

July 28, 2008

PART 1

PROJECT IDENTIFICATION

Subproject II.3

Transboundary Diagnostic Analysis

**Integrated and Sustainable Management of Transboundary Water Resources
in the Amazon River Basin Considering Climate Variability and Climate Change**

Link to umbrella project:

Subproject II.3 is linked to all activities of Component I and II.

The basic activity of this subproject is related to the formulation of a Transboundary Diagnostic Analysis (TDA) included within Component II that will provide an essential input to the Strategic Action Program (SAP).

Geographical scope: Amazon Basin.

Executing Agency/entity:

The Project Coordination Unit (PCU) will, in close consultation with the National Project Units and the ACTO (1) coordinate the overall execution of the umbrella project under the oversight of the Implementing Agency (IA) and Executing Agency (EA), and (2) will liaise directly with all subproject execution teams.

Duration: 24 months

Focal area(s): International Waters

GEF grant: US \$ 100,000

Co-financing: US \$ 300,000

Total funding: US \$ 540,466

Counterpart funding: US \$ 140,466

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**Integrated and Sustainable Management of Transboundary Water Resources
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Project Summary

This subproject is designed to formulate the Transboundary Diagnostic Analysis (TDA) for the Amazon Basin. The TDA provides the scientific basis for the actions to be identified under Component III, and provides a vehicle for integrating the results of the target research and foundational activities (Component II) to be integrated into and synthesized with the existing knowledge base that exists within the multinational Amazon Basin.

The outcome of this activity will form the basis for subsequent interventions to be determined through the formulation of a Strategic Action Program (SAP) for the Basin.

This subproject will strengthen the ability of country-level institutions to implement common basin wide programs and projects by creating a shared knowledge base upon which a common management framework for the Amazon Basin can be founded. This subproject provides an essential input for the formulation of the Strategic Action Program (SAP) of the GEF Amazon Project.

Subproject II.3 - Transboundary Diagnostic Analysis		
Activity	Output	Outcome
1. TDA Formulation	The documented scientific knowledge on the water resources and hydro-meteorological conditions of the Amazon Basin and identified gaps in knowledge and compiled essential (existing) baseline information from which priority interventions and key strategic actions can be developed. In addition, these outputs will be essential to the subprojects developed under Component II and specifically the formulation of the SAP.	(i) The shared knowledge of the key scientific and technical aspects and identification of priority issues of concern related to a sustainable IWRM of the Amazon Basin and (ii) an agreed agenda of issues to be addressed in the SAP.

Subproject II.3 - Transboundary Diagnostic Analysis								
Activity	Sources of funding							
	GEF funding (US\$)		Co-financing (US\$)		M&E (% from GEF funding)		Total Cost (US\$)	
1. TDA Formulation	100,000	18,5 %	440,466	81,5 %	3,000	3 %	540,466	100 %
TOTAL	100,000	18,5 %	440,466	81,5 %	3,000	3 %	540,466	100 %

PART 2

PROJECT DESIGN

Background and Context

The Amazon River Basin, covering almost one-half of the South American continent, extends over more than 6.2 million km², from the eastern part of the Andes mountains in the west to the Atlantic Ocean in the east. The eastern portion of the north Brazilian plateau forms the coastline through which the Amazon discharges to the Atlantic Ocean. The Amazon Basin comprises parts of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela, with the greater portions of the national territories of some of these countries, such as Brazil and Peru, being included in the Basin. The Amazon Basin is composed of a wide range of landscapes with specific climatic and topographic characteristics, and having elevations ranging from sea level to 6,500 meters. The majority of the countries (Bolivia, Ecuador, Colombia and Peru) form the headwater areas of this vast drainage system.

The Amazon River Basin has been defined in various ways. The hydrographic basin is the geographic basis for the interventions to be developed under this proposed Strategic Action Program. Beyond this catchment area, the Amazon Basin is defined by a characteristic biogeography that extends beyond the hydrographic basin. Superimposed upon both of these delineations of Amazonia is the political geography of the eight Basin countries, which have created the Amazon Cooperation Treaty Organization (ACTO) to encourage and promote cooperation within this Basin of global importance. These political jurisdictions form the legal basis for the implementation of the actions to be developed during this proposed Project.

The flow regime of the Amazon River system is still relatively un-impacted by human activities, but is subject to important inter-annual and long-term variability in tropical precipitation, which produces large variations of river water levels. The whole Amazon River System discharges an average of 6,300-km³/per year (approximately 210,000 m³ per second) into the Atlantic Ocean. This volume of water is equal to more than 15% of annual global river runoff, exceeding the combined discharge of the world's nine next largest rivers.

The Amazon River with a length of approximately 7,100 km—from its source (a small Peruvian river, the Apurimac, located about 5,700 m above sea level) to the Atlantic Coast of Brazil—is the world's longest, widest, and deepest river. Sixty-five percent of the Basin's total flow comes from only two sub-basins, the Solimões and Madeira. A further approximately 15% of the flow is provided by the Rio Negro sub-basin, a so-called black water system, which joins the white water system of the Rio Solimões at the famous Meeting of the Waters (*encontro das águas*) near Manaus, Brazil.

Precipitation levels range from 200 mm per year in the Andes to more than 6,000 mm per year in some parts of the foothills and plains of the Basin. Seasonal variations in rainfall are the result of movements in the inter-tropical convergence zone (ITCZ), with periods of maximum precipitation occurring during the months of March through June in the northern hemisphere, and December through March in the southern hemisphere.

The enormous volume of precipitation (over 15 trillion m³ per year) in this hot and humid tropical climate generates a movement of huge volumes of warm superficial water circulating throughout an extensive drainage network covered by dense vegetation, and recharges a widespread and complex groundwater and aquifer system, the so-called Aquifer Amazonas. While there is little scientific knowledge of its full extent, geological data suggest that the

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Aquifer Amazonas could be the largest transboundary groundwater system