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PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED GRANT
IN THE AMOUNT OF US\$5.8 MILLION
(US\$5.1 MILLION FROM USAID/WORLD BANK TRUST FUND
AND
US\$0.7 MILLION FROM RAIN FOREST TRUST FUND)
TO THE
FEDERATIVE REPUBLIC OF BRAZIL
FOR A
SCIENCE AND TECHNOLOGY SUBPROGRAM PHASE II PROJECT
APRIL 2005

**Environmentally and Socially Sustainable Development Sector Management Unit
Brazil Country Management Unit
Latin America and Caribbean Region**

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 22, 2005)

Currency Unit = Real (R\$)

R\$2.70 = US\$1.00

US\$1 = R\$2.70

FISCAL YEAR

January 1 -- December 31

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CGCTM	General Coordinating Unit for Earth and Environmental Sciences (CNPq)
CNPq	National Council for Scientific and Technological Development
CORPAM	Regional Coordinating Commission for Research in the Amazon
DfID	United Kingdom Department for International Development
EC	European Commission
EU	European Union
FINEP	Agency for Financing of Studies and Projects
GOB	Government of Brazil
INPA	National Institute for Amazonian Research
LBA	Large-Scale Biosphere-Atmosphere Experiment in Amazonia
MCT	Ministry of Science and Technology
MMA	Ministry of the Environment
MPEG	Emílio Goeldi Museum of Pará
PADCT III	Science and Technology Reform Support Project
PCU	Project Coordination Unit (MCT)
PIP	Project Implementation Plan
PIU	Project Implementation Unit (CNPq)
POA	Annual Work Plan
PPG7	Pilot Program to Conserve the Brazilian Rain Forest
PRONEX	Nuclei of Excellence Program
PROSAB	Program in Basic Sanitation Research
R&D	Research and Development
RFT	Rain Forest Trust Fund
SEPED	Secretariat for Policies and Programs of Research and Development (MCT)
SOE	Statement of Expenditure
USAID	United States Agency for International Development

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Country Manager/Director:	Vinod Thomas
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Task Team Leader/Task Manager:	Judith Lisansky

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**BRAZIL
SCIENCE AND TECHNOLOGY SUBPROGRAM PHASE II PROJECT**

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BRAZIL
Science and Technology Subprogram Phase II Project

Project Appraisal Document

Latin America and Caribbean Region
LCSEO

Date: April 15, 2005 Sector Director: John Redwood Country Director: Vinod Thomas Project ID: P068730	Team Leader: Judith M. Lisansky Sector(s): General agriculture, fishing and forestry sector (100%) Theme(s): Biodiversity (P), Other environment and natural resources management (P), Participation and civic engagement (S)
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Project Financing Data				
<input type="checkbox"/> Loan <input type="checkbox"/> Credit <input checked="" type="checkbox"/> Grant <input type="checkbox"/> Guarantee <input type="checkbox"/> Other:				
For Loans/Credits/Others:				
Amount (US\$m): 6.5				
Financing Plan (US\$m):	Source	Local	Foreign	Total
	BORROWER/RECIPIENT	0.75	0.00	0.75
	US: AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)	0.00	5.10	5.10
	LOCAL GOVTS. (PROV., DISTRICT, CITY) OF BORROWING COUNTRY	0.00	0.00	0.00
	LOCAL SOURCES OF BORROWING COUNTRY	0.00	0.00	0.00
	RAIN FOREST	0.00	0.70	0.70
Total:		0.75	5.80	6.55

Borrower/Recipient: FEDERATIVE REPUBLIC OF BRAZIL
MINISTRY OF SCIENCE AND TECHNOLOGY (MCT) AND CNPq

Responsible agency: MINISTRY OF SCIENCE AND TECHNOLOGY (MCT) AND CNPQ
MINISTRY OF SCIENCE AND TECHNOLOGY (MCT)

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Estimated Disbursements (Bank FY/US\$m):

FY	2005	2006	2007	2008					
Annual	1.60	2.25	1.60	1.10					
Cumulative	1.60	3.85	5.45	6.55					

Project implementation period: 4 years

Expected effectiveness date: 08/16/2005 **Expected closing date:** 09/01/2008

OPCS PAQ Form Rev. March, 2000

A. Project Development Objective

1. Project development objective: (see Annex 1)

Project Background

Although tropical rain forests contain most of the earth's biodiversity, and perform a range of important environmental services, such as carbon sequestration to offset the effects of global climate change, they remain one of the least understood ecosystems in the world. This is especially relevant in the case of the Brazilian Legal Amazon¹ which encompasses about 5 million square kilometers (an area larger than western Europe), represents 61% of Brazilian national territory, and comprises 30% of the world's remaining tropical forest. The Amazon, with its 23 distinctive ecoregions, is the repository of some of the greatest genetic diversity on earth. The Amazon region is also home to 17 million people both rural and urban, including indigenous people, rubbertappers, nut gatherers, fishermen and small farmers, as well as hosting an increasing number of enterprises in agribusiness, cattle ranching, and other industries – comprising a pattern of expanding economic and demographic occupation and use of the region's natural resources.

The Pilot Program to Conserve the Brazilian Rain Forest supports a set of projects aiming to optimize the environmental benefits offered by rain forest ecosystems in a way that is consistent with the development goals of Brazil. With about US\$340 million of financial and technical assistance pledged to date by the G-7 countries, the Commission of the European Communities and the Netherlands, this program is the largest multilateral donation for environmental conservation in a single country. Its 16 projects include twelve currently under implementation with 3 closed, as well as this project. These include initiatives in Brazil's Amazon and Atlantic forest regions designed to (i) help strengthen the capacity of the public sector to set and enforce sound environmental policy; (ii) improve management of special protected areas, including parks, extractive reserves, national forests, and indigenous lands; and (iii) increase the knowledge base on conservation of the rain forest and sustainable utilization of its resources. The Pilot Program is managed by the Brazilian Government in coordination with the World Bank. The Bank administers the Rain Forest Trust Fund in accordance with agreements reached by the program participants, Brazil and donor countries, as well as administering other donor specific Program trust funds such as the USAID Trust Fund that would finance the operation which is the subject of this Project Appraisal Document (PAD) for the Science and Technology Subprogram-Phase 2 Project (Science-2).

The Pilot Program's specific objectives have included: (i) demonstrating that economic and environmental objectives can be pursued at the same time in tropical rain forests; (ii) preserving the huge genetic resources of the rain forests; (iii) reducing the Amazon's contribution to global greenhouse gas emissions; and (iv) providing a model of international cooperation between developed and developing countries on global environmental issues. Over the past four years, the Program has undergone an intensive mid-term evaluation, a revision of its governance structure, and process of planning for a possible future second phase (still under debate) to scale up and mainstream its activities. In addition, the "mission" of the Program has been refined as follows: to contribute to policies that promote conservation and sustainable development of Brazil's Amazon and Atlantic rain forests, including due attention to the livelihood of local populations, by pursuing the following objectives: (i) generating, validating and disseminating knowledge within Brazil.

¹ The Legal Amazon is defined under Brazilian law as the area comprised of the States of Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, Mato Grosso, Tocantins and parts of Maranhã.

and the Amazon and Atlantic Forest regions; (ii) catalyzing the adjustment of policies and mobilizing political support for their adoption and their effective implementation; (iii) promoting and selectively supporting the mainstreaming and scaling-up of successful experiences and models; and (iv) strengthening capacity in public, private and civil society institutions to implement such policies and apply new knowledge.

Brazil has a long tradition of supporting science and technology, but, until relatively recently, its investments for environmental research on and in the Amazon have represented only a small fraction of total S&T funding. Furthermore, cutbacks in national S&T funding during the 1980s and early 1990s further restricted the availability of resources for supporting research on environmental issues in the Amazon and contributed to deterioration of the region's scientific infrastructure. This was the context in 1994 for the Pilot Program's two interrelated projects under the Science and Technology Subprogram-Phase 1 -- Emergency Assistance and the Science Centers and Directed Research -- which sought to promote the generation and dissemination of scientific knowledge relevant to conservation and sustainable management of the Amazon. These two projects, which provided total funding in the amount of about US\$27 million (US\$17.43 million equivalent in grants from RFT, USAID, EC and DfID, and about US\$9.23 million equivalent from GOB) and closed in June 1999 and December 1999 respectively, were largely successful in rehabilitating the region's two premier science centers, the National Institute for Amazon Research in Manaus (INPA) and the Emilio Goeldi Museum of Pará (MPEG), as well as supporting 23 competitively bid interdisciplinary research projects at multiple institutions focused on the Amazonian ecosystems' structure and function; sustainable natural resource management and socioeconomic and cultural systems (see ICR for Phase I and Emergency Assistance Projects). An additional ECU 5 million was provided by the EC bilaterally in 1998 through the Pilot Program to fund a second round of 30 directed research projects under the same themes (plus a fourth theme of low environmental impact infrastructure) which were completed in early 2003.

In addition to the jump start provided to S&T in the Amazon by the Pilot Program, in recent years the situation has improved somewhat with S&T policy changes targeting and earmarking resources for the region (see Section B.2) and the advent of a number of national and international initiatives (see Sections D.2 and D.3) designed to address some of the limitations affecting research in the Amazon. Outstanding among recent initiatives, the Brazilian government is currently coordinating a large international multidisciplinary research program entitled "The Large-Scale Biosphere-Atmosphere Experiment in Amazônia (LBA)" that seeks to understand how the Amazon functions as a regional entity, and how changes in land use and climate affect the biological, chemical, and physical functions of the Amazon, including the sustainability of development in the region and the influence of the Amazon on the global climate. LBA is funded by the US National Aeronautics and Space Administration (NASA), the EC and the Government of Brazil.

The proposed second phase project under the Pilot Program's Science and Technology Subprogram (Science-2) has initially pledged financing of US\$10 million from USAID of which US\$5.8 million is already committed and available in a World Bank trust fund (the remaining funds are under discussion) as well as eleven percent counterpart financing. The new project is designed to build on the accomplishments and lessons learned from the subprogram's first phase, as well from other ongoing and planned Pilot Program projects and related S&T initiatives in the region. A major criticism of the first phase was the degree of perceived disconnect between support for S&T and the interests of the Pilot Program overall and regional end users in particular. Hence, Science-2 was prepared with significant and broad stakeholder participation, and its design enhances the incorporation of Pilot Program and regional concerns in the targeting of S&T research priorities as well as emphasizing dissemination to end users. The new project

also seeks to enhance the synergies between research groups at diverse institutions with special emphasis on strengthening regional research groups and increasing the regional scientific cadre via the formation of research networks described in detail in Sections C.1.2 and Annex 2. Furthermore, Science-2 has been firmly integrated into the Ministry of Science and Technology's (MCT) strategic policies for Brazil that seek to provide for the long-term consolidation, maintenance and expansion of the nation's S&T, as well as MCT's specific strategic policies with respect to the Amazon that include, among others, strengthening and fostering regional S&T capacity and infrastructure, linkages to the Pilot Program, and improved dissemination of its results to benefit regional end users.

Project development objective

The development objective of the proposed project is to promote and disseminate targeted and coordinated scientific and technological research on key questions contributing to the conservation and sustainable development of the Amazon region.

To accomplish this objective, the project would support (i) targeted research subprojects in science and technology in priority thematic research areas as well as capacity building of regional human resources; (ii) the selection and use of innovative dissemination methods to augment the applicability and transfer of scientific and technical knowledge to conservation and sustainable development end users in the Amazon; and (iii) the development and use of an effective and efficient system of project and subproject coordination, including an integrated system of monitoring and evaluation of project outcomes and impacts.

2. Key performance indicators: (see Annex 1)

Project impact would be determined on the basis of the useful and relevant scientific and technological results that are produced, utilized and disseminated in an effective, coordinated and transparent manner. Key project performance indicators would include:

- The generation of high quality research results in science and technology contributing to the conservation and sustainable development of the Amazon by integrated research networks, as measured by the timely implementation of appropriate research methodologies, the achievement of well-defined research objectives, and the originality and applicability of research results as evaluated by a panel of experts.
- The participation of a diverse range of institutions, multidisciplinary groups and other partners in carrying out research, as measured by the number of entities involved, the inclusion of less experienced research groups² and the number of high quality, multi-authored, juried publications.
- The effective training of human resources under the research networks, as measured by the number of participating scholarship recipients fulfilling 80% or more of their work programs.
- Number of Pilot Program and other regional beneficiary communities reached via innovative dissemination activities targeting nonscientific audiences.
- Successful leveraging of additional resources to carry out dissemination strategy.
- Full implementation of project management arrangements and use of integrated Monitoring and Evaluation System for adaptive management of project, research networks and targeted research subprojects.

² Less experienced research groups are "junior" (*emergente*) research groups led by a coordinator with a PhD earned less than five years ago, based in the Amazon region, but little known with only incipient contributions to S&T research.

the project is focused on the Amazon region, and has been carefully tailored to complement other governmental and donor financed S&T initiatives in the region. In addition, although competing research groups do not have to be physically located in the Amazon region, they do need to be affiliated with Amazonian institutions. In addition, proposals would be favored that include collaboration with less experienced Amazon research groups and the emphasis for scholarship support would be targeted to students in the Amazon or those intending to remain, hence the project also addresses the sector issue of strengthening S&T human resource capacity for and in the Amazon region.

The proposed project would focus on supporting targeted research in key areas related to the conservation and sustainable development of the Amazon. Five Priority Thematic Research Areas were identified by the CAN for the Amazon region overall, including: (i) the impacts of land use and climate change on ecosystems; (ii) biodiversity and environmental functions; (iii) integrated management of terrestrial ecosystems and the recuperation of degraded areas; (iv) land use and endemic diseases of the Amazon; and (v) integrated management of watersheds, aquatic ecosystems and recuperation of degraded areas.

During preparation, it was proposed that the project further target its regional research support to two Priority Thematic Research Areas considered essential for the conservation and sustainable development of the Amazon region's natural resources. These are (i) integrated management of terrestrial ecosystems and recuperation of degraded areas; and (ii) integrated management of watersheds, aquatic ecosystems and recuperation of degraded areas – being referred to in shorthand as the “Forest” and “Water” themes. These were selected strategically for two main reasons. One is to maximize the complementarity of the project to other existing ongoing programs and projects already being supported or under development for the Amazon region, and the second is because of the relevance of these two themes to the focal interests of the Pilot Program. In addition, the two themes were endorsed by six regional stakeholder consultations carried out by MCT.

The project also directly addresses the issue of increasing the involvement, relevance and dissemination of S&T results to regional stakeholders and end-users, with special attention to the Pilot Program. This would be done in several ways. First, research subproject selection would include specific criteria to promote more applied research, intra- and inter-institutional collaborations, and adequate dissemination plans. Second, it is expected that the networks and sub-networks (research clusters) would encourage a more inclusive learning environment where a wider range of institutions (such as universities and research centers) and groups (such as NGOs, community organizations) would participate. Third, the project includes a component specifically focused on the dissemination of research findings to nonscientific audiences and particularly Pilot Program beneficiary populations. Fourth, the project management would be supported by a Consultative Committee including Pilot Program representation; and lastly, the project monitoring and evaluation system would be designed to monitor dissemination activities.

C. Project Description Summary

1. **Project components** (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

Component	Indicative Costs (US\$M)	% of Total	Bank-financing (US\$M)	% of Bank-financing
Component 1: Support for Targeted Research Subprojects	5.38	82.1	5.03	86.7
Component 2: Dissemination of Information and Results	0.34	5.2	0.34	5.9
Component 3: Support for Project Management and Network Activities	0.83	12.7	0.43	7.4
Total Project Costs	6.55	100.0	5.80	100.0
Total Financing Required	6.55	100.0	5.80	100.0

Project Context

To provide the context for the project components, this section will briefly describe the project's approach to (a) targeting research areas; (b) research networks; (c) the Request for Proposals (*Edital*) and (d) dissemination. Further details are provided below and in Annex 2 and Annex 2(a) (Summary of Draft Request for proposals).

(a) Prioritizing and Targeting Research

It was agreed that the project would focus on stimulating research activities in only two **Priority Research Thematic Areas**, selected with extensive consultation to complement national S&T strategy, existing programs and projects and the focal interests of the Pilot Program on conservation and sustainable development of the Amazon's natural resource. These thematic areas are:

- Integrated management of terrestrial ecosystems and recuperation of degraded areas, which is being referred to in shorthand as the "Forest" theme; and
- Integrated Management of watersheds, aquatic ecosystems and recuperation of degraded areas, being referred to as the "Water" theme.

To further direct and target the research activities to be financed under the project, a series of specific research areas or **Priority Research Topics** were further defined for each of the Priority Research Thematic Areas. Hence, under the "Forest" theme, the Priority Research Topics defined for the bidding process include: (i) the conservation and use of plant genetic resources; (ii) biogeochemical cycles; (iii) the conservation and recuperation of wildlife resources; (iv) the recuperation of degraded areas; and (v) timber and nontimber products. Priority Research Topics to be bid under the "Water" theme would include: (i) water quality; (ii) the biology and ecology of aquatic organisms; (iii) aquaculture; (iv) the recuperation of degraded areas and/or systems; and (v) the conservation and use of fishery resources and fishery technologies.

In addition, the research competition would encourage **Cross-Cutting Research** in the ethnosciences, natural resource economics and the social sciences (especially the relations between the state and society)

linked to the above cited Priority Research Topics. Further information on research targeting is in Annex 2 and Annex 2(a) - Summary of the Draft Request for Proposals.

(b) Network Approach. The proposed project is designed to encourage the formation and strengthening of research networks both within the Amazon region and with researchers and research groups outside the region. The methodological approach for this would be as follows: the Request for Proposals (see Annex 2(a)) would require researchers and research groups at diverse agencies and institutions both inside and outside the Amazon region with interest in specific but interrelated research subprojects to get together and propose the formation of a **Research Cluster** (consortium or sub-network) of researchers investigating different but related aspects of research questions linked to the same Priority Research Topic. Hence, the screening and evaluation of proposals would be evaluated both in terms of the quality of the individual subprojects being proposed by research groups as well as on certain features of the entire Research Cluster which would represent a “package” or consortium of interrelated subprojects.

