

Project Name Brazil-Support of Scientific Research for the...  
Amazon II

Region Latin America and Caribbean Region

Sector Research

Project ID BRPE68730

Borrower(s) FEDERATIVE REPUBLIC OF BRAZIL

Implementing Agency  
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#### 1. Country and Sector 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 Amazon, which contains the largest extent of tropical rain forest in the world. Brazil has a long tradition of supporting research into science and technology, but, until relatively recently, its investments for environmental research 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 to support research on environmental issues in the Amazon. This situation improved somewhat in recent years with the advent of a number of national and international initiatives designed to address some of the limitations affecting research in the Amazon. One such initiative was supported through the Pilot Program to Conserve the Brazilian Rain Forest, a joint undertaking of the Brazilian government, Brazil's civil society and the international

community that seeks to find ways to conserve the tropical rain forests of the Amazon and Brazil's Atlantic coast. Under the Pilot Program's Science and Technology Subprogram, two interrelated projects were initiated in 1995 to promote the generation and dissemination of scientific knowledge relevant to conservation and sustainable management of the Amazon by supporting competitive grants for directed research, and strengthening two established regional research institutions. By the time the projects closed in June 1999 and December 1999, respectively, the Emergency Assistance and Science Centers and Directed Research Phase I Projects had provided total funding in the amount of about US\$27 million (US\$17.43 million equivalent in grants from RFT, USAID, EU and DfID, and US\$9.23 million equivalent from GoB) to support 23 directed research projects, as well as significant infrastructural improvements and institutional strengthening of the two regional research centers, the Emílio Goeldi Museum of Pará (MPEG) and the National Institute for Amazonian Research (INPA). An additional ECU 5 million was provided by the EU bilaterally in 1998 through the Pilot Program to fund a second round of directed research projects. USAID has also indicated that it intends to provide some US\$6 million to support a follow-on operation to continue strategic support for strengthening scientific research on targeted environmental topics, the proposed second phase science project, which is the subject of this PCD. In addition, the Brazilian government is currently leading a large international multidisciplinary research initiative which 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. The "Large-Scale Biosphere-Atmosphere Experiment in Amazonia (LBA)" is being funded by the US National Aeronautics and Space Agency (NASA), the EU and the Government of Brazil. The proposed second phase project under the Pilot Program Science and Technology subprogram is being designed to build on the lessons learned from the Phase I projects, as well as other related projects in the region. The Phase II project is also being designed with an eye to recent developments in Brazil's S&T strategy, which is providing for more long-term, sustained national support for S&T activities, with special provisions to guarantee support for infrastructure and research in the Amazon. Thus, the primary emphasis of the proposed project will be on sharpening the focus of regional research in the Amazon and disseminating results for the benefit of a broad range of end users.

## 2. Objectives

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 on selected priority questions; (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 model of project and subproject coordination and management, including an improved system of monitoring and evaluation of project outcomes and impacts.

## 3. Rationale for Bank's Involvement

The proposed project would support at least two important objectives of the Bank's latest Country Assistance Strategy (CAS) for Brazil. First, in the area of environmental management, the CAS emphasizes the importance of increasing the strategic focus of ongoing environmental activities. To this end, the proposed project would build upon the results and lessons learned from the first phase of the Science and Technology Subprogram of the Pilot Program to Conserve the Brazilian Rain Forest to identify and support targeted interdisciplinary research into key questions directly relevant to the conservation and sustainable development of the Amazon region. The project would also contribute to the areas of higher education, skill and technology development highlighted in the CAS through its support for the creation of an efficient, coordinated and transparent network of scientific research groups which would be involved not only in directed research for the Amazon, but also in the dissemination of research outcomes to a broad range of beneficiaries, as well as capacity building and training efforts for the formation of a critical mass of research scientists and technicians in the region. Furthermore, Bank involvement in this project would add value on the basis of the Bank's experience with:ñ Science and technology projects, globally;ñ Science and technology lending and grant-financed operations in Brazil;ñ Promoting decentralized management in Brazil;ñ Innovative methods of providing technical assistance to poor populations.

#### 4. Description

Component 1: Support for Targeted Research Subprojects. This component would include: (i) pre-research activities related to the competitive subproject bidding process, such as the issuance of the call for proposals, the formation of relevant research networks, and the evaluation and selection of subproject research groups' proposals to address specific research questions in two or three pre-selected priority thematic areas, and the establishment of the research networks (subprojects); (ii) subproject implementation by the proponent research networks, which would include the actual research and data analysis, as well as related training activities and dissemination of scientific and technological research results to a range of technical and non-technical stakeholders. Training during subproject implementation would focus on providing the necessary skills to students and technicians from the Amazon region participating in the research groups, and would be supported with CNPq-funded scholarships and stipends. During project preparation, two or three of the five thematic areas defined by the CAN will be confirmed for project support, and highly specified research questions to be bid under each theme will be determined in a participatory manner, to ensure that priority research issues of the Pilot Program as well as key concerns of local beneficiary populations are adequately addressed. Component 2: Dissemination of Information and Results. The second component would support the identification and implementation of innovative dissemination methodologies targeting specific stakeholder audiences for public awareness raising and training purposes, as well as for the direct application of research results to key regional concerns. Activities would include (i) development of a detailed dissemination plan; and (ii) implementation of activities under the plan which would range from public awareness raising and education campaigns to activities designed to use relevant research results to address regional and community concerns, as well as the specific information needs of other Pilot Program initiatives. Component 3: Project Management and Monitoring and

Evaluation. In light of the institutional complexity of the proposed research networks, 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 working groups), and the dissemination of research results in an effective, coordinated and transparent manner. This component would also support the development and implementation of a detailed monitoring and evaluation plan based on the identification and application of physical financial, outcome and impact indicators for the assessment of project success in attaining its specific and overall development goals.

