000
1st Year Total	$1,795,000

While the Training Center is being built, the mobile faculty assumes an important role meeting the training needs of the land managers of the protected areas of Brazil. Material referenced was a 5 month study entitled, "Estudio Para La Creación de Un Centro Interamericano de Capacitación de Personal en Manejo y Operación de Parques Nacionales Y Areas Afines", preparado por el Consultor del World Wildlife Fund - U.S.A., Ing. Forestal Edmundo S. Fahrenkrog B.

- <u>"Model" Conservation Units:</u>

It is obvious from the following analysis that the necessary development of all of the areas cannot be done at once. There are a number of factors that do not allow this and the most prominent of these is the lack of land managers at all levels within the organization. Together with practical training of these individuals, "model" areas are needed. This is not without precedent; the Food And Agriculture Organization of the United Nations (FAO) used this concept in Chile (1971-74) with excellent results.

Our proposal is to immediately begin concentrating development of 1 "model" conservation unit per type of area in each of the 5 Regions; for instance, 1 biological reserve, 1 national park, 1 national forest, etc. in each region. This would allow the area itself to serve as an on-the-job training site and with the normal transfer of employees, their "model" working experience will permeate the System.

The preceding information is the "critical pathway" and the following should be performed in parallel, but with the possibility of a longer time frame to complete it:

A complete analysis and justification based on the very complete analysis presented by long-term Consultants Jesus Delgado and Miguel Milano can be found in the text of the principal document for a "System of Conservation Units".

- Establishment of New Conservation Units:

- Priority Conservation Units:

- Basic Studies:

The lack of trained personnel is considered one of the greatest threats to the conservation of existing protected areas and the establishment of new ones. By focusing existing and amplified budgets and manpower in development of "model" areas to gain land management experience, while simultaneously developing the talents and abilities of existing and newly contracted personnel, the goals and objectives of the various types of conservation units can be met.

3. Construct housing within the protected areas for personnel who protect the area and set up environmental education programs for the areas' neighbors.

4. Increase the capability of land management agencies in the United States to be responsive in Brazil through Portuguese language courses for those employees with demonstrated cultural skills that presently speak Spanish.

These are some of the suggestions you might consider.

Sincerely,

Charles W. Wendt

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