After considerable debate about how best to induce these consortia, consensus emerged that it would be best to allow researchers to spontaneously form and propose their own Research Clusters. While the competition is open to subprojects being carried out both by researchers based in the Amazon region and elsewhere, the proposed scientific coordinator of the Research Cluster (as well as being a coordinator of a specific subproject) is expected to be a researcher with recognized outstanding scientific standing who is based in a high quality scientific institution in the Amazon region which has committed itself to serving as the focal point for the Research Cluster. These coordinators of the Research Clusters, with the assistance of CNPq, would promote a variety of periodic interchanges among the research subprojects.

Lastly, the project would also support the formation of two larger **Networks** – one for the “Forest” theme and one for the “Water” theme – to be comprised of all the pertinent Research Clusters. CNPq would organize meetings of the two networks every two years.

(c) Request for Proposals. The Request for Proposals would specify that the competition will be a single process consisting of two sub-parts, using weighted criteria to direct the process. In the first sub-part, proposals for Research Clusters would focus on the definition of the scientific question, scientific qualifications of researchers, commitment of the diverse institutions, and cross-cutting themes as well as a plan for integration of the Cluster. Proposals for Research Cluster will further specify that the maximum financing for a Research Cluster would be US\$900,000 and that each Cluster should be comprised of four or more research subprojects. There would be no set amount for the financing of individual research subprojects, which may vary.

In the second sub-part, Research proposals would include detailed proposals for each research subproject, the dissemination potential of research results to nonscientific audiences, as well as other details (see Annex 2(a)). Research Cluster and Research proposals would be evaluated and finalists selected. Research proposals would be evaluated and winners selected.

Detailed proposals for each research subproject will include dissemination potential of research results to nonscientific audiences, a plan for integration of the Cluster, as well as other details (see Annex 2(a)). Proposals would be evaluated and winners selected.

(d) Dissemination Approach. The project would include dissemination activities in two components. Under Component 1, Research Clusters (and their constituent subprojects) would be encouraged to develop dissemination activities oriented toward nonscientific audiences. In addition, dissemination beyond the scientific community is anticipated for the network and sub network conferences and related activities.

Furthermore, given that the traditional target audiences of scientific dissemination are primarily the scientific community rather than regional end-users, a separate component (Component 2 - Dissemination of Information and Results) was designed to support innovative methods of outreach to Pilot Program and Amazon regional end users. It is anticipated that Component 2, described in detail below and in Annex 2, would be a separate competitive fund. Selected activities under Component 2 would likely be carried out by nongovernmental organizations and other entities engaged in extension and technical assistance in the region.

Project Description (see Annex 2 for a detailed description)

Component 1: Support for Targeted Research. (Estimated cost US\$5.382 million or 87% of total project cost).

This component would support a grants program to fund the formation and implementation of consortia of integrated research subprojects (organized in Research Clusters) to be evaluated on a transparent competitive basis and responding to established priorities. The maximum financing for a Research Cluster would be US\$900,000 to fund four or more specific research subprojects the size and costs of which may vary. Up to 30% of the total grant funding of each research subproject may be used for scholarships. MCT and CNPq emphasized their intention to provide additional scholarships for winning Research Clusters, as supplementary counterpart, but were unable to *a priori* determine the size of this commitment.

Specifically, this component would support (i) issuance of the Request- for-Proposals; (ii) evaluation and selection of grouped proposals (see definition of Research Cluster above); (iii) implementation of grouped subprojects; and (iv) regional network and sub-network activities such as conferences, specialized training and regional information exchanges.

Qualified grantees would include researchers with doctoral degrees or the equivalent who are linked to public and private universities, nonprofit research centers, foundations and other nonprofit research organizations. Researchers or research groups outside the Amazon may compete for subproject financing but must be part of a regionally based Research Cluster (see definition above).

Further information on the targeted Priority Thematic Areas and Priority Research Topics is outlined above and in Annex 2(a) – Summary of the Draft Request for Proposals. Depending on the quality and number of proposals and given the current financing available, it is anticipated that approximately five to ten Research Clusters addressing Priority Research Topics under the two Priority Research Thematic Areas are expected to be funded during this initial stage of the project. A second Request for Proposals is planned if the anticipated additional financing becomes available.

The agreed screening criteria for proposals are specified in Annex 2(a), Summary of the Draft Request for Proposals. It is important to note that apart from the scientific merit of the individual subprojects, qualifications of the scientists and institutional commitment normally required in research competitions, the criteria also assign the maximum number of points for (i) the applied potential of the research subprojects to Amazon regional environmental and socioeconomic issues, (ii) whether or not less experienced researchers or research groups in the Amazon region are included in the Research Cluster; (iii) an integration plan for the Research Cluster (iv) qualifications for research team, and (v) Institutional Stability. The objective of the first criterion is to target research of the highest relevance to Pilot Program goals. The objective of the second is to stimulate more established research groups and institutions (*consolidados*) to collaborate with less experienced researchers (*grupos emergentes*) to strengthen scientific human resources in the Amazon region. The third criterion looks at the proposed intra- and

inter-institutional collaboration and linkages being proposed for the Research Cluster overall. The fourth consists of an evaluation of *Currículo Lattes* of the coordinator and team members. The fifth criterion works to ensure the infrastructure of the participating institutions are adequate to the scope of the research. Lastly, to further encourage interdisciplinary collaboration, one criterion assigns up to three points for if the Research Cluster includes subprojects involving the Cross-Cutting Themes (ethnoscience, natural resources economics and social sciences). With respect to the screening criteria for the research proposal, the same criteria are applied with four additional criteria which include: (i) scientific methodology; (ii) potential for dissemination of research results for nonscientific audiences; (iii) timetable; and (iv) detailed budget.

Each research subproject would have a coordinator with scientific and administrative responsibilities. CNPq would provide management, financial and procurement assistance to subproject coordinators. Each Research Cluster would have one scientific coordinator at the selected lead institution responsible for inter-institutional collaboration and exchange.

Direct support for the selected research subprojects would correspond to approximately US\$4.7 million or 73% of total project costs and include funding for research, research equipment, upgrading of research facilities or equipment, training and scholarships, and travel and dissemination activities. Training and scholarships (*bolsas*) under this component would focus on providing the necessary scientific and technical skills to students and technicians from the Amazon region participating in the research groups. Individual institutional overhead is not eligible for project funding; rather, individual institutions are expected to provide counterpart in terms of institutional support for the research groups. Financing for the activities related to the Request for Proposals and network-wide activities, such as workshops, meetings and conferences, would be handled by CNPq. Preparation of a satisfactory final draft Request for Proposals is a condition of effectiveness.

Component 2: Dissemination of Information and Results (Estimated cost US\$0.344 million or 6% of total project cost).

The second component would support the identification and implementation of innovative dissemination methodologies targeting specific nonscientific stakeholder audiences for public awareness raising and training purposes, as well as for the direct application of research results to key regional concerns. This component is predicated on the assumption that the transfer of science and technology information to Pilot Program and regional end users is rarely the main goal, function or comparative advantage of the scientific community. To ensure that the project addresses the dissemination concerns of the Pilot Program to beneficiaries and other regional end users, and given the general lack of governmental extension services in the Amazon region, it was concluded that this component should be designed as a competitive fund to support dissemination activities more frequently undertaken by universities, nongovernmental organizations and specialized research institutes. These entities provide many of the currently available extension and technical assistance to regional communities, often working for example in agroforestry, sustainable timbering, recuperation of degraded areas, natural resource management and other topics. To broaden the base of the science and technology knowledge transfers and to ensure that such transfers occur well before the conclusion of the research subprojects under this operation, it was agreed that dissemination proposals may draw upon research results generated by previous phases of the Science and Technology Subprogram as well as scientific research results from all Pilot Program-supported activities provided they are related to themes of approved clusters for Phase II.

During the first year of the project, CNPq would develop a simplified competitive process for application to these funds which they would subsequently administer and supervise, through a cooperative process and

with the participation of specialists from different areas and with experience in dissemination activities to nonscientific audiences. Because the funds are relatively limited, it is anticipated that they would be applied to complement existing outreach activities by regional organizations. The development of a satisfactory competitive mechanism for use of these funds is a condition of disbursement for the component, with the exception of the first subcomponent which is the development of the mechanism.

Specifically, this component would support: (i) development of a dissemination strategy for nonscientific audiences during the first year of project implementation that would include, among other things, the definition of the mechanisms for inviting and selecting proposals for innovative dissemination activities; and (ii) implementation of competitively selected dissemination activities designed to use relevant research results to address regional and community concerns, provided they are related to the approved thematic networks for Phase II.

Component 3: Support for Project Management and Network Activities. (Estimated cost US\$0.827 million or 7% of total project costs.)

This component would support the implementation of an efficient project management system to facilitate subproject execution (including the administration of the research networks, their composite sub-networks and research groups, and dissemination subprojects) and an effective monitoring and evaluation system.

Specifically, this component would support: (i) project coordination activities by MCT; (ii) project implementation activities by CNPq; and (iii) implementation of the monitoring and evaluation system, including physical and financial monitoring, outcome and impact indicators for the assessment of subproject and project success in attaining its specific and overall development goals, as well as independent mid-term and final evaluations. Further information on project implementation arrangements can be found in Sections C.4 and E.4, and further information on monitoring and evaluation is in Annex 11.

The project would also establish a project Consultative Committee (see Section C.4 and Annex 2) the objectives for which would include, among others, facilitating effective and efficient inter-institutional coordination, helping to resolve implementation problems encountered, and providing oversight for the project.

A detailed draft project operational manual as well as a draft project implementation plan (PIP) have been prepared. Adoption of a satisfactory final draft of the operational manual is a condition of effectiveness.

2. Key policy and institutional reforms supported by the project:

As the second phase project under the Pilot Program's Science and Technology Subprogram, the proposed project would seek to sharpen the focus of regional research under the subprogram to address the most important concerns related to Pilot Program initiatives for the conservation and sustainable development of the Amazon. The project would also support the development of an innovative system of networks linked to priority research themes and composed of interdisciplinary research groups who would focus on subproject design and implementation to address agreed research questions. The networks would focus not only on the generation and dissemination of research results to a narrowly defined technical audience; they would also assist in the process of linking the research results generated to the most pressing concerns of regional end users.

3. Benefits and target population:

Benefits under the proposed project would include the generation, dissemination and application of targeted research results to support conservation and sustainable management efforts in the Amazon, especially in relation to Pilot Program initiatives. The project would also support the development of an innovative and dynamic research network composed of science institutions, multidisciplinary research groups and other entities, who would engage in activities that move beyond the traditional research agenda to include training of local human resources in the targeted regions, and the direct application of relevant research results to help local populations.

Main beneficiaries include the regional science and technology community, who would benefit from activities under the project that aim to (i) strengthen, integrate and reinforce emerging research groups in the Amazon through the proposed research network strategy; and (ii) help build capacity in order to consolidate the regional human resource base for S&T research in the Amazon. In addition, local communities and end users would benefit from the generation and improved dissemination of multidisciplinary, applied research results under the project to help address local sustainable development issues. Pilot Program stakeholders would also benefit from the targeted research approach, which would focus in part on research priorities and information needs related to Pilot Program initiatives.

4. Institutional and implementation arrangements:

General project coordination and supervision as well as oversight of project monitoring and evaluation would be the responsibility of MCT's Technical Secretariat for the Science and Technology Subprogram, under the Unit for the General Coordination of Environmental Policies and Programs of the Secretariat for Policies and Programs of Research and Development (SEPED). The direct implementation of project activities, project monitoring and evaluation, and coordination of the research clusters would be the responsibility of MCT's premier research agency, the National Council for Scientific and Technological Development (CNPq) through its General Coordinating Unit for Earth and Environmental Sciences (CGCTM).

MCT would establish a **Project Coordination Unit (PCU)** within the Technical Secretariat (SEPED) to oversee the project. The PCU's responsibilities would include (i) overseeing/supervising project activities in coordination with CNPq, the Consultative Committee, other participating entities, and project donors; (ii) coordinating/analyzing project progress and financial management reports for submission to the Bank; (iii) reviewing annual work plans; (iv) managing the flow of project funds in coordination with the Bank and the National Treasury Secretariat; (v) integrating coordination of the Science 2 project with other Pilot Program projects; (vi) conducting strategic analysis of project results for regional policy purposes; and (vii) overseeing the implementation of the project monitoring and evaluation plan. The establishment of the Project Coordination Unit within MCT with staff in adequate numbers and qualification under Terms of Reference satisfactory to the Bank, is a condition of Grant effectiveness.

CNPq would establish a **Project Implementation Unit (PIU)** responsible for: (i) carrying out the bidding process regional dissemination and selecting and contracting targeted research subprojects; (ii) coordinating, managing and supervising the research networks, clusters and research subprojects, including provision of administrative and technical assistance; (iii) preparing the dissemination strategy and mechanisms, and identifying, selecting and contracting targeted dissemination subprojects; (iv) implementing the project monitoring and evaluation strategy, including subproject level monitoring and evaluation; (v) preparing annual work plans for MCT review; (vi) preparing project progress and financial management reports for MCT review; and (vii) day to day management of project funds. The establishment of the Project Implementation Unit within CNPq with staff in adequate numbers and qualification under

Terms of Reference satisfactory to the Bank, is a condition of Grant effectiveness.

The project would also establish a project **Consultative Committee** which would, among other things, facilitate effective and efficient inter-institutional coordination; help resolve implementation problems that may arise; and provide oversight assistance for the project. Membership on the Consultative Committee would include one representative each from: MCT's Secretariat for Policies and Programs of Research and Development (SEPED); CNPq's General Coordinating Unit for Earth and Environmental Sciences (CGCTM); the Technical Secretariat of another Pilot Program project; and a representative of the scientific community with previous experience in research networks similar to the one to be implemented in the Science 2 project. The Consultative Committee would invite representatives of other organizations or institutions to meetings as needed. Each institution or program would select their representative and the representative of the scientific community would be selected by MCT from a short list of six candidates to be prepared by CNPq.

Within the research networks, each research subproject would have a coordinator with scientific and administrative responsibilities. The PIU within CNPq would provide administrative, procurement and financial management assistance to subproject coordinators. In addition, each Research Cluster (or sub-network) would have a scientific coordinator at the selected lead institution responsible for inter-institutional collaboration and exchange. To facilitate the management of the research networks, clusters and research subprojects, the PIU would include two network management assistants to, among other things, assist in administering, monitoring and integrating the targeted research activities. Also on PIU staff would be two financial management officers, a procurement specialist, and three technical assistants.

The project's administrative and financial management procedures would be further specified in a detailed Operational Manual. A detailed draft Operational Manual has already been prepared. Adoption of a satisfactory final draft Operational Manual is a condition of effectiveness.

The project would be implemented according to a four-year Project Implementation Plan (PIP) specifying activities, implementing agencies, timing and costs. A draft PIP has already been prepared. The PIP would be further operationalized by Annual Operating Plans (POAs) detailing for the coming year, by component and subcomponent, the activities, goals, implementation responsibilities, time frames/dates and monthly expenditures. The POA would be prepared by the PIU/CNPq in consultation with research subproject coordinators for review and analysis by the PCU/MCT prior to submission to the Bank. Preparation of a satisfactory POA for the first year of project implementation is a condition of effectiveness.

The selection of CNPq as the implementing agency for the current project should contribute significantly to improving project outcomes. CNPq is a specialized, semi-autonomous agency of MCT responsible for a large portion of the financial and administrative management of science and technology projects throughout Brazil. Established in 1951, and made a public foundation in 1974, CNPq is also the lead national agency for the administration of national and international scholarships, awards and stipends to Brazilian scholars. It has almost a decade of previous experience in promoting and implementing research networks, such as PRONEX, and others. CNPq also has ample experience in international cooperation, and in the management of internationally funded projects, including responsibilities under the Bank-funded PADCT III project. Signature of a satisfactory Operating Agreement (*Convênio*) between MCT and CNPq is a condition of effectiveness.

D. Project Rationale

1. Project alternatives considered and reasons for rejection:

The main project alternative considered was a continuation of the Phase I project, which included both directed research support and infrastructural assistance for the development of two regional science centers of excellence, the Emílio Goeldi Museum of Pará (MPEG) and the National Institute for Amazonian Research (INPA). The Phase I project was implemented by a specially created project management unit within MCT, with financial management performed by the Agency for Financing of Studies and Projects (FINEP/MCT).

The continuation of the Phase I design was eventually ruled out for the following reasons: (i) the implementation arrangements of the Phase I project contributed to a variety of difficult and persistent financial management and administrative bottlenecks throughout the Phase I project implementation period; (ii) the full development of regional institutions into centers of excellence requires considerable additional funding and implementation follow-through not available through the Pilot Program; (iii) the selection, coordination and implementation arrangements for Directed Research subprojects under the Phase I project did not sufficiently support the identification of innovative approaches adequately integrated with the needs of end users and the objectives of the Pilot Program as a whole; (iv) recent policy developments within the S&T strategy of the Brazilian government have resulted in the creation of long-term sectoral funds with a certain percentage earmarked to fund science and technology development (including infrastructure) in universities and research institutions of the Amazon and other regions of Brazil; and (v) other initiatives, including the Millennium Science Initiative under PADCT III, have been developed in recent years to provide infrastructure support to science centers in the Amazon and other regions of Brazil.

The Phase I project design was thus passed over in favor of a more innovative approach which would focus on supporting targeted research groups and contributing to related capacity building of regional science and technology personnel as well as placing a greater emphasis on the transfer of information to regional end users. In addition, the designation of CNPq as project implementing agency would further enhance project performance, due to CNPq's prior experience in the administration of science and technology projects as well as research networks.