## 5. Financing

Total ( US\$m)

BORROWER 2.5

AGENCY FOR INTERNATIONAL DEVELOPMENT 5.4

LOCAL GOVTS. (PROV., DISTRICT, CITY) OF BORROWING COUNTRY N/A

RAIN FOREST 0.6

Total Project Cost 8.5

## 6. Implementation

The Secretariat for Science and Technology Policy and Programs (SEPCT) of the Ministry of Science and Technology (MCT) would supervise project implementation, with the assistance of an oversight committee whose composition and responsibilities would be determined during project preparation. The National Council for Scientific and Technological Development (CNPq) would be responsible for day-to-day project implementation, including financial management of project funds, oversight of dissemination activities, monitoring and evaluation, and coordination and administrative oversight of the research networks. Subproject implementation and administration would be largely the responsibility of the coordinators of each proponent research network, who would be chosen by the component research groups at the time of network formation. and subproject proposal design Additional information about how the networks will function, as well as issues needing to be addressed based on similar previous experiences (primarily PRONEX), will be further clarified during project preparation. The designation of CNPq as project implementing agency is expected to help address a number of implementation lessonsby MCT is an important development based on the lessons learned from of the Phase I science project. CNPq is a specialized, semi-autonomous agency of MCT responsible for the financial and administrative management of science and technology projects throughout Brazil. CNPq is also the lead national agency for the administration of national and international scholarships, awards and stipends to Brazilian scholars, as well as the administration of a previously existing research network program called the Nuclei of Excellence Program (PRONEX). It also has ample experience in international cooperation, and in the management of internationally funded projects, including responsibility for the Bank-funded PADCT III project. During project preparation, several studies and assessments related to financial management issues and institutional analyses will be undertaken to review the administrative lessons learned during the Phase I science project as well as existing experiences in Brazil with research networks and apply these directly to the final design of project implementation arrangements for the proposed second phase project. A draft Operational Manual containing detailed TORs, guidelines and procedures will also be developed for review by project appraisal.

## 7. Sustainability

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. The longer-term utility and sustainability of the proposed research networks is a question which will be further examined during project preparation. In terms of political/institutional sustainability, the second phase project will greatly benefit from execution by CNPq, Brazil's most experienced and effective research oversight institution which is also contributing additional counterpart funds for strengthening 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 will be maintained by other means after the project.

## 8. Lessons learned from past operations in the country/sector

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 such as grants for research, support for facilities, monetary rewards, increased professional status, travel and further training, 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; 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 Science Phase II project incorporates many of the above lessons, as well as lessons learned from the initial operation (Phase I). Phase II is being prepared within the context of a larger governmental strategy to improve science and technology in Brazil in general and in the Amazon region in particular, where research priorities are being carefully identified. While Phase I provided incentives for interdisciplinary research, Phase II is being designed to specifically encourage interdisciplinary and inter-institutional collaboration and synergies by means of the proposed formation of research networks. In Phase I the evaluation of the performance and impact of research subprojects was hampered by the absence of pre-established performance and impact indicators. In the proposed Phase II, it is expected that each research proposal will include a detailed monitoring and evaluation plan, including the identification of adequate performance and impact indicators as well as post-subproject monitoring scheme, 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. Other lessons learned about research support during the Phase I included: (i) poor targeting because of overly broad thematic lines; (ii) lack of integration

and synergy with the Pilot Program as a whole; (iii) difficulties assessing whether or not the research proposal was innovative or just a continuation or repetition of existing or previous work; and (iv) lack of attention to possible users of scientific knowledge generated. Phase II will formulate more specific research questions to more fully direct scientific research. Efforts are underway to improve the integration of the Science Subprogram with the Pilot Program overall, including in particular the involvement of key stakeholders during project preparation, as well as the proposed requirement for each subproject to formulate a specific dissemination plan, as well as a project-level dissemination component that will specifically address issue of improving the transfer of information to regional end users. Lastly, the methods for proposal bidding and evaluation will be improved to better target innovative research. There were also a series of lessons learned during Phase I related to project and subproject management and financial administration, particularly in terms of an overly complex funding arrangement that led to myriad delays. It is expected that the management and financial administration of Phase II will be significantly improved, through the participation of CNPq which already has a track record in the coordination of similar projects, largely by using more proven arrangements already pre-tested and used by CNPq. An analysis of key issues for the efficient administration of research networks is currently being undertaken.

9. Program of Targeted Intervention (PTI) N - Poverty Category. It is expected that the project will not be included in the Program of Targeted Interventions.

10. Environment Aspects (including any public consultation)

Issues : 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 utilize sustainably 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. A participatory process will be carried out during project preparation to consult with a range of project stakeholders, including research scientists and technicians both within and outside of the Amazon region, universities and other research entities, government and donor managers of Pilot Program initiatives, national and international environmental NGOs, and local communities and grass-roots based organizations. The purpose of these consultations will be to contribute to the selection of two or three priority research areas for project coverage, and help define precise research questions within each area. In this way, it is expected that key concerns of local populations, as well as priority research issues of the Pilot Program, will be adequately addressed by the project. Stakeholder participation during implementation will range from involvement of scientists as researchers and technicians in the working groups and networks chosen to carry out the targeted research, to participation of representative stakeholders, including NGO and local community representatives, on advisory panels overseeing project implementation, dissemination of results, and monitoring and evaluation activities.

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Note: This is information on an evolving project. Certain components may not be necessarily included in the final project.

This PID was processed by the InfoShop during the week ending September 14, 2001.