Furthermore, in light of the serious financial management issues that emerged during the first phase of the subprogram, special attention was paid during project preparation to designing effective and efficient administrative arrangements to support the innovative aspects of the second phase project. To this end, a comparative analysis was conducted of the relative advantages and risks of various financial management arrangements. These included channeling project funds through: (i) private, nonprofit entities such as Social Organizations (Organização Social – OS); and (ii) Public Interest Civil Society Organizations (Organização da Sociedade Civil de Interesse Público – OSCIP); (iii) semi-autonomous public finance agencies, such as the Bank of Brazil or FINEP; (iv) specially established finance foundations, such as FUNBIO; and (v) government agencies, such as CNPq. The various options and entities were assessed primarily on the basis of their capacity for agile, efficient management of project funds (including ease of transferring counterpart funds); their legal/bureaucratic advantages and constraints; their capacity to meet Bank financial management requirements; and their capacity to support the achievement of project development objectives.

CNPq was ultimately confirmed as project implementing agency on the basis of this comparative analysis, which demonstrated, among other things, that while the other options might offer fewer bureaucratic requirements and greater flexibility overall (especially the OS's and OSCIPs), they: (i) would present

additional costs in terms of higher administrative fees and formation of project financial management teams (in the case of OS's and OSCIPs, and to a lesser extent Bank of Brazil and FINEP); (ii) have not been performing especially well in recent years (especially the case for the Bank of Brazil which has started charging higher overheads while providing fewer services, and FINEP which has lost its designation as a private enterprise); (iii) would still require the involvement of CNPq in the disbursement process (in the case of Bank of Brazil); (iv) would require additional agreements for processing Government counterpart funds (in the case of all entities except CNPq); and (v) may not have the capacity to meet Bank financial management requirements (in the case of OS's and OSCIPs). Furthermore, CNPq would be in the best position overall to achieve and internalize project development objectives, due to its above-mentioned prior experience in the administration of science and technology projects as well as research networks. Lastly, the Ministry of Science and Technology strongly articulated its preference for using CNPq for this project.

During project preparation, various approaches to the formation and organization of research networks and clusters were also explored. One option considered was to use geographic distribution criteria instead of priority thematic research areas as an organizing principle for the networks. This approach was eventually rejected due to the following issues: (i) lack of consensus on the identification of appropriate geographic criteria to inform the organization of the networks; (ii) the risk of geographic distribution criteria becoming arbitrary or irrelevant insofar as sub-regional distinctions cannot be adequately reflected in broad geographic categories; (iii) research priorities defined on a geographic basis cannot be scientifically sustained; (iv) in light of information needs and scant human resources in the region, the organization of research networks based on targeted research thematic areas would contribute to optimizing the generation and dissemination of scientific knowledge. Nevertheless, a geographic based approach could still be proposed under the current project given that the formation of Research Clusters would be spontaneous.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed Science and Technology Reform Support Project/Millennium Institutes (PADCT III) (CNPq)	The objective of this project is to improve the overall performance of Brazil's science and technology sector by undertaking activities that promote scientific research and technological innovation in priority thematic areas.	S	S
Brazil National Biodiversity Project (GEF) (MMA, CNPq)	This project supports (i) a series of workshops to set biome-level priorities for biodiversity conservation and development of a national biodiversity strategy, (ii) establishment of a national biodiversity information network, and (iii)	S	S

<p>Science Centers and Directed Research Project, Phase I (closed 12/99) and Emergency Assistance (closed 6/99) (MCT/FINEP)</p>	<p>funding of model biodiversity projects involving various combinations of public and private sector organizations.</p> <p>The Phase I project aimed to promote the generation and dissemination of scientific knowledge relevant to conservation and sustainable development activities in the Amazon region through: (i) support for a competitive grants program for funding directed research projects in the Amazon region; and (ii) strengthening two established research institutions of the Amazon, the National Institute for Amazon Research (INPA) in Manaus, and the Emilio Goeldi Museum of Pará (MPEG) in Belém. Emergency Assistance was associated with the Phase I project and aimed to strengthen, on an emergency basis, the two science centers.</p>	<p>S</p>	<p>S</p>
<p>Other development agencies Amazon Biosphere-Atmosphere Large Scale Experiment (LBA) (US/NASA; EC, MCT, CNPq)</p> <p>Program in Basic Sanitation Research (PROSAB) (IDB, MCT, CNPq)</p>	<p>The objective of this project is to understand how the Amazon functions as a regional entity, and how changes in land use and climate affect the biological, chemical, and physical functions of the Amazon, including the sustainability of development in the region and the influence of the Amazon on global climate.</p> <p>The focus of this project is on developing and improving water treatment and sanitation technologies on the basis of priority research themes and research networks involving universities, technology institutes and the private sector.</p>		

<p>Other Relevant Projects: Program to Support "Núcleos" of Excellence (PRONEX) (Govt. of Brazil) (CNPq)</p>	<p>This project aims to enhance and disseminate science and technology information through support for integrated research networks, including newly established/emerging research groups.</p>		
<p>Program for the Humid Tropics (CNPq, other research institutions such as INPA, MPEG)</p>	<p>The focus of this project is on providing support for the development of multidisciplinary research networks to investigate relevant economic, social and strategic themes for the sustainable development of the Amazon region.</p>		
<p>Inter-American Institute for Research into Global Change (CNPq, INPE)</p>	<p>This initiative supports development of projects on issues related to climate change, comparative ecosystem studies, socioeconomic impacts from global change, and related policy/private sector issues.</p>		
<p>Science & Technology Programs for Ecosystem Management (INPA, INPE, MCT, Sociedade Civil Mamirauá, MPEG)</p>	<p>The objective is to develop, disseminate and promote utilization of S&T knowledge for Brazilian ecosystem and biodiversity management.</p>		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in the project design:

Lessons from previous Bank lending for science and technology, including the Brazil-PACDT, include the need to: (i) assess current and future science and technology needs for development in order to plan resource development and allocation among research priorities; (ii) promote opportunities for inter-institutional and interdisciplinary collaboration of the extended local scientific community; (iii) monitor and evaluate project implementation and outcomes; (iv) introduce incentives related to efficient, appropriate productivity, primarily by basing access to resources on demonstrated performance; (v) promote access to information resources; (vi) provide basic infrastructure and equipment needs in order for science and technology projects to prosper; (vii) support the vital role of the private sector in science and technology education and research; (viii) link research and teaching to assure relevance, and (ix) move to decentralized self-management of education and research.

The design of the current project incorporated many of the above lessons, as well as lessons learned from the initial operations under the Pilot Program's Science and Technology Subprogram Phase 1, including the

Emergency Assistance and Science Centers and Directed Research Projects, as well as the second round of Directed Research Projects (PPD2) supported bilaterally by the European Commission. Lessons learned from Phase 1 include the need to: (i) better target directed research; (ii) improve integration of the subprogram with the Pilot Program as a whole; (iii) better disseminate results to possible users of scientific knowledge; (iv) screen research for innovation since previous operations tended to finance the continuation or repetition of existing or previous work; (v) improve attention to emerging institutions and S&T capacity building in the region (beyond the flagship institutions); (vi) design monitoring and evaluation systems in advance; and (vii) improve the administrative, financial and procurement arrangements. Lessons learned from PPD2 also emphasized the need for better coordination and integration of research groups; improved dissemination of research results both to scientific and to broader stakeholder audiences; improved administrative assistance to research groups to facilitate the timely procurement of necessary equipment; and the provision of scholarships to facilitate the involvement of regionally based students in the directed research projects.

The new project is based on an updated assessment and more targeted prioritization of regional research needs that was also broadly discussed with Pilot Program and regional stakeholders. Science-2 is more explicitly linked to addressing the focal interests of the Pilot Program in the conservation and sustainable development of the Amazon's natural resources, as well as improving dissemination to regional end-users. The new project seeks to specifically encourage interdisciplinary and inter-institutional collaboration and synergies by means of the proposed formation of research networks designed to include emerging research groups and build S&T capacity. Revised criteria for the selection of research subprojects should help target both innovative research, and research considered more relevant to Pilot Program needs. In addition, Science-2 includes a well-designed monitoring and evaluation system, with a requirement that each research subproject proposal include its expected results and its goals in terms of products, which would be useful to the monitoring and evaluation, since the impact of scientific research, especially in relation to biodiversity conservation or natural resource management, can generally only be adequately captured in the long-run. Furthermore, the new operation's administrative, financial and procurement arrangements have been thoroughly redesigned. Finally, the second phase project will support the provision of scholarships to train regional S&T resources.

In addition, the new operations incorporates lessons learned from the implementation of other research networks in Brazil and the Amazon region, such as PROSAB (Programa de Saneamento Básico), PRONEX (Programa Núcleos de Excelência), the Long-Term Ecology Program (Programa de Ecologia de Longa Duração) and the Millennium Institute. Under PROSAB, for example, CNPq has effectively coordinated the establishment of four thematic research networks involving about six institutions each for the development and application of appropriate technologies for water/sanitation management. The experience thus far has demonstrated how the effective integration of diverse research groups in a cooperative effort can foster the development of innovative and complementary methodologies to address targeted issues in water and sanitation management.

Lessons learned from the PROSAB and other experiences include that: (i) establishing research networks can dynamize research synergies and optimize the use of financial and human resources; but (ii) often necessitate some cultural change on the part of the scientific community more accustomed to more individualized and isolated research endeavors; and (iii) require strong and respected scientific leadership for such networks to be successful including that the coordinators must be highly respected active researchers with a broader vision of the interrelationship of scientific questions as well as a strong interest in the applied aspects of results. Other key elements of successful research networks are the need to: (iv) clearly formulate research questions; (v) form strong inter-regional and international partnerships; (vi) ensure satisfactory individual institutional support for research groups; (vii) avoid groups assuming more

responsibilities than they can operationally handle; and (viii) ensure adequate monitoring and evaluation. In addition, it is clear that in the Amazon region, (ix) previous research experience has largely been of a more isolated nature; (x) many Amazon region research groups are emerging groups with less experience and/or less educational qualifications; and (xi) to date there has been a dearth of more programmatic approaches emphasizing inter-institutional exchanges and linkages.

The new project has targeted and well defined research priorities and questions, intends to actively disseminate the research network approach prior to the Request for Proposals, as well as providing extensive implementation support and supervision to ensure success. It is designed to select outstanding scientific leadership, promote partnerships including with less experienced groups or institutions, ensure operational assistance to participants, and would require individual institutional counterparts.

4. Indications of borrower and recipient commitment and ownership:

Within the S&T sector, the Government of Brazil has engaged in an active program of growth and reform, providing significant funding for research and innovation in recent years, and developing an extensive policy agenda. With respect to the proposed project, the GoB has demonstrated commitment and ownership through development of a specific S&T regional strategy for the Amazon that aims to: (i) strengthen regional capacity and infrastructure; (ii) enhance linkages to the Pilot Program; (iii) strengthen strategically targeted research thematic areas in the Amazon; (iv) improve dissemination of results to benefit regional end users; and (v) support regional conservation and sustainable development. The Government has also established a region-specific coordination unit within MCT to improve integration of diverse Amazonian programs and projects within the context of national and regional S&T policies, and has already charted substantial experience in the formation and coordination of research networks on a national and regional basis under three ongoing initiatives. In addition, national funding for S&T has been significantly increased in recent years, with some 30% earmarked for S&T support to traditionally under-funded regions of the North, Northeast and Central West.

5. Value added of Bank and Global support in this project:

Bank involvement in this project would add value on the basis of the Bank's experience with:

- Science and technology projects, worldwide, including those related to tropical natural resource management;
- Science and technology lending and grant-financed operations in Brazil;
- Promoting decentralized management and brokering partnerships in Brazil;
- Innovative methods of providing technical assistance to poor populations.
-

E. Summary Project Analysis (Detailed assessments are in the project file, see Annex 8)

1. Economic (see Annex 4):

- Cost benefit NPV=US\$ million; ERR = % (see Annex 4)
- Cost effectiveness
- Incremental Cost
- Other (specify)

2. Financial (see Annex 4 and Annex 5):

NPV=US\$ million; FRR = % (see Annex 4)

The total project costs of US\$6.5 million are divided between investment (US\$6.0 million) and recurrent (US\$0.5 million) costs. The resources to fund these costs would be provided by the Bank through the Rain Forest Trust Fund (US\$0.7 million), USAID (US\$5.1 million) and the Government of Brazil (US\$0.7 million).

Fiscal Impact:

N/A

3. Technical:

The major technical issues addressed during the project preparation included: improving research targeting; implementing a network approach; disseminating research results to regional end users; and establishing an effective monitoring and evaluation system. The research targeting, described in Sections B.3, C.1.2 and Annexes 2 and 2(a), has been improved to more closely align the project to Pilot Program objectives. The research network approach, described in Sections C.1.2 and Annexes 2 and 2(a), both builds on existing research network approaches in Brazil and introduces several innovative features including targeting the Amazon region and fostering partnerships with less experienced research groups. The challenge of dissemination to Pilot Program and regional end users, described in Section C.1.2 and Annex 2, is being addressed primarily by a proposed mechanism to finance, on a competitive basis, regional organizations already specializing in providing extension and technical assistance; in addition, scientists are also being encouraged to formulate dissemination plans for nonscientific audiences. Considerable work was carried out to formulate an integrated monitoring and evaluation system for the project which is summarized in Annex 11.

4. Institutional:

4.1 Executing agencies:

The Ministry of Science and Technology (MCT) would serve as project executing agency, while its National Council for Scientific and Technological Development (CNPq) would serve as the project implementation agency. Research and dissemination subprojects selected competitively to be financed would be executed by their proponents; subproject coordinators would be assisted by CNPq technical support staff.

4.2 Project management:

The predominant concerns during preparation were to avoid the administrative, financial management, and financial flow problems that plagued the first phase, ensure an integrated M&E system, and address the challenges of efficient management of subprojects organized into networks and sub-networks. Given CNPq's successful track record both with administering scientific research and facilitating a network approach, together with detailed reviews during preparation of the management arrangements, more effective and efficient management of Phase 2 is anticipated. In addition, project management would be guided by a detailed project operational manual, a draft of which has already been provided.

4.3 Procurement issues:

Special attention was paid during preparation of the Phase II project to the lessons learned from procurement bottlenecks experienced during the first phase project. A procurement capacity review was conducted to (i) evaluate the procurement implementation capacity of both MCT and CNPq; (ii) assess the

risks that may negatively affect the ability of the project implementing agencies to carry out the procurement process; (iii) develop an action plan to address any deficiencies detected; and (iv) propose a suitable Bank procurement supervision plan for the project. Based on the results and recommendations of the review, the following procurement arrangements were agreed and incorporated into the project (see Annex 5(a) for more details):

- **Procurement responsibility.** The PIU within CNPq would be directly responsible for overall procurement activities, including compliance with procedures and timetables agreed with the Bank. It was agreed that the PIU would appoint a procurement specialist under Terms of Reference agreed with the Bank within one month after project effectiveness, to prepare annual procurement plans; draft standard procurement documents, carry out overall supervision of procurement being implemented by the research subprojects; prepare procurement processes in selected cases; and train/coach personnel involved in procurement under the targeted research subprojects. The implementation of the project would require that most of the procurement would be done in small packages by an estimated 20-50 research subprojects. The subproject coordinators are responsible for procurement at the subproject level, with the help of administrative assistants. The procurement specialist within the PIU would also be in charge of procurement monitoring and reporting, and maintaining the project's procurement files.
- **Procurement plans.** Given that the bulk of procurement would take place under the research subprojects, which would be selected and initiated only late in the first year of project implementation (i.e., by late 2005), it was agreed that CNPq would prepare annual procurement plans on the basis of the annual work plans (POAs) which would define the research subprojects per item. It was agreed that a procurement plan for 2005 would be submitted for discussion during project negotiations.
- **Procurement monitoring/supervision.** Close monitoring and supervision is critical to minimizing identified risks associated with the fact that most of the procurement would be carried out by scientists/technicians on a decentralized basis. To facilitate this process, it was agreed that procurement data would be integrated into the financial management information system by project effectiveness, and that independent procurement reviews would be carried out at the end of 2006 and 2007. In addition, detailed procurement procedures would be spelled out in a detailed Operational Manual.

4.4 Financial management issues:

During project preparation, a detailed review of financial management issues and the capacity of MCT and CNPq to administer project resources was undertaken with resulting recommendations being incorporated into the design of Phase II project implementation arrangements (see Sections C.4, and Annex 6(b) for more information). A comparative analysis of alternative financial management mechanisms was also undertaken during project preparation (see Section D.1). The FM arrangements were revised during negotiations in November 2003, and again in November 2004. Based on these reviews, it was concluded that both MCT and CNPq have the comparative advantage and requisite experience for project implementation, provided the following actions are taken prior to effectiveness: full implementation of SIGMA system including agreed financial management report and SOE formats; and the composition of a financial management team within the project implementation unit (PIU) of CNPq. Detailed financial management procedures would also be documented in the Operational Manual.

5. Environmental:

Environmental Category: C (Not Required)

5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and disclosure) and the significant issues and their treatment emerging from this analysis.

The project retains a "C" for environmental assessment purposes. It is not expected to produce any

negative environmental effects.

In terms of general environmental impacts, the proposed project is expected to increase capacity in the environmental sciences in the Amazon and in Brazil, and improve the technological knowledge needed to sustainably utilize the resources from the rain forest.

Key stakeholders include the national and regional science and technology community, the PPG7, national and international NGOs, grass-roots based organizations, and local end users.

5.2 What are the main features of the EMP and are they adequate?

N/A

5.3 For Category A and B projects, timeline and status of EA:

Date of receipt of final draft:

N/A

5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

Stakeholder consultations were initiated before closure of the Phase I project and continued during preparation of the Phase II project summarized below.

- During the mid-term review (September 1997) of the Science Centers and Directed Research, Phase I and Emergency Assistance Projects, two meetings were held in Manaus and Belém with research scientists, technicians and administrators from a broad range of regional research institutions, including entities already involved in implementation of Phase I Directed Research subprojects, to discuss the issues, lessons learned and suggestions for improving directed research implementation in future phases of the subprogram.
- In March 1999, a two-day seminar was held in Brasilia bringing together stakeholders of the Science and Technology Subprogram and the Pilot Program (particularly project technical secretariats) to discuss recommendations for a second phase with attention to incorporating Pilot Program concerns in the Science and Technology Subprogram.
- Towards the end of Phase 1 in December 1999, a two-day seminar was held in Manaus including both stakeholders of Phase 1 and Pilot Program representatives to discuss the results of the first phase activities, and recommendations for the proposed design of the Phase 2 S&T subprogram.
- In March 2000, the MMA held a Pilot Program retreat that identified potential linkages between projects and specifically generated a list of Pilot Program research needs.
- In June 2000, the CGPA established a high-level committee (CAN) of eminent national scientists to advise MCT on research priorities for the Amazon as well as to make recommendations for the Phase II project.
- From September to December 2001, CGPA held stakeholder workshops on the Phase II projects in five cities in the Amazon as well as in Brasilia.

5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

N/A

6. Social:

6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

The main social issues pertain to (i) the applicability and dissemination of research results to Pilot Program and Amazon regional end users, and (ii) strengthening regional scientific capacity. With respect to the first issue, the preparation of the second phase project included extensive consultations with a broad range of project stakeholders, including regional nongovernmental organizations, on the design of the new project, as well as discussions on potential dissemination activities. The current project is designed to better target research oriented toward Pilot Program concerns as well as including evaluation criteria on research applicability and dissemination. It is expected that the network activities would also facilitate linkages beyond the scientific community. In addition, the innovative dissemination component proposed would finance a variety of activities designed to transfer S&T knowledge to regional end users by universities, nongovernmental organizations and other agencies already engaged in the region in extension and technical assistance activities. Hence the project is expected to improve the applicability and dissemination of research results to Pilot Program and regional end users.

The second issue of strengthening regional scientific capacity is addressed by the network approach that encourages the participation of less experienced research groups in the sub-networks as well as the inclusion of scholarships for the training of regional S&T human resources.

6.2 Participatory Approach: How are key stakeholders participating in the project?

See Section 5.4 for a description of the involvement of key stakeholders during the preparation process. During project implementation, it is expected that key stakeholders of the scientific community would participate through their involvement with subprojects, sub-networks and networks. Funding is included for a variety of exchange activities such as meetings and conferences. It is further expected that network meetings would periodically include broader stakeholders such as pertinent government agencies and nongovernmental organizations as well as representatives of community organizations. Pilot Program beneficiaries and regional end users are expected to participate directly in the dissemination subprojects (Component 2). In addition, there would be a Pilot Program representative on the project consultative committee.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

Nongovernmental research organizations could participate directly by competing for project financing for research activities under Component 1. Civil society organizations could also participate in network conferences and meetings to be financed under Component 1. In addition, it is expected that nongovernmental organizations and other civil society organizations would participate directly in dissemination subprojects to be financed under Component 2.

6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

The project would finance, on a transparent competitive basis, research and dissemination subprojects to be

carried out by a wide variety of eligible institutions. The decentralized subprojects at diverse institutions would receive technical and administrative assistance from CNPq.

6.5 How will the project monitor performance in terms of social development outcomes?

The project monitoring and evaluation system includes indicators to measure (i) that innovative dissemination activities are carried out by experienced organizations leveraging existing extension and technical assistance activities; (ii) awareness and application of research results to Pilot Program and regional end users; (iii) participation of a diverse range of institutions and partners in research and network activities; and (iv) effective training of human resources under the research networks. See Section A.3 and Annex 11.

7. Safeguard Policies:

7.1 Are any of the following safeguard policies triggered by the project?

Policy	Triggered
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Natural Habitats (OP 4.04, BP 4.04, GP 4.04)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Forestry (OP 4.36, GP 4.36)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Pest Management (OP 4.09)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cultural Property (OPN 11.03)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Indigenous Peoples (OD 4.20)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Involuntary Resettlement (OP/BP 4.12)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Safety of Dams (OP 4.37, BP 4.37)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)*	<input type="radio"/> Yes <input checked="" type="radio"/> No

7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

N/A

F. Sustainability and Risks

1. Sustainability:

1.1 Financial. The future financial sustainability of science and technology investments in the Amazon region appear to be more promising than ever before due to recent major policy shifts in the Ministry of Science and Technology (MCT) including the approval of major long-term sectoral and infrastructural S&T investment programs which for the first time will be allocated in part by percentages to specific regions of Brazil. It is expected that these longer-term policies will be continued under the new administration. The project would also contribute to the future financial sustainability of research institutions in the Amazon region insofar as research groups are strengthened in their capacity to compete for national and international research funds.

1.2 Political/Institutional. The second phase project is expected to greatly benefit from execution by CNPq, Brazil's most experienced and effective research oversight institution, by the network approach, and by the inclusion of scholarships to strengthen regional S&T human resources. The research networks to be established by the project are likely to be sustainable in terms of the more favorable S&T national investment program, as well as the emphasis Government is placing on improving S&T in the Amazon region. Furthermore, it is expected that exchanges among research institutions would be maintained by other means after the project. In addition, policies favoring the dissemination and application of S&T

results to regional end users are likely to receive continued support from the new administration with its focus on social equity as well as issues of sustainable development.

2. Critical Risks (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

Risk	Risk Rating	Risk Mitigation Measure
<p>From Outputs to Objective Development Objective: The PPG7 Science Subprogram continues to fail to adequately address concerns relevant to the conservation and sustainable development of Brazil's tropical forests.</p>	M	<p>This risk has been minimized by involvement of key stakeholders in the definition of research questions; specific criteria to select relevant research subprojects; and targeted support to broader dissemination activities including a dissemination component that will finance innovative ways to link research results with end-users.</p>
<p>From Components to Outputs The research networks are incorrectly constituted and/or the complexity of the networks undermines the smooth functioning, coordination and exchange among research groups.</p> <p>Persons trained under the research grants do not remain in the Amazon region.</p> <p>The dissemination activities fail to adequately target and deliver pertinent information to the correct audiences, and hence the Science Subprogram continues to be considered as mainly not addressing the needs of the Pilot Program.</p> <p>Similar administrative and financial management problems that plagued the first phase continue in this follow-on operation.</p>	<p>M</p> <p>N</p> <p>M</p> <p>M</p>	<p>The Request for Proposals has been carefully designed; and CNPq has accumulated considerable experience in establishing and supporting the implementation of research networks.</p> <p>Emphasis of human resource training program will be on providing training for students and young professions at Amazonian institutions and research organizations thus maximizing the probability that the trained people will remain in the region.</p> <p>The risk will be addressed by weighted criteria favoring applied research and dissemination to nonscientific audiences as well as by an innovative component to support S&T knowledge transfers by NGOs and other entities to regional end users.</p> <p>Alternative project administrative and financial management arrangements have been carefully assessed and the arrangements selected are expected to maximize effectiveness. Plus switching the executing agency from FINEP to CNPq should facilitate overcoming numerous problems encountered in the first phase.</p>
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

3. Possible Controversial Aspects:

Although the Science 2 Project has incorporated numerous elements to ensure improved linkages with the Pilot Program, it would be unrealistic to expect that the project could substitute for the wider lack of available extension and technical assistance in the Amazon region; hence there remains a possibility that the operation might be perceived by some as continuing to not address the needs of Pilot Program stakeholders.

G. Main Conditions

1. Effectiveness Condition

- Satisfactory Operating Agreement (*Convênio*) between MCT and CNPq signed.
- Satisfactory Annual Operating Plan (POA) for the first year of project implementation prepared.
- Satisfactory Operational Manual prepared.
- Satisfactory financial and procurement management system established.
- MCT Project Coordination Unit (PCU) established with staff in adequate numbers and qualification under Terms of Reference satisfactory to the Bank.
- CNPq Project Implementation Unit (PIU) established with staff in adequate numbers and qualification under Terms of Reference satisfactory to the Bank.
- Satisfactory Request for Proposals prepared.

2. Other [classify according to covenant types used in the Legal Agreements.]

Disbursement condition for Component 2, Subcomponent 2.2

- Satisfactory competitive mechanism to carry out dissemination subprojects developed.

H. Readiness for Implementation

- 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
- 1. b) Not applicable.
- 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
- 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
- 4. The following items are lacking and are discussed under loan conditions (Section G):

I. Compliance with Bank Policies

- 1. This project complies with all applicable Bank policies.
- 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

Judith M. Lisansky
Team Leader

John Redwood
Sector Director

Vinod Thomas
Country Director

Annex 1: Project Design Summary
BRAZIL: Science and Technology Subprogram Phase II Project

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
<p>Sector-related CAS Goal: To contribute to policies promoting conservation and sustainable development of the Amazon and Atlantic Forest regions, including necessary attention to the livelihoods of local populations, through the generation, evaluation and dissemination of knowledge.</p>	<p>Sector Indicators: Functioning research networks established and contributing to addressing key Pilot Program concerns. Dissemination of research results to Pilot Program beneficiaries and end users.</p>	<p>Sector/ country reports: Project monitoring and evaluation system reports. Pilot Program M & E reports (AMA project).</p>	<p>(from Goal to Bank Mission) Political climate conducive to harmonizing economic and environmental objectives. Policy makers open to incorporation of research results into public policies.</p>
<p>Project Development Objective: To promote and disseminate targeted and coordinated scientific and technological research on key questions contributing to the conservation and sustainable development of the Amazon region.</p>	<p>Outcome / Impact Indicators: Research results produced, shared and utilized in an effective, coordinated and transparent manner. Regional research capacity enhanced.</p>	<p>Project reports: Mid-term review Independent evaluations Implementation Completion Report -ICR Final reports of research subprojects, CNPq and/or technical consultancies. Reports of Consultative Committee M&E system reports</p>	<p>(from Objective to Goal) The Science 2 Project adequately addresses concerns relevant to the conservation and sustainable development of the Amazon region.</p>
<p>Output from each Component: Innovative research on strategic regional themes effectively carried out and regional research capacity strengthened.</p>	<p>Output Indicators: High quality research results in science and technology generated by well-defined and integrated research groups, as measured by the timely implementation of appropriate research methodologies, the achievement of well-defined research objectives, and the originality and applicability of research results as evaluated by a panel of experts.</p>	<p>Project reports: Subproject proposals and implementation reports. Feedback on subproject results by independent panel. Subproject findings and dissemination in scientific and other fora (e.g., meetings, peer-reviewed journals, etc.) Scholarship recipient progress</p>	<p>(from Outputs to Objective) The research networks can be appropriately constituted and their complexity managed to ensure smooth functioning, coordination and exchange among research groups. Researchers trained under the subprojects remain in the Amazon region.</p>

	<p>Participation of diverse institutions, multidisciplinary groups and other partners in carrying out research, as measured by the number of entities involved, the inclusion of less experienced research groups and the number of high quality, multi-authored, juried publications..</p> <p>Effective training of human resources, as measured by the number of participating scholarship recipients fulfilling 80% or more of their research programs.</p>	<p>reports.</p> <p>Minutes of research network and sub-network meetings.</p> <p>M&E system reports</p> <p>Supervision missions</p>	
<p>Innovative methods utilized to disseminate research results to pilot program and regional end users.</p>	<p>Number of Pilot Program and other regional beneficiary communities reached via innovative dissemination activities targeting nonscientific audiences.</p> <p>Successful leveraging of additional resources to carry out dissemination strategy.</p>	<p>Dissemination strategy</p> <p>Dissemination subproject proposals and implementation reports.</p> <p>Verification of effectiveness of dissemination to targeted groups.</p> <p>M&E system reports</p> <p>Supervision missions.</p>	<p>The dissemination strategy defines appropriate methods for adequately targeting and delivering pertinent information to Pilot Program beneficiaries and other regional end-users.</p>
<p>Project managed and research subprojects functioning efficiently, effectively and adaptively.</p>	<p>Full implementation of project management arrangements, and use of integrated Monitoring and Evaluation System for adaptive management of project, research networks and targeted research subprojects.</p>	<p>Operational Manual</p> <p>Implementation reports.</p> <p>Supervision missions.</p> <p>M&E system reports</p>	<p>The measures to correct the administrative and financial management problems of the first phase are adequate.</p>

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
Project Components / Sub-components: Component 1 Support for Research Subprojects on Strategic Themes 1.1 Publication of Request for Proposals (Edital) 1.2 Evaluation and selection of Research Clusters 1.3 Implementation of subproject proposals 1.4 Support for regional network and sub-network activities.	Inputs: (budget for each component) US\$5,381,767	Project reports: Workshop reports. Report on process/outcomes of competitive bidding process. Semiannual project progress reports. Semiannual research subproject implementation reports. Independent evaluations of research subproject implementation. Network and sub-network event reports. Supervision missions. M&E system report	(from Components to Outputs)
Component 2 Dissemination of Information and Results 2.1 Development of Dissemination Strategy 2.2 Implementation of activities under Dissemination Strategy (including public awareness and education campaigns and appropriate methodologies for dissemination of research results to end users).	US\$344,333	Semiannual reports on dissemination strategy implementation. Report on process/outcomes of competitive bidding process. Semiannual project progress reports. Semiannual research subproject implementation reports. Supervision missions. M&E system reports.	
Component 3 Support for Project Management and Network Activities 3.1 Support to MCT 3.2 Support to CNPq 3.3 Implementation of Monitoring and Evaluation Plan	US\$827,453	Semiannual project progress reports. Quarterly financial management reports (FMRs). Annual audits. Supervision missions. M&E reports.	

Annex 2: Detailed Project Description
BRAZIL: Science and Technology Subprogram Phase II Project

Project Overview

The development objective of the proposed project is to promote and disseminate targeted and coordinated scientific and technological research on key questions contributing to the conservation and sustainable development of the Amazon region.

To accomplish this objective, the project would support: (i) integrated targeted research subprojects in science and technology in priority thematic areas, as well as capacity building of regional human resources; (ii) the selection and use of innovative dissemination methods to augment the applicability and transfer of scientific and technological knowledge to conservation and sustainable end users in the Amazon; and (iii) the development and use of an effective and efficient system of project and subproject coordination and management including an integrated system of monitoring and evaluation of project outcomes and impacts.

The proposed project components, described in more detail below, are:

- Component 1 – Support for Targeted Research;
- Component 2 – Dissemination of Information and Results; and
- Component 3 – Support for Project Management and Network Activities.

While this second phase of the Pilot Program's Science and Technology Subprogram builds on the first phase already executed, the second phase has been modified to improve research targeting, implement a network approach and strengthen dissemination. The second phase approach is summarized in the following paragraphs.

Prioritizing and Targeting Research. First, after considerable discussion and stakeholder consultations, consensus was reached that the project would focus on stimulating research activities in only two **Priority Research Thematic Areas**. These thematic areas are: (1) Integrated management of terrestrial ecosystems and recuperation of degraded areas, which is being referred to in shorthand as the "Forest" theme; and (2) Integrated Management of watersheds, aquatic ecosystems and recuperation of degraded areas, being referred to as the "Water" theme. The two themes were selected to complement national S&T strategy, existing programs and projects, and the focal interests of the Pilot Program on the conservation and sustainable development of the Amazon region's natural resources.

To further direct and target the research activities to be financed under the project, a series of specific research areas or **Priority Research Topics** were further defined for each of the Priority Research Thematic Areas. Hence, under the "Forest" theme, the Priority Research Topics defined for the bidding process include: (i) the conservation and use of plant genetic resources; (ii) biogeochemical cycles; (iii) the conservation and recuperation of wildlife resources; (iv) the recuperation of degraded areas; and (v) timber and nontimber products. Priority Research Topics to be bid under the "Water" theme would include: (i) water quality; (ii) the biology and ecology of aquatic organisms; (iii) aquaculture; (iv) the recuperation of degraded areas and/or systems; and (v) the conservation and use of fishery resources and fishery technologies.

In addition, the research competition would encourage **Cross-Cutting Research** in the ethnosciences,

natural resource economics and the social sciences (especially the relations between the state and society) linked to the above cited Priority Research Topics. Further information on the targeting is in Annex 2(a) - Summary of the Draft Request for Proposals.

Network Approach. Second, the proposed project is designed to encourage the formation and strengthening of research networks both within the Amazon region and with researchers and research groups outside the region. The methodological approach for this would be as follows. The Request For Proposal (see Annex 2(a)) would require researchers and research groups at diverse agencies and institutions both inside and outside the Amazon region with interest in specific but interrelated research subprojects to get together and propose the formation of a **Research Cluster** (consortium or sub-network) of researchers investigating different but related aspects of research questions linked to the same Priority Research Topic. Hence, the screening and evaluation of proposals would be evaluated both in terms of the quality of the individual subprojects being proposed by research groups as well as on certain features of the entire Research Cluster which would represent a “package” or consortium of interrelated subprojects.

After considerable debate as to if such Research Clusters should be formed from the top down or from the bottom up, consensus emerged that it was best to allow research groups to spontaneously form and propose their own Research Clusters. In addition, to encourage the inclusion of less experienced researchers and research groups (*grupos emergentes*), proposals evaluation criteria for competing Research Clusters would assign full weight (five points) for the inclusion of less experienced research groups (see Annex 2(a)).

Furthermore, since the network approach is relatively new, especially in the Amazon region, CNPq agreed to the importance of carrying out a series of preliminary activities to acquaint a wide range of researchers and institutions with the methodological approach that would be utilized by the project prior to formally issuing the Request For Proposals. These preliminary activities (see Component 1 below) would include: (i) involving state environmental and science and technology agencies, universities and research institutions in identifying and mobilizing a wide range of both more experienced (consolidated) research groups as well as less experienced research groups; and (ii) encouraging the inclusion of less experienced Amazon regional researchers and research groups in the proposals for the formation of Research Clusters. Given that southern researchers are generally more competitive, better informed about research funding and more familiar with the network approach, CNPq concluded that it was unnecessary to hold orientation workshops in the south.

While the competition is open to subprojects being carried out by researchers based both in the Amazon region and elsewhere the proposed scientific coordinator of the Research Cluster (as well as being a coordinator of a specific subproject) is expected to be a researcher with recognized outstanding scientific standing who is based in a high quality scientific institution in the Amazon region which has committed itself to serving as the focal point for the Research Cluster. The coordinators of the Research Clusters, with the assistance of CNPq, would promote a variety of interchanges among the research subprojects.

Lastly, the project would also support the formation of two larger **Networks** – one for the “Forest” theme and one for the “Water” theme – to be comprised of all the pertinent Research Clusters. CNPq would organize biannual meetings for representatives of the two networks every two years.

Request for Proposals. The Request for Proposals would specify that the competition will be a single process consisting of two sub-parts, using weighted criteria to direct the process. In the first sub-part, proposals for Research Clusters would focus on the definition of the scientific question, scientific qualifications of researchers, commitment of the diverse institutions, and cross-cutting themes as well as a plan for integration of the Cluster. Proposals for Research Cluster will further specify that the maximum

financing for a Research Cluster would be US\$900,000 and that each Cluster should be comprised of four or more research subprojects. There would be no set amount for the financing of individual research subprojects, which may vary.

In the second sub-part, Research proposals would include detailed proposals for each research subproject, the dissemination potential of research results to nonscientific audiences, as well as other details (see Annex 2(a)). Research Cluster and Research proposals would be evaluated and finalists selected. Research proposals would be evaluated and winners selected.

Dissemination Approach. The project would include dissemination activities in two components. Under Component 1, Research Clusters (and their constituent subprojects) would be encouraged to develop dissemination activities oriented toward nonscientific audiences. In addition, dissemination beyond the scientific community is anticipated for the network and sub network conferences and related activities. During the biannual network meetings, it is anticipated that one day would be reserved to invite representatives of nonscientific organizations and agencies specifically with the goal of expanding the dialogue on science and technology beyond the scientific community. However, since the traditional target audiences of scientific dissemination are primarily the scientific community, a separate component (Component 2- Dissemination of Information and Results) was designed to finance innovative methods of reaching Pilot Program and Amazon regional end users. It is anticipated that Component 2, described in more detail below, would be a separate competitive fund and selected activities would likely to be carried out by nongovernmental organizations and other entities engaged in extension and technical assistance in the region.

By Component:

Project Component 1: Support for Targeted Research. - US\$ million
(Estimated cost US\$5.382 million or 87% of total project cost)

This component would support a grants program to fund the formation and implementation of integrated research subprojects (organized in Research Clusters) to be evaluated on a transparent competitive basis and responding to established priorities. The maximum financing for a Research Cluster would be US\$900,000 to fund four or more specific research subprojects the size and cost of which may vary. Up to 30% of the total grant funding of each research subproject may be used for scholarships. MCT and CNPq emphasized their intention to provide additional scholarships for winning Research Clusters, as supplementary counterpart, but were unable to *a priori* determine the size of this extra commitment.

Specifically, this component would support: (i) issuance of the Request for Proposals; (ii) evaluation and selection of submitted grouped proposals (see definition of Research Cluster above); (iii) evaluation and selection of grouped subproject proposals; (iv) implementation of grouped subprojects; and (v) regional network and sub-network activities such as conferences, specialized training and regional information exchange.

Further information on the targeted Priority Thematic Areas and Priority Research Topics is outlined above and in Annex 2(a) – Summary of the Draft Request for Proposals. Depending on the quality and number of proposals and given the current financing available, it is anticipated that approximately five to ten Research Clusters addressing Priority Research Topics under the two Priority Research Thematic Areas are expected to be funded during this initial stage of the project. A second Request for Proposals is planned if the anticipated additional financing becomes available.

The agreed screening criteria for proposals are specified in Annex 2(a), Summary of the Draft Request for Proposals, Tables A and B, respectively. At , it is important to note that apart from the scientific merit of the individual subprojects, qualifications of the scientists and institutional commitment normally required in research competitions, the criteria also assign the maximum number of points for (i) the applied potential of the research subprojects to Amazon regional environmental and socioeconomic issues, (ii) whether or not less experienced researchers or research groups in the Amazon region are included in the Research Cluster; (iii) an integration plan for the Research Cluster (iv) qualifications for research team, and (v) Institutional Stability. The objective of the first criterion is to target research of the highest relevance to Pilot Program goals. The objective of the second is to stimulate more established research groups and institutions (consolidados) to collaborate with less experienced researchers (*grupo emergentes*) to strengthen scientific human resources in the Amazon region. The third criterion looks at the proposed intra- and inter-institutional collaboration and linkages being proposed for the Research Cluster overall. The fourth consists of an evaluation of *Cirriculo Lattes* of the coordinator and team members. The fifth criterion works to ensure the infrastructure of the participating institutions are adequate to the scope of the research. Lastly, to further encourage interdisciplinary collaboration, one criterion assigns up to three points for if the Research Cluster includes subprojects involving the Cross-Cutting Themes (ethnoscience, natural resources economics and social sciences). With respect to the screening criteria for the research proposal, the same criteria are applied with four additional criteria which include: (i) scientific methodology; (ii) potential for dissemination of research results for nonscientific audiences; (iii) timetable; and (iv) detailed budget.

Qualified grantees would include researchers with doctoral degrees or the equivalent who are linked to public and private universities, nonprofit research centers, foundations and other nonprofit research organizations. Researchers or research groups outside the Amazon may compete for subproject financing but must be part of a regionally based Research Cluster.

The screening and evaluation committees would be formed by CNPq utilizing their existing extensive database of qualified scientists, and their standardized procedures for evaluation of research proposals (see Annex 11).

Each research subproject would have a coordinator with scientific and administrative responsibilities. CNPq would provide management, financial and procurement assistance to subproject coordinators. Each Research Cluster would have one scientific coordinator at the selected lead institution responsible for inter-institutional collaboration and exchange. The Research Clusters in each of the Priority Research Thematic Areas would make up the two larger networks to be established.

Direct support for the selected research subprojects would correspond to approximately US\$4.7 million or 73% of total project costs and include funding for research, research equipment, upgrading of research facilities or equipment, training and scholarships, and travel and dissemination activities. Training and scholarships (*bolsas*) under this component would focus on providing the necessary scientific and technical skills to students and technicians from the Amazon region participating in the research groups. Individual institutional overhead is not eligible for project funding; rather, individual institutions are expected to provide counterpart in terms of institutional support for the research groups. Financing for activities related to the Request for Proposals and network and sub-network activities, such as workshops, meetings and conferences, would be handled by CNPq.

Project Component 2: Dissemination of Information and Results.
(Estimated cost US\$0.344 million or 6% of total project cost).

The second component would support the identification and implementation of innovative dissemination methodologies targeting specific nonscientific stakeholder audiences for public awareness raising and training purposes, as well as for the direct application of research results to key regional concerns. This component is predicated on the assumption that the transfer of science and technology information to Pilot Program and regional end users is rarely the main goal, function or the comparative advantage of the scientific community. Furthermore, given the lack of a well developed extension service in the Amazon region, the question posed was what mechanisms could be used to stimulate the transfer of knowledge.

While the design of the research competition in Component 1 assigns weight to more applied research that would be relevant to regional socioeconomic and environmental issues as well as requesting dissemination plans for nonscientific audiences from research groups and Research Clusters, it was agreed that there was still a need to finance extension type activities to ensure that the project addresses the concerns of the Pilot Program that scientific research results become more useful and available to Pilot Program and regional end users. Given the relative lack of governmental extension services in the Amazon region, it was concluded that universities, nongovernmental organizations and specialized research institutes provide many of the currently available extension and technical assistance to regional communities, often working for example, in agroforestry, sustainable timbering, recuperation of degraded areas, natural resource management and other areas. These organizations often have many years of experience in targeting and disseminating scientific research results for the benefit of a wide stakeholder audience. Since it is assumed that many of these organizations would have a strong interest in becoming more updated on the most relevant recent research findings which they would then translate into outreach, training and technical assistance activities with regional end users, the proposal for this component is to develop a competitive fund to which such organizations could apply for updating and improving their dissemination activities. Since the research findings from research subprojects to be supported by this second phase would likely not be available for several years, the scope of research results to be used would focus on but not be limited to all scientific work financed by the Pilot Program and other research results related to themes of approved clusters for Phase II could also be considered (for example, Phase I and EC supported directed research). Similarly the target audiences would be expected to include Pilot Program beneficiaries but could also include other regional end users with a focus on poor rural communities.

During the first year of the project, CNPq would develop a simplified competitive process for application to these funds which they would subsequently administer and supervise, through a competitive process and with the participation of specialists from different areas and with experience in dissemination activities to nonscientific audiences. The development of a satisfactory competitive mechanism for use of these funds would be a condition of disbursement for the component, with the exception of first subcomponent which is the development of the mechanism.

Specifically, this component would support: (i) development of a dissemination strategy for nonscientific audiences during the first year of project implementation that would include, among other things, the definition of the mechanisms for inviting and selecting proposals for innovative dissemination activities; and (ii) implementation of competitively selected dissemination activities designed to use relevant research results to address regional and community concerns, provided they are related to the approved thematic networks for Phase II.

Project Component 3: Support for Project Management and Network Activities.
(Estimated cost US\$0.827 million or 7% of total project costs).

This component would support the implementation of an efficient project management system to facilitate subproject execution (including the administration of the research networks and their composite sub-networks and research groups, and dissemination subprojects), and an effective monitoring and evaluation system.

Specifically, this component would support: (i) project coordination activities by MCT; (ii) project implementation activities by CNPq; and (iii) implementation of the monitoring and evaluation system, including physical and financial monitoring, outcome and impact indicators for the assessment of subproject and project success in attaining its specific and overall development goals, as well as independent mid-term and final evaluations. Further information on project implementation arrangements can be found in Section C.4 and further information on monitoring and evaluation in Annex 12.

A project coordination unit (PCU) to be established in MCT would be responsible for general project coordination and supervision as well as oversight of project monitoring and evaluation. A project implementation unit (PIU) to be established in CNPq would be responsible for the implementation of project activities, in particular the administration and management of the research networks, clusters and research subprojects, implementation of dissemination activities and execution of the monitoring and evaluation strategy. The establishment of the PCU/MCT and the PIU/CNPq are conditions of project effectiveness.

A detailed draft project operational manual as well as a draft project implementation plan (PIP) have been prepared. A satisfactory final draft of the operational manual is a condition of effectiveness.

The project would also establish a Project Consultative Committee the objectives for which would include, among others, facilitating effective and efficient inter-institutional coordination, helping to resolve implementation problems encountered, and providing oversight for the project. The core membership would include a representative from MCT's Secretariat for Policies and Programs of Research and Development (SEPED); a representative from CNPq's General Coordinating Unit for Earth and Environmental Sciences (CGCTM); a representative from the Technical Secretariat of another Pilot Program project (preferably a person with a background in science and technology); and a representative of the scientific community with previous experience with research networks similar to the one being implemented in the project. The Consultative Committee would invite representatives of other organizations or institutions to meetings as needed. Each institution or program would select their representative and the representative of the scientific community would be selected by MCT from a short list of six candidates to be prepared by CNPq.

Annex 2(a). Summary of the Draft Request for Proposals

Objective

The objective of the Request for Proposals under the Science and Technology Subprogram Phase 2 Project is to support the formation of research networks aimed at promoting and disseminating in a coordinated and cooperative manner, scientific and technological research into relevant areas aimed at contributing to the conservation and sustainable development of the Amazon region.

1. Priority Research Areas

Two research networks will be organized to address *Priority Research Thematic Areas* (see 2.1 and 2.2). Each network would be composed at the sub-network level of five *Research Clusters* spontaneously proposed and formed by researchers and research groups from diverse institutions. A total of ten Research Clusters will be formed to address the Priority Research Topics under each of the two priority thematic areas.

2.1 Priority Research Thematic Area 1: Integrated Management of Terrestrial Ecosystems and Recovery of Degraded Areas

- Priority Research Topic 1: Conservation and use of genetic plant resources
- Priority Research Topic 2: Biogeochemical cycles
- Priority Research Topic 3: Conservation and recovery of wildlife resources
- Priority Research Topic 4: Recovery of degraded areas
- Priority Research Topic 5: Timber and nontimber products

2.2 Priority Research Thematic Area 2: Integrated Management of watersheds, aquatic ecosystems and recuperation of degraded areas

- Priority Research Topic 1: Water quality
- Priority Research Topic 2: Biology and ecology of aquatic organisms
- Priority Research Topic 3: Aquaculture
- Priority Research Topic 4: Recovery of degraded areas and systems
- Priority Research Topic 5: Conservation and use of fishery resources and technology

2.3 Cross-Cutting Themes

The following cross-cutting themes should also be considered by the Research Clusters: ethnosciences, natural resource economics and social sciences. The importance of the cross-cutting themes is highlighted in various aspects of the Request for Proposals, including the objectives and in proposal evaluation criteria.

3. General Considerations for the Formation of Research Clusters

Each Research Cluster should be spontaneously formed by established and less experienced researchers and research groups (*grupos consolidados, e emergentes*). The researchers would organize themselves to present a proposal of the formation of a Research Cluster made up of *Research Subprojects* investigating different but related aspects of research questions linked to the same Priority Research Topic. Coordinators

of the research subprojects will choose from among themselves a Research Cluster coordinator, who would be responsible for coordinating the scientific development and coordination of the cluster as a whole. The Research Cluster coordinator should be based in an Amazonian institution, which would serve as the research cluster's reference institution. The reference institution should be a "Center of Excellence" and would be expected to offer the necessary conditions to ensure the viability and implementation of the research subprojects, including the provision of adequate counterpart human resources, facilities and materials. In addition to the reference institution, all participating entities would be expected guarantee the provision of effective support to research cluster participants, including laboratory facilities and libraries.

4. Eligibility Criteria

Individual proponents must have a PhD or equivalent, with relevant experience in the area of research. Proponents must also have an updated *Curriculo Lattes* with CNPq, and be on the staff of a teaching/research institution or other nonprofit research center or foundation.

5. Budget and Timetable

The maximum financing for a Research Clusters would be US\$900,000 to fund four or more specific research subprojects the size and costs for which may vary. Up to 30% of the total grant funding of each research project may be used for scholarships. Evidence of institutional support must be provided. The maximum period for subproject implementation would be 30 months.

6. Proposal Process

- a) The process of analyzing, evaluating and selecting of Research Clusters and Research Proposals will be carried out as a single process consisting of the following two sub-parts: Presentation of the Research Cluster and Research Coordinator Proposals is analyzed, evaluated and selected according to established criteria (see Section 6.1 below).
- b) Presentation of the Research Proposals, including a proposal for subprojects to be carried out by each Research Sub-project in the cluster, is analyzed, evaluated and selected in accordance to established criteria (see Section 6.3 below).

6.1 Presentation of the Research Cluster and Research Coordinator Requirements

- a) Indicate which Priority Research Topic will be addressed.
- b) Indicate the title of the Proposal of the formation of the Research Cluster.
- c) Present the Coordinator of the Research Cluster.
- d) Present the objectives of the Research Cluster Proposal.
- e) Present project justification, including scientific relevance, contribution to the conservation of and the substantial development of the Amazon Region.
- f) Present the Research Cluster's estimated total costs/expenses.
- g) Present potential socioeconomic and environmental impacts of the proposal.
- h) Include a detailed integration plan for the Research Cluster.
- i) Indicate the inclusion of any cross-cutting themes in the proposal.
- j) Define the technical and administrative responsibilities of each participating institution, including the expected level of support (infrastructure and equipment) to be provided to the Research Subprojects under the cluster. All participating institutions must pledge effective support to all Research Cluster participants, individually and collectively, including access to labs and libraries.

- k) Have a minimum of four research subprojects, where one is for the formation of the Research Cluster
- l) Present a detailed description of all research subprojects in the cluster, including the qualifications of the coordinator and principle researchers, the main lines of research to be carried out by the groups, and the specific roles to be played by each member of the research group.
- m) Briefly provide a summary, with objectives and methodology, of each research subproject.

Note: Participants in the project should only include: researchers, technicians and collaborating institutions that have received a formal invitation, which should be maintained by the coordinator of the project until the documents are sent to CNPq.

6.2. Research Proposal Requirements

The full proposals presented by Research Clusters selected during the preliminary phase must:

- a) Indicate which Priority Research Topic will be addressed.
- b) Indicate the title of the Proposal of the formation of the Research Cluster.
- c) Indicate the title of the Research Proposal.
- d) Describe the scientific responsibilities of the Research Cluster coordinator and of participating researchers, including definition of specific roles and weekly responsibilities of each participant.
- e) Provide a detailed description of each research subproject under the Research Cluster, with clearly defined objectives, justification (scientific relevance, contribution to the conservation and the substantial development of the Amazon Region), methodology, and expected results.
- f) Present the potential socioeconomic and environmental impacts of the proposal.
- g) Describe how the various subprojects within the Research Cluster will be coordinated and integrated, including in relation to cross-cutting themes, and how they are linked institutionally.
- h) Present the potential for the Dissemination of scientific research.
- i) Present a list of ongoing projects of which the participants of the Research Cluster are implementing, explaining how these projects relate to the current proposal, including titles, dedication (hour/weekly responsibilities), implementation period, funding levels/sources and each projects function.
- j) Describe the activities that will be carried out, including start date, duration, descriptions, responsibilities, participants and progress indicators.
- k) Indicate counterpart institution(s), including human resources, the administration-finance assistant who will help and coordinate the Research project, infrastructure, equipment, etc. to be made available for the Research project in question.
- l) Present proof of specific authorization/permission request(s), and reasons.
- m) Indicate any additional funding received from other sources for the proposed research.
- n) Specify, as needed, the potential for patents, designs, prototypes and technological products and the mechanisms foreseen for the transfer of the technology developed.

6.3 Analysis, Evaluation and Selection

The process of analyzing, evaluating and selecting the proposals by research clusters to CNPq, will be carried out through comparative means of analysis and evaluation. In effect, this process will include the following phases:

Phase I- Analysis by CNPq Technical Team - Preliminary Selection/Screening

This phase consists of a preliminary screening of the presented proposals, which will be carried out through analysis and evaluation by the CNPq's technical team, on the basis of how each proposal meets eligibility

criteria and obligatory requirements.

Phase II- Analysis by the Specialists Committee (Comitê de Especialistas–CE) - Evaluation and Classification

This stage consists of detailed analysis of required qualifications and scientific merits of each research and research cluster project proposal.

The process of analyzing, evaluating and selecting the proposals would be performed by a Specialists Committee (Comitê de Especialistas – CE) composed of recognized specialists in the given thematic area with Currículo Lattes and recent history of funding from CNPq. The selection process would be regulated by a proactive attitude on the part of the CE, which could during the process recommend changes, syntheses and linkages of the constituent research subprojects. No member of the research teams submitting proposals may have a seat on the CE. No member of the CE will be granted access to any proposals submitted by his own institution. The results of the review process would be communicated to the proponents along with the technical report of the CE.

7. Monitoring and Evaluation

CNPq would form a special monitoring and evaluation commission focused on assessing the achievement of research network, cluster and subproject objectives against specific performance and impact indicators, within the context of the global objectives of the science and technology subprogram of the Pilot Program to Conserve the Brazilian Rain Forest. M&E activities would be conducted on the basis of reports, Research Cluster meetings and field visits to research subproject sites.

Annex 3: Estimated Project Costs
BRAZIL: Science and Technology Subprogram Phase II Project

Components	USAID US\$	RFT US\$	GOB US\$	Total US\$
Component 1. Support for Targeted Research	5,033,059		348,708	5,381,767
1.1 Issuance of Request for Proposals	1,700		300	2,000
1.2. Evaluation and selection of Research Clusters	48,875		8,625	57,500
1.3. Implementation of subprojects	4,707,000			4,707,000
1.4 Support for regional network and sub-network activities	275,484		339,783	615,267
Component 2. Dissemination of Information and Results		337,286	7,047	344,333
2.1 Development of detailed dissemination plan		37,286	7,047	44,333
2.2 Implementation of dissemination plan		300,000		300,000
Component 3. Support for Project Management and Network Activities	66,941	362,714	397,798	827,453
3.1 Support to MCT		94,003	93,570	187,573
3.2 Support to CNPq		218,711	209,758	428,469
3.3 Monitoring and Evaluation	66,941	50,000	94,470	211,413
Total	5,100,000	700,000	753,553	6,553,553

Annex 4

BRAZIL: Science and Technology Subprogram Phase II Project

N/A

Annex 5: Financial Summary
BRAZIL: Science and Technology Subprogram Phase II Project

Table 5.1. – Project Investment Costs by Year⁴

COMPONENTS	YEAR				TOTAL
	2005	2006	2007	2008	
Component 1: Support for Targeted Research Subprojects	1,236,250	1,852,539	911,139	1,381,839	5,381,767
1.1 Issuance of Request for Proposals	2,000	0	0	0	2,000
1.2. Evaluation and selection of Research Clusters	57,500	0	0	0	57,500
1.3. Implementation of subprojects	1,176,750	1,647,450	706,050	1,176,750	4,707,000
1.4 Support for regional network and sub-network activities	0	205,089	205,089	205,089	615,267
Component 2: Dissemination of Information and Results	44,333	100,000	100,000	100,000	344,333
2.1 Development of detailed dissemination plan	44,333	0	0	0	44,333
2.2 Implementation of dissemination plan	0	100,000	100,000	100,000	300,000
Component 3: Support for Project Management and Network Activities	308,531	206,928	155,998	155,996	827,453
3.1 Support to MCT	55,720	58,053	36,900	36,900	187,573
3.2 Support to CNPq	224,269	114,600	44,800	44,798	428,467
3.3 Monitoring and Evaluation	28,542	34,275	74,298	74,298	211,413
TOTAL	1,589,114	2,159,467	1,167,137	1,637,835	6,553,553

⁴ US\$ 1,00 = R\$ 2,70

Table 5.2 – Total Financing Required (US\$,000)

Year	2005	2006	2007	2008	Total
Investments	1,280	1,952	1,011	1,481	5,724
Recurrent Costs	308	206	155	155	824
TOTAL	1,588	2,158	1,166	1,636	6,548

Table 5.3 – Financing Sources (US\$,000)

Year	2005	2006	2007	2008	Total
USAID	1,275	1,785	1,275	765	5,100
RFT	175	245	175	105	700
GOB	188	204	188	173	753
TOTAL	1,638	2,234	1,638	1,043	6,553

Table 5.4 – Financing Sources as Percentage of Total Project Cost

Year	2005	2006	2007	2008	Total
USAID	78	79	78	73	78
RFT	11	11	11	10	11
GOB	11	10	11	17	11
TOTAL	100	100	100	100	100

Annex 6(A): Procurement Arrangements
BRAZIL: Science and Technology Subprogram Phase II Project

Procurement

Annex 6(a): Procurement and Disbursements Arrangements

Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement Under IBRD Loans and IDA Credits", published in January 1995 (revised January/August 1996, September 1997 and January 1999); and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers", published in January 1997 (revised in September 1997, January 1999 and May 2002); and the provisions stipulated in the Grant Agreement. The Bank's Standard Bidding Documents and Standard Request for Proposals would be used for Bank-financed ICB for goods and consultant services respectively. For NCB procurement of goods and services, the PIU and the research and dissemination subprojects would use the model standard bidding documents issued by SEAIN and for shopping, a standard "Modelo para Cotação de Preços."

- 1. Procurement Responsibility.** The project is constituted by a group of research and dissemination subprojects, to be carried out by an estimated 30-50 research groups, often attached to universities. Each of these subprojects would require the carrying out of procurement in rather small packages of goods, civil works, and consultant and other services. These groups also would receive financing for travel expenses, including per-diems and for consumables. At the central level, project procurement would mostly consist of hiring consultants for project coordination, preparation, evaluation, supervision and monitoring of subprojects, to be carried out by the Project Implementation Unit (PIU) at CNPq. It is estimated that the research and dissemination groups, in the aggregate, would spend about 75% of the funds, while CNPq and MCT would spend the remaining 25%.
- 2.** The MCT has designated CNPq as directly responsible for the implementation and monitoring and evaluation of project activities. Accordingly, the PIU would be responsible for the overall project procurement activity, including the compliance with procedures and timetables agreed with the Bank. The PIU would appoint a procurement specialist to be responsible for CNPq and MCT procurement, for training and coaching the staff responsible for procurement at the research and dissemination groups, and the overall supervision and control of procurement carried out by such groups. The specialist would also be in charge on keeping the procurement monitoring and reporting and the project procurement files. The contracts (convênios) between CNPq and the research groups would include provision for compliance with the Bank's procurement procedures.
- 3.** At the research or dissemination subproject level, responsibility would rest with the subproject coordinator, who would be assisted in administrative matters, including procurement by a consultant appointed in Research Cluster (or sub-network). Both would attend procurement sessions prepared by CNPq.
- 4. Procurement Plan.** As subprojects would be selected and become eligible in late 2005, when the selection process is finished, and because procurement under these subprojects represents about 75% of the project's procurement, the design of detailed procurement plans during project preparation is not possible. CNPq has prepared a rather detailed implementation schedule covering the project implementation period 2005-2008. Most detailed planning would follow the preparation of the annual budgetary instruments - POAs, which defines subprojects per item. On that basis, CNPq would prepare annually procurement plans. The plans would consist of: (i) procurement plans for goods and works, including contract

packaging, applicable procedures and schedule; (ii) a consultant selection plan, including packaging, applicable procedures, short lists and selection criteria. CNPq agreed during appraisal on the preparation of a procurement plan for 2003, to be submitted at grant negotiations.

5. Procurement Arrangements. The project's procurement arrangements are summarized in Table A.

Annex 6(a). Table A: Project Costs by Procurement Arrangements
(in US\$ thousand equivalent)

Expenditure Category	Procurement Method				Total cost inc. contingencies
	ICB	NCB	Other	NBF	
1. Research		700	4,535		5,235
		(630)	(4,080)		(4,710)
2. Dissemination			365		365
			(330)		(330)
3. Consultant Services			110		110
			(88)		(88)
4. Training			510		510
			(430)		(430)
5. Incremental Operational Costs			333		333
			(242)		(242)
TOTAL		700	5,853		6,553
		(630)	(5,170)		(5,800)

Figures in parenthesis are the amounts to be financed by the Bank grant. All costs include contingencies
ICB: International Competitive Bidding; NCB: National Competitive Bidding
Other includes National and International Shopping, consultant services, travel costs, per-diems and consumables.

6. Research subprojects. The project would finance (a) goods, consisting of research and laboratory equipment, transportation, and technology equipment, to support the activities of the research subprojects. The aggregate value of the goods, which are expected to be procured by shopping procedures is estimated at US\$2.2 million; (b) works, estimated at US\$540,000 in the aggregate, would consist of the rehabilitation of existing installations, which would be procured using shopping procedures; (c) consultant services, mostly by individuals, who would carry out studies and research; and (d) travel expenses, including tickets and per-diems. The beneficiaries of the grants for subprojects would sign grant agreements with CNPq, which provide for the use of the procurement procedures and rules agreed under the Grant Agreement.

7. Dissemination subprojects. Procurement would include the hiring of consultant and other services, purchase of tickets and payment of per-diems, purchase of supplies, training events, and expenses related to editing, layout, publication and dissemination of materials developed under these subprojects.

8. Consultant Services. In addition to the consultant services required by under the research and dissemination subprojects, consultant services are required to assist CNPq and the MCT in project selection and evaluation, and project supervision, monitoring and evaluation. The aggregate value of the individual consultant contracts is estimated at about US\$2.0 million. The project's selection and employment of consultants would be carried under arrangement acceptable to the Bank (Table A2), using the Bank's standard forms and contracts. The contracting of consulting firms would be carried following the Quality and Cost-Based Selection (QCBS) method.

9. Training. This category involves the organization and carrying out of events, including expenses

for educational materials, food and travel for the beneficiary research institutions and CNPq and MCT staff participation.

10. Operational Costs. Incremental operational costs refer to the management and supervision of the project, including mostly travel and subsistence expenses for CNPq, MCT and the subproject groups, audit procedures and maintenance and supplies. These services estimated to cost US\$335,000 would be identified in the annual work plans. Identification of suppliers of consumables and minor services would be made through market inquiries locally. Purchase orders would be issued to least-cost providers. Market inquiries would be updated periodically.

Annex 6(a). Table A.1: Thresholds for Procurement and Prior Bank's Review
(in US\$ thousand equivalent)

Category	ICB	NCB	Shopping	Prior Review	Ex-Post Review
Goods	>250	100-250	<100	All ICB; NCB over 150; 2 first shopping	Independent procurement reviews at the end of years 2006 and 2007
Works	>1,000	100-1,000	<100	All ICB; 2 first NCB; 2 first shopping	
Services	>1,000	100-1,000	<100	NCB over 250; 2 first shopping	

Annex 6(a). Table A.2: Consultants Selection Arrangements
(in US\$ thousand equivalent)

Category	QCBS	QBS	SFB	SBC	Other	Prior Review
		Not identified in initial plan				
Firms	>100				<100	All
Individual					CQ	Over \$50,000

11. Procurement Review and Methods. In view of the nature of the expenses, Bank's prior review of procurement for goods, works and services would be limited, as follows: (a) ICB is not expected because of the low cost of the project's procurement packages and the acceptability of Brazilian procurement procedures; (b) NCB would be limited to exceptional cases, if required, which would be known when subprojects be selected and procurement plans be prepared, and for one case for purchase of air tickets at CNPq. The rest of procurement for goods, works and services would be for small packages by shopping, inviting three contractors or suppliers. Due to the decentralization of decisions, packaging in larger sizes would be difficult. Regarding consultant services, most contracts are expected to be in the range of US\$10 to 50 thousand, and with individuals. Prior review is required with respect to each contract for the employment of individual consultants estimated to cost the equivalent of \$50,000 or more. Contracts with firms are not yet defined (and would likely be with nongovernmental agencies).

12. Advertising. As all procurement is expected to be local, no General Procurement Notices are

required. Detailed purchases by ICB and for consultant services and assignments would be advertised, as become available, in at least one national newspaper of large circulation. The agencies may also seek "expressions of interest", giving at least 14 days for the responses, before the preparation of the short-lists.

13. Procurement Risk Assessment. Although CNPq appears to be experienced in the implementation of project of similar characteristics than the proposed project, and consistent in the application of rules for procurement of goods and services, the project is rated as high risk for procurement. The reason being that procurement decisions are heavily decentralized, and taken by specialists, which may or may not have background in administration. To minimize risks the project provides for the following:

- a. Appointing by CNPq a full-time procurement specialist under Terms of Reference agreed with the Bank within one month after project effectiveness;
- b. Integration of procurement into the information system, by project effectiveness;
- c. Carrying out Independent Procurement Reviews at the end of 2006 and 2007.

14. In addition, CNPq prepared a detailed draft Project Operational Manual, including specific guidelines and procedures for procurement, which have been reviewed and found to be highly satisfactory.

15. Independent Procurement Reviews. The PIU would provide the Bank not later than six months after the end of 2006 and 2007, the reports of the independent procurement reviews audited by procurement experts acceptable to the Bank. The terms of reference for such reviews should be based on internationally accepted standards.

16. Frequency of Procurement Supervision Missions: The Bank would carry out ex-post reviews during selected supervision missions, with a frequency of once a year. The Bank would review the annual procurement plans.

Procurement methods (Table A)

See above.

**Annex 6(B): Financial Management and Disbursement Arrangements
BRAZIL: Science and Technology Subprogram Phase II Project**

Financial Management

1. Summary of the Financial Management Assessment

Annex 6(b) Financial Management and Disbursement Arrangements

Country Issues

The Country Financial Management Accountability Assessment - CFAA concluded that Brazil has a well developed and centralized system of public financial management. Overall it is able to reliably track budget expenditures. However the institutional arrangements and processes are complex. While good results are achieved in terms of aggregate fiscal control, the government is less successful in achieving good expenditure prioritization and operational efficiency. The Brazilian system of public financial management yields reliable information and adequate management and tracking of the receipt and use of funds at national level, and is able to support Bank's lending programs.

Strengths and Weaknesses

This project would be implemented by both the Ministry of Science and Technology - MCT and the National Council for Scientific and Technological Development -- CNPq. In this respect, MCT would have to establish a Project Coordination Unit (PCU), considering allocation of a small financial and administrative team and put in place an adequate financial management information system. This should not be difficult for MCT due to previous experience with Bank project execution. However, even though CNPq has a portfolio of about 6,000 research projects amounting to approximately R\$ 200 million, with good financial mechanisms in place to control funds transferred to the researchers, CNPq has never been an implementing agency for a Bank-financed project. The financial management information system developed by MMA - the SIGMA system will be implemented to control, monitor and report this Project implementation. An action plan is included in this annex which would provide the Project Implementation Unit (PIU) to be established by CNPq with management capability to implement and manage the project.

Implementing Entity and Staffing

MCT would be the coordinating agency for this project and the PCU is expected to be located in the Secretariat for Policies and Programs of Research and Development - SPED/ MCT. CNPq would implement the components related to research, as well as dissemination, and it would establish a Project Implementation Unit (PIU) responsible for selecting the research subprojects according to eligibility criteria set out by CNPq, MCT and the Grant Agreement. MCT would be responsible for general project coordination and supervision, as well as oversight of project monitoring and evaluation, while CNPq would be responsible for direct execution of project activities, including coordination of research and dissemination subprojects and implementation of the project monitoring and evaluation system (see Section C.4 on institutional and implementation arrangements).

MCT and CNPq would have to allocate staff as per the proposal established in the organizational chart of the project included in the draft Operational Manual. The proposed project staffing structure for the PIU within CNPq includes one Executive Coordinator, three Technical Assistants for the networks, and two Financial and Administrative Assistants. The financial team would be responsible for all the financial

routines, which includes preparing SOEs and FMRs from SIGMA, following up on funds transfers to the research subprojects.

Funds Flow

A Budgetary Cost Center (UG)⁵ will be opened for the Project in SIAFI⁶. Approved Budgetary annual resources will be allocated in the UG. The PIU will commit funds (empenho) as required and approved in the Budget, directly in the Budget Account in SIAFI. Payments will be made from the Treasury single Account on basis of the commitments recorded in SIAFI. CNPq would prepare and submit SOEs based on actual expenditures to MCT for consolidation and send these SOEs to STN to submit the application form to the Bank for reimbursement directly from the Loan Account to the Treasury single Account.

2. Audit Arrangements

External Audit

The annual financial audit of the project accounts for the period January 1 to December 31 of the year would be carried out by the Secretaria Federal de Controle - SFC, acceptable to the Bank to perform the Bank's financed projects. SFC would submit to the Bank no later than June 30 of the following year that the expenditures were incurred. The Auditor's TOR would be submitted to the Bank, for final review. It would include the issuance of a management letter on internal controls six months after effectiveness.

The following audit reports would be required:

<i>Audit Report</i>	<i>Due Date</i>
Project accounts (FMRs)	Up to six months after closing of fiscal year
SOE	Up to six months after closing of fiscal year
Special Accounts	Up to six months after closing of fiscal year
Compliance with Legal covenants	Up to six months after closing of fiscal year
Management Letter	Up to six months after closing of fiscal year

Reporting and Monitoring

MCT and CNPq would report the progress of the project activities on the format of FMRs. These FMRs would be formatted to reflect the project design and support the project coordinator during the implementation stage. It has been agreed that the set of FMRs would be generated by SIGMA. They would be submitted quarterly to the Bank. The year end FMRs would be considered as the annual Financial Statements of the project to be certified by the Auditors.

Supervision Plan

In view of the high risk rate given in this assessment, this project would need more supervision at the beginning of its implementation. The supervision mission time table would be discussed with the responsible World Bank Task Team Leader in due course.

⁵ UG – Unidade Gestora – Budgetary Cost Centerwill

⁶ SIAFI-Sistema Integrado de Administração Financeira.

Action Plan

Following is the action plan agreed with the TFG to comply with all FM requisites.

<u>Action</u>	<u>Due Date</u>
1. MCT to establish the Project Coordination Unit (PCU) and CNPq to establish Project Implementation Unit (PIU)	By Effectiveness
2. Financial/Administrative teams established within PCU and PIU	By effectiveness
3. Information system and control processes - SIGMA fully operational, including: <ul style="list-style-type: none">• Financial Management/Monitoring System;• Agreed FMR and SOE formats	By effectiveness
4. Auditing <ul style="list-style-type: none">• Management letter prepared by auditors commenting upon the PIU's internal controls adequacy; and• Audited yearly Financial Statements	<ul style="list-style-type: none">• Six months after effectiveness• June 30 each year

Financial Covenants

The project would have to:

1. Have the records, accounts and financial statements, the records and accounts for each Special Account for each fiscal year audited, in accordance with auditing standards acceptable to the Bank, consistently applied, by public auditors acceptable to the Bank;
2. Furnish to the Bank as soon as available, but in any case not later than six months after the end of each such year: (A) certified copies of the financial statements audited; and (B) an opinion on such statements, records and accounts and report of such audit, by said auditors, of such scope and in such detail as the Bank shall have reasonably requested; and
3. Furnish to the Bank such other information concerning such records and accounts, and the audit. Enable the Bank's representatives to examine such records; and ensure that such records and accounts are included in the annual audit.
4. The package of model reports referred to above, covering expenditures and disbursements, procurement and contracts, and information related to financial audits, would be up to date each month, and would be available to the Bank supervision team as needed.

3. Disbursement Arrangements

Disbursements would be made on the basis of transactions (SOEs) considering actual expenditures incurred by MCT and CNPq. However, MCT would receive the SOEs prepared by CNPq and would consolidate them to allow STN to reimburse itself from the Loan Account. The exception to the rule would be where **goods are valued above US\$150,000.00** equivalent, contracts with consulting firms are valued above US\$100,000 equivalent, and individual consultants above US\$50,000.00. In these cases all contract information would have to be attached to the Summary Sheet (SS).

Although the financial management information system to be implemented would have the capability to produce FMRs, the project does not intend to disburse on the basis of reports.

Financial and Accounting Systems and Procedures

MCT and CNPq are executing agencies of the Federal financial/accounting and administration system of the Brazilian government, and all accounting and financial transactions are recorded in SIAFI – Sistema de Administração Financeira Integrada do Governo Federal (Federal Integrated Financial Administration System). SIAFI is centralized in Brasilia and is extended to each of its executing agencies. It is based on chart of accounts structure which allows the project to identify the source of funds and the nature of the expenditures. The project program would be recorded in SIAFI. For proper financial execution, MCT and CNPq would put in place an information system capable of capturing the accounting records made in each of the executing agencies for reporting purposes. The system to be used is the SIGMA developed by MMA.

Disbursement Categories	US\$,000	Percentage Financed
Research Subprojects	4,330	100%
Dissemination Subprojects	300	100%
Consultants	80	80%
Training/Seminars	393	85%
Operational Costs	255	85%
Unallocated	472	
Additional Scholarships*		
Total	5,800	

*Supplementary GoB counterpart, amount to be determined/added during project implementation.

Disbursement Categories	USAID US\$,000	RFT US ,000	GoB US\$,000	Total US\$,000
Research Subprojects	4,300		430	4,730
Dissemination Subprojects		300	30	330
Consultants		80	20	100
Training/Seminars	393		69	462
Operational Costs		255	45	300
Unallocated	407	65	159	631
Additional Scholarships*				
Total	5,100	700	753	6,553

Allocation of grant proceeds (Table C)

Use of statements of expenditures (SOEs):

Special account:

Recent regulations from STN indicate that no special account would be opened for new Projects, although STN may retain the right to open one if considered necessary.

Annex 7: Project Processing Schedule
BRAZIL: Science and Technology Subprogram Phase II Project

Project Schedule	Planned	Actual
Time taken to prepare the project (months)		42
First Bank mission (identification)		06/01/1999
Appraisal mission departure		06/01/2003
Negotiations		11/01/2004
Planned Date of Effectiveness		08/16/2005

Prepared by:

Ministry of Science and Technology (MCT), National Council for Scientific and Technological Development (CNPq)

Preparation assistance:

World Bank, US Agency for International Development, US Department of State.

Bank staff who worked on the project included:

Name	Speciality
Judith Lisansky	Senior Anthropologist, Task Manager
Gregor V. Wolf	Manager, Brazil Rain Forest Unit
Loretta Sprissler	Social Development Specialist
Túlio Correa	Financial Management Specialist
Claudio Mittelstaedt	Financial Management Specialist
Susana Amaral	Financial Management Analyst
Emílio Rodriguez	Procurement Specialist
Luciano Wuerzius	Procurement Analyst
Alberto Ninio	Lawyer
Daniel Gross	Senior Anthropologist, Peer Reviewer
Claudia Sobrevila	Senior Biodiversity Specialist, Peer Reviewer
Jessica Winn	Junior Professional Associate

Project Budget (in US\$)

A. <u>Project Budget (in US\$)</u>	<u>Actual</u>
FY 00	
FY 01	57,000
FY 02	64,000
FY 03	117,000
TOTAL	238,000

Annex 8: Documents in the Project File*
BRAZIL: Science and Technology Subprogram Phase II Project

A. Project Implementation Plan

GIAC, Relatório de Avaliação do Subprograma pelo Grupo Internacional de Assessoramento Científico-GIAC (July 10, 1997).

GIAC, Relatório de Avaliação do Subprograma de C&T pelo grupo Internacional de Assessoramento Científico-GIAC (Nov 20, 1999).

MCT, Subprograma de Ciência e Tecnologia, Oficina de Trabalho, Subsídios para Nova Etapa, June 8-9, 1999.

MCT, Subprograma de Ciência e Tecnologia, Seminário de Apresentação de Resultados, Consolidação, Conclusões e Propostas (December 1999).

MCT, Documento de Ideias Básicas (Concept Note) (December 2000).

MCT, Diretrizes para a Fase de Pre-Investimento (December 2000).

MCT/Elmar Wagner, Relatório Final de Consultoria (October 2001).

MCT, Subprograma de Ciência e Tecnologia-Fase II, Documento do Subprograma (December 2002).

MCT, Draft Operational Manual (December 2002).

MCT, Draft Project Implementation Plan (December 2002).

MCT, Draft Request for Proposals (December 2002).

WB, Memorandum and Recommendation of the Director, Science Centers and Directed Research Project, Phase I (June 27, 1994).

WB, Grant Agreements, Science Centers and Directed Research Project, Phase I (September 21, 1994) and Emergency Assistance (November 22, 1994).

WB, Post Mission Letter to Government (September 29, 1997) and Aide Memoire from September 2-15, 1997, Science Centers and Directed Research Project, Phase I and Emergency Assistance, Mid-Term Review Supervision Mission.

WB, Post mission letter to Government (February 26, 1999) and Aide Memoire from February 1-12, 1999 Supervision Mission for Science Centers and Directed Research Projects (Phase I and Emergency Assistance).

WB, Post Mission Letter to Government (June 30, 1999) and Aide Memoire from June 7-12, 1999, Science and Technology Subprogram, Phase II Preparation Mission.

WB, Implementation Completion Report (ICR), Science Centers and Directed Research Project, Phase I

and Emergency Assistance (March 2001).

WB, Project Concept Document, Directed Research Project, Phase II (June 22, 2001).

WB, Minutes from PCD review meeting (July 6, 2001).

WB, Post technical discussions letter to Government and Next Steps Table (June 11, 2001).

WB, Post mission letter to Government (November 25, 2002) and Aide Memoire from November 8-14, 2002, Science and Technology Subprogram, Phase II Pre-Appraisal Mission.

WB, Science and Technology Subprogram, Phase II. Summary Report on the Capacity Assessment on Procurement (November 2002).

WB Aide Memoire from June 9-13, 2003, Science and Technology Subprogram, Phase II Appraisal Mission.

B. Bank Staff Assessments

C. Other

*Including electronic files

Annex 9: Statement of Loans and Credits
BRAZIL: Science and Technology Subprogram Phase II Project
23-Nov-2004

Project ID	FY	Purpose	Original Amount in US\$ Millions					Difference between expected and actual disbursements ^a	
			IBRD	IDA	GEF	Cancel.	Undisb.	Orig	Frm Rev'd
P082328	2005	BR-Integ.Munic.Proj.-Belim Municipality	24.07	0.00	0.00	0.00	24.08	0.00	0.00
P083533	2005	BR TA-Sustain. & Equit Growth	12.12	0.00	0.00	0.00	12.12	0.00	0.00
P087711	2005	BR Espirito Santo Wtr & Coastal Pollu	36.00	0.00	0.00	0.00	36.00	0.57	0.00
P069934	2005	BR-PERNAMBUCO INTEG DEVT: EDUC QUAL I	31.50	0.00	0.00	0.00	31.50	0.00	0.00
P060573	2004	BR Tocantins Sustainable Regional Dev	60.00	0.00	0.00	0.00	60.00	6.00	0.00
P080830	2004	BR Maranhao Integrated: Rural Dev	30.00	0.00	0.00	0.00	30.00	1.53	0.00
P087713	2004	BR (CRL1) Boisa Familia 1st APL	572.20	0.00	0.00	0.00	572.20	0.00	0.00
P083013	2004	BR Disease Surveillance & Control APL 2	100.00	0.00	0.00	0.00	99.50	0.00	0.00
P058503	2003	GEF BR Amazon Region Prot Areas (ARPA)	0.00	0.00	30.00	0.00	26.31	0.00	0.00
P049265	2003	BR-RECIFE URBAN UPGRADING PROJECT	46.00	0.00	0.00	0.00	44.99	5.60	0.00
P054119	2003	BR BAHIA DEVT (HEALTH)	30.00	0.00	0.00	0.00	28.51	5.51	0.00
P070827	2003	BR-2nd APL BAHIA DEV. EDUCATION PROJEC	60.00	0.00	0.00	0.00	42.99	19.79	0.00
P080400	2003	BR-AIDS & STD Control 3	100.00	0.00	0.00	0.00	91.85	14.15	0.00
P076977	2003	BR-Energy Sector TA Project	12.12	0.00	0.00	0.00	12.12	3.72	0.00
P074777	2003	BR-Municipal Pension Reform TAL	5.00	0.00	0.00	0.00	4.90	4.10	0.00
P055954	2002	BR GOIÁS STATE HIGHWAY MANAGEMENT	65.00	0.00	0.00	0.00	34.46	33.79	0.00
P073192	2002	BR TA Financial Sector	14.50	0.00	0.00	0.00	9.30	5.98	0.00
P057665	2002	BR-FAMILY HEALTH EXTENSION PROJECT	68.00	0.00	0.00	0.00	50.81	37.74	0.00
P057653	2002	BR- FUNDESCOLA IIIA	160.00	0.00	0.00	0.00	209.31	-22.78	0.00
P051696	2002	BR SÃO PAULO METRO LINE 4 PROJECT	209.00	0.00	0.00	0.00	163.48	122.58	0.00
P074085	2002	BR Sergipe Rural Poverty Reduction	20.80	0.00	0.00	0.00	3.13	-2.40	0.00
P066170	2002	BR-RGN 2ND Rural Poverty Reduction	22.50	0.00	0.00	0.00	13.68	5.88	0.00
P070552	2002	GEF BR PARANA BIODIVERSITY PROJECT	0.00	0.00	8.00	0.00	8.47	5.86	0.00
P043869	2002	BR SANTA CATARINA NATURAL RESOURC & P	62.80	0.00	0.00	0.00	59.96	18.22	0.00
P060221	2002	BR FORTALEZA METROPOLITAN TRANSPORT	85.00	0.00	0.00	0.00	111.47	55.68	0.00
P073294	2001	BR Fiscal & Fin. Mgmt. TAL	8.88	0.00	0.00	0.00	6.74	5.78	0.00
P059566	2001	BR- CEARA BASIC EDUCATION	90.00	0.00	0.00	0.00	71.32	-18.68	0.00
P057649	2001	BR Bahia Rural Poverty Reduction Project	54.35	0.00	0.00	0.00	7.01	-0.76	0.00
P050881	2001	BR PIAUI RURAL POVERTY REDUCTION PROJ	22.50	0.00	0.00	0.00	8.93	7.27	0.00
P050880	2001	BR Pernambuco Rural Poverty Reduction	30.10	0.00	0.00	0.00	17.05	12.78	0.00
P050875	2001	BR Ceara Rural Poverty Reduction Project	37.50	0.00	0.00	0.00	8.64	2.64	0.00
P050772	2001	BR LAND-BASED POVRTY ALLEVIATION I (S	202.10	0.00	0.00	58.13	151.01	152.74	0.00
P039199	2000	BR PROSANEAR 2	30.30	0.00	0.00	6.40	22.29	28.69	22.29
P047309	2000	BR ENERGY EFFICIENCY (GEF)	0.00	0.00	15.00	3.29	9.26	11.17	4.36
P006449	2000	BR CEARA WTR MGT PROGERIRH SIM	136.00	0.00	0.00	0.00	68.66	45.66	2.90
P035741	2000	BR NATL ENV 2	15.00	0.00	0.00	2.32	5.61	7.93	1.79
P062619	2000	BR INSS REF LIL	5.05	0.00	0.00	0.00	0.36	-0.14	0.67
P050776	2000	BR NE Microfinance Development	50.00	0.00	0.00	0.00	30.15	-19.85	0.00
P058129	1999	BR EMER. FIRE PREVENTION (ERL)	15.00	0.00	0.00	0.00	5.46	5.46	-0.02
P048869	1999	BR SALVADOR URBAN TRANS	150.00	0.00	0.00	0.00	85.95	85.95	0.00
P050763	1999	BR- Fundescola 2	202.00	0.00	0.00	0.00	17.29	17.29	0.00
P042565	1998	BR PARAIBA R.POVERTY	60.00	0.00	0.00	0.00	11.16	11.16	0.00
P057910	1998	BR PENSION REFORM LIL	5.00	0.00	0.00	0.50	1.48	1.98	1.08
P035728	1998	BR BAHIA WTR RESOURCES	51.00	0.00	0.00	0.00	4.03	4.03	-0.97
P006559	1998	BR (BF-R)SP.TSP	45.00	0.00	0.00	0.00	0.02	0.02	0.00
P038895	1998	BR FED.WTR MGT	198.00	0.00	0.00	40.00	54.67	94.67	21.29
P006474	1998	BR LAND MGT 3 (SAO PAULO)	55.00	0.00	0.00	10.00	36.98	46.98	19.96
P043421	1998	BR RJ M.TRANSIT PRJ.	186.00	0.00	0.00	27.78	92.74	120.52	0.00
P043420	1998	BR WATER S.MOD.2	150.00	0.00	0.00	125.00	19.33	144.30	3.28
P006532	1997	BR FED HWY DECENTR	300.00	0.00	0.00	50.00	61.51	111.51	111.51
P034578	1997	BR RGS Highway MGT	70.00	0.00	0.00	0.00	32.54	32.54	32.54
P043873	1997	BR AG TECH DEV.	60.00	0.00	0.00	0.00	15.24	15.24	15.24
P043868	1997	BR RGS LAND MGT/POVERTY	100.00	0.00	0.00	0.00	10.94	10.94	10.94

Project ID	FY	Purpose	Original Amount in US\$ Millions				Difference between expected and actual disbursements*		
			IBRD	IDA	GEF	Cancel.	Undisb.	Orig	Frm Rev'd
P006210	1996	GEF BR-NATL BIODIVERSITY	0.00	0.00	10.00	0.00	1.84	2.59	1.10
P037828	1996	BR (PR)R.POVERTY	175.00	0.00	0.00	10.00	39.68	49.68	49.68
Total:			4330.39	0.00	63.00	333.42	2679.02	1311.62	297.64

BRAZIL
STATEMENT OF IFC's
Held and Disbursed Portfolio
Mar - 2004
In Millions US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
2001	AG Concession	0.00	15.00	15.00	0.00	0.00	14.07	0.00	0.00
2002/05	Amaggi	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	Andrade G. SA	27.50	0.00	10.00	16.67	27.50	0.00	10.00	16.67
2001	Apolo	7.61	0.00	0.00	0.00	5.11	0.00	0.00	0.00
1998	Arteb	20.00	7.00	0.00	18.33	20.00	7.00	0.00	18.33
1999	AutoBAn	24.35	0.00	0.00	19.41	24.35	0.00	0.00	19.41
1998	BSC	1.54	0.00	0.00	0.66	1.46	0.00	0.00	0.66
1996	Banco Bradesco	1.19	0.00	0.00	1.75	1.19	0.00	0.00	1.75
2001	Brazil CGFund	0.00	20.00	0.00	0.00	0.00	0.60	0.00	0.00
1994/96	CHAPECO	1.78	0.00	0.00	5.26	1.78	0.00	0.00	5.26
2002/04	CN Odebrecht	25.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
2003	CPFL Energia	0.00	0.00	40.00	0.00	0.00	0.00	40.00	0.00
1992	CRP-Caderi	0.00	0.32	0.00	0.00	0.00	0.32	0.00	0.00
1996/97	CTBC Telecom	0.00	8.17	0.00	0.00	0.00	8.17	0.00	0.00
2004	Comgas	45.00	0.00	0.00	45.00	5.00	0.00	0.00	5.00
1997/00	Coteminas	0.00	0.29	0.00	0.00	0.00	0.29	0.00	0.00
1980/92	DENPASA	0.00	0.12	0.00	0.00	0.00	0.12	0.00	0.00
1998	Dixie Toga	0.00	15.00	0.00	0.00	0.00	15.00	0.00	0.00
1997	Duratex	6.76	0.00	0.00	3.95	6.76	0.00	0.00	3.95
1999	Eliane	21.33	0.00	13.00	0.00	21.33	0.00	13.00	0.00
1998	Empesca	5.00	0.00	10.00	0.00	5.00	0.00	10.00	0.00
2001/02	Escola	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00
2000/04	Fleury	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	Fosfertil	5.30	0.00	0.00	21.36	5.30	0.00	0.00	21.36
1998	Fras-le	6.00	0.00	10.00	0.00	6.00	0.00	6.70	0.00
1994	GAVEA	0.94	0.00	5.50	0.00	0.94	0.00	5.50	0.00
2001	GP Cptl Rstrctd	0.00	8.70	0.00	0.00	0.00	8.62	0.00	0.00
1997	GPC	9.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00
1998	Guilman-Amorim	21.88	0.00	0.00	33.53	21.88	0.00	0.00	33.53
1999	Icatu Equity	0.00	14.00	0.00	0.00	0.00	12.61	0.00	0.00
1980/87/97	Innova SA	13.75	5.00	0.00	35.00	13.75	5.00	0.00	35.00
1999	Ipiranga	23.62	0.00	0.00	39.75	23.62	0.00	0.00	39.75
2000/02	Itaberaba	0.00	5.34	0.00	0.00	0.00	5.34	0.00	0.00
1999	Itau-BBA	103.63	0.00	0.00	0.00	64.08	0.00	0.00	0.00
1995	JOSAPAR	7.57	0.00	7.00	0.00	2.57	0.00	7.00	0.00
1992/99	Lojas Americana	4.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
2002	MBR	15.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00

2002	Macaé	45.25	0.00	10.00	37.50	45.25	0.00	10.00	37.50
2002	Microinvest	0.00	1.25	0.00	0.00	0.00	0.42	0.00	0.00
1994	Net Servicios	0.00	31.74	0.00	0.00	0.00	31.74	0.00	0.00
1996	Para Pigmentos	8.60	0.00	9.00	0.00	8.60	0.00	9.00	0.00
1994/00/02	Perdigao	4.38	0.00	0.00	0.00	4.38	0.00	0.00	0.00
2000	Portobello	0.00	1.15	0.00	0.00	0.00	1.15	0.00	0.00
	Puras	2.67	0.00	0.00	0.00	2.67	0.00	0.00	0.00
	Total Portfolio:	667.98	162.50	159.67	358.38	475.43	132.86	141.37	280.28

FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic
2005	ABN AMRO REAL	50.00	0.00	0.00	0.00
2000	BBA	10.00	0.00	0.00	0.00
2002	Banco Itau-BBA	0.00	0.00	0.00	100.00
1999	Cibrasec	0.00	0.00	7.50	0.00
2002	Net Servicios 2	50.00	0.00	0.00	0.00
2002	Suape ICT	6.00	0.00	0.00	0.00
2004	TermoFortaleza	55.50	7.00	0.00	112.50
2004	TriBanco Brazil	10.00	0.00	0.00	0.00
2002	Unibanco-CL	0.00	0.00	0.00	150.00
	Total Pending Commitment:	181.50	7.00	7.50	362.50

Annex 10: Country at a Glance

BRAZIL: Science and Technology Subprogram Phase II Project

POVERTY and SOCIAL	Brazil	Latin America & Carib.	Lower-middle-income
	2003		
Population, mid-year (millions)	176.6	534	2,655
GNI per capita (Atlas method, US\$)	2,720	3,260	1,480
GNI (Atlas method, US\$ billions)	479.5	1,741	3,934
Average annual growth, 1997-03			
Population (%)	1.3	1.5	0.9
Labor force (%)	1.6	2.1	1.2
Most recent estimate (latest year available, 1997-03)			
Poverty (% of population below national poverty line)	22	..	..
Urban population (% of total population)	83	77	50
Life expectancy at birth (years)	69	71	69
Infant mortality (per 1,000 live births)	33	28	32
Child malnutrition (% of children under 5)	6	..	11
Access to an improved water source (% of population)	87	86	81
Illiteracy (% of population age 15+)	14	11	10
Gross primary enrollment (% of school-age population)	148	129	112
Male	153	131	113
Female	144	126	111

Development diamond*

Life expectancy

GNI per capita

Gross primary enrollment

Access to improved water source

— Brazil

- - - Lower-middle-income group

KEY ECONOMIC RATIOS and LONG-TERM TRENDS	1983	1993	2002	2003	
	GDP (US\$ billions)	203.3	438.3	460.8	492.3
Gross domestic investment/GDP	16.7	20.8	19.8	20.1	
Exports of goods and services/GDP	11.4	10.5	15.5	16.9	
Gross domestic savings/GDP	19.1	22.3	21.8	23.8	
Gross national savings/GDP	..	20.2	18.5	20.7	
Current account balance/GDP	-3.4	-0.1	-1.6	0.8	
Interest payments/GDP	3.9	0.6	2.9	2.7	
Total debt/GDP	48.5	32.9	49.6	48.0	
Total debt service/exports	54.7	24.4	70.3	65.1	
Present value of debt/GDP	..	..	52.6	..
Present value of debt/exports	..	..	329.6	..
	1983-93	1993-03	2002	2003	2003-07
(average annual growth)					
GDP	2.4	2.3	1.9	-0.2	3.9
GDP per capita	0.6	1.0	0.7	-1.4	3.2

Economic ratios*

Trade

Domestic savings

Investment

Indebtedness

— Brazil

- - - Lower-middle-income group

STRUCTURE of the ECONOMY	1983	1993	2002	2003
	(% of GDP)			
Agriculture	10.9	7.6	5.8	5.8
Industry	44.0	41.6	20.6	19.1
Manufacturing	33.2	25.0	12.4	11.4
Services	45.1	50.8	73.5	75.1
Private consumption	71.2	60.1	58.1	56.9
General government consumption	9.7	17.7	20.1	19.3
Imports of goods and services	9.0	9.1	13.4	13.1
	1983-93	1993-03	2002	2003
(average annual growth)				
Agriculture	2.4	3.9	5.0	5.5
Industry	1.2	1.8	2.6	-1.0
Manufacturing	0.0	1.4	1.4	2.7
Services	3.0	2.5	1.6	-0.2
Private consumption	0.8	1.9	-0.4	-3.3
General government consumption	6.4	2.0	1.0	11.6
Gross domestic investment	4.9	1.2	-4.3	-4.5
Imports of goods and services	5.9	4.0	-12.3	-1.9

Growth of Investment and GDP (%)

— GDI

◆ GDP

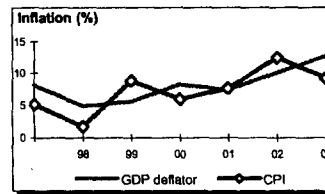
Growth of exports and imports (%)

— Exports

◆ Imports

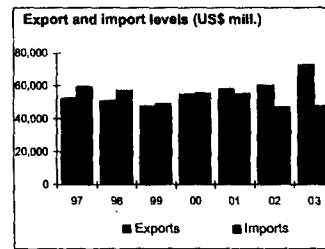
PRICES and GOVERNMENT FINANCE

	1983	1993	2002	2003
Domestic prices				
(% change)				
Consumer prices	135.0	1,928.0	12.5	9.3
Implicit GDP deflator	140.2	1,996.6	10.2	12.8
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	..	23.9	23.7
Current budget balance	..	..	2.8	3.0
Overall surplus/deficit	..	..	..	..



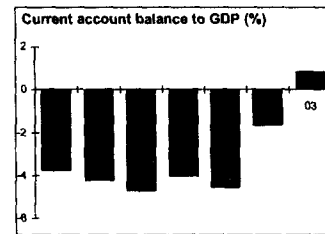
TRADE

	1983	1993	2002	2003
(US\$ millions)				
Total exports (fob)	..	38,563	60,362	73,084
Coffee	..	2,466	3,049	3,456
Soybeans	..	3,074	3,032	4,290
Manufactures	..	25,935	33,000	39,653
Total imports (cif)	..	25,256	47,237	48,260
Food	..	1,089	1,085	924
Fuel and energy	..	2,139	6,240	6,577
Capital goods	..	8,369	11,643	10,348
Export price index (1995=100)	80	91	88	95
Import price index (1995=100)	57	67	91	90
Terms of trade (1995=100)	140	136	97	105



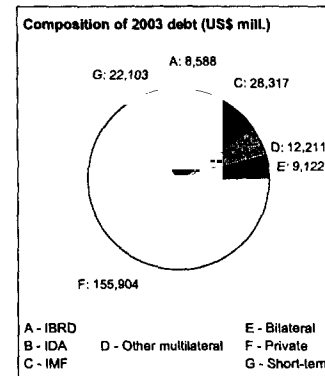
BALANCE of PAYMENTS

	1983	1993	2002	2003
(US\$ millions)				
Exports of goods and services	23,611	41,616	69,913	83,567
Imports of goods and services	19,534	31,795	61,709	63,819
Resource balance	4,077	9,821	8,204	19,748
Net income	-11,022	-12,099	-18,191	-18,552
Net current transfers	108	1,686	2,390	2,867
Current account balance	-6,837	-592	-7,597	4,063
Financing items (net)	4,946	9,805	-6,003	-963
Changes in net reserves	1,891	-9,213	13,600	-3,100
Memo:				
Reserves including gold (US\$ millions)	4,563	32,211	37,823	49,296
Conversion rate (DEC, local/US\$)	2.10E-10	3.22E-2	2.9	3.1



EXTERNAL DEBT and RESOURCE FLOWS

	1983	1993	2002	2003
(US\$ millions)				
Total debt outstanding and disbursed	98,525	144,104	228,662	236,245
IBRD	3,628	6,575	8,585	8,588
IDA	0	0	0	0
Total debt service	13,304	10,883	51,636	56,793
IBRD	507	1,858	1,518	2,010
IDA	0	0	0	0
Composition of net resource flows				
Official grants	16	59	0	..
Official creditors	1,576	-1,033	916	..
Private creditors	2,659	10,073	-9,541	233
Foreign direct investment	1,609	1,292	0	..
Portfolio equity	0	6,570	0	..
World Bank program				
Commitments	2,067	636	1,276	1,217
Disbursements	1,204	471	1,384	1,291
Principal repayments	270	1,279	1,063	1,633
Net flows	934	-808	322	-342
Interest payments	237	579	456	377
Net transfers	698	-1,387	-134	-719

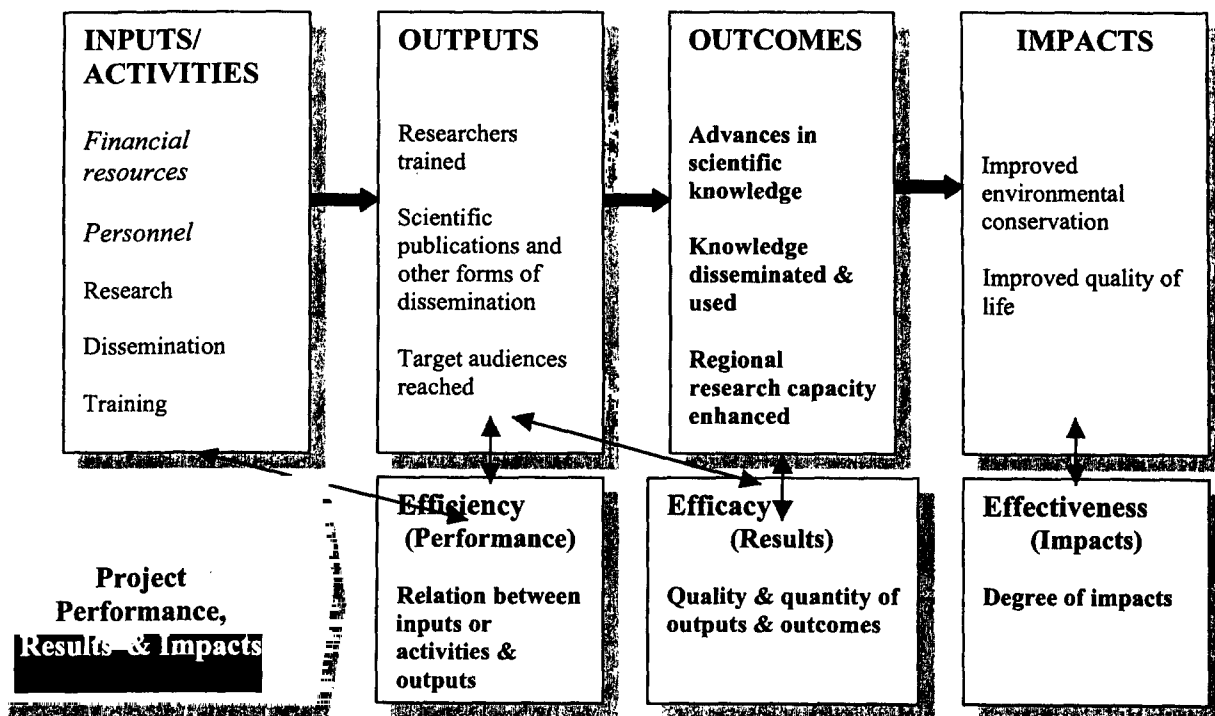


**Additional Annex 11: Monitoring and Evaluation Plan
BRAZIL: Science and Technology Subprogram Phase II Project**

Annex 11. Monitoring and Evaluation Plan

The PIU in CNPq would carry out the project monitoring and evaluation (M&E) strategy, in conjunction with overall project coordination and oversight provided by the PCU in MCT. The M&E strategy focuses on the overall project but also incorporates a specific M&E strategy developed for M&E of the research subprojects, sub-networks and networks. The M&E strategy is based on the project logframe (see Annex 1), which is closely linked to the conceptual scheme below illustrating three measures of project success:

- *Effectiveness*, which refers to the project impacts corresponding to the overall goal or goals (e.g., “Improved environmental conservation”);
- *Efficacy*, which measures the quality and quantity of project outcomes and outputs (e.g., “Scientific and technical knowledge disseminated and applied” and “Number of regionally based researchers trained,” among others); and
- *Efficiency*, which measures the relation between project inputs or activities and outputs (e.g., “Number of institutional partners per publication”).



Because of time lags and other limitations, it is usually impossible to measure project impacts directly, and even the outcomes are usually only inferred from the outputs. In the case of the Science and Technology project, a limited number of specific output indicators would be measured directly (see also Annex 1). Of these indicators, three are especially significant, providing robust measures of the three project outcomes and associated with key premises on which the project is based (see table below). These premises, in turn, correspond to innovative aspects of the project in Phase II: (i) rigorous and comprehensive criteria for selecting research proposals, (ii) appropriate and targeted dissemination of research results, and (iii) organization of research subprojects within networks.

Underlying Premise	Output Indicator (type)	Corresponding Outcome
Ranking of proposals according to selection criteria is a good predictor of research efficacy.	Quality and quantity of research results as predicted by proposal ranking according to selection criteria (<i>Efficacy</i>).	Significant advances in scientific and technological knowledge.
Appropriate and targeted dissemination of research results enhances their application by end users.	Awareness and application of research results by targeted groups (<i>Efficacy</i>).	Scientific and technological knowledge disseminated and applied.
Research networks enhance efficiency by facilitating information exchange and distribution of functions.	Productivity per researcher before and after establishment of research networks (<i>Efficiency</i>).	Regional research capacity enhanced.

For Component 1 with respect to the specific research subprojects, each research proposal would be required to submit information that would be useful for the M&E system based on verifiable impact, outcome and output indicators. As a result, specific indicators at this level have not yet been defined, however, the instruments (as well as a methodology and pertinent instructions) for subproject M&E have been developed and are being refined. One of these instruments is to be used for independent evaluation of the research subprojects, to be carried out periodically [three times per year] during the course of the project.

With respect to Component 2, apart from the awareness indicator (efficacy level) discussed above, a second indicator at the efficiency level has been proposed which is to measure the nonproject funds and resources leveraged for each project dollar invested in dissemination subprojects.

The M&E system for the project and the specific instruments for Component 1 would be finalized before project effectiveness and would be included in the project operational manual.

In addition, the project, specifically the PIU in CNPq would carry out the standardized physical and financial monitoring based on annual physical and financial planning as reflected in the Project Implementation Plan (PIP) and the Annual Operations Plan (POA).

Reports from the project M&E system would be included in the project's semi-annual reports. Financial reporting would be quarterly (see Annex 6(b)).

In summary, the proposed M&E strategy sets this project apart from its predecessors. At the project level, the strategy identifies a limited number of measurable indicators linked to outcomes and associated with underlying premises. At the subproject level, it provides a practical set of instruments that would facilitate M&E by both independent evaluators and the research teams themselves. This strategy should provide measurements of project success at diverse levels while also permitting strategic course directions during project implementation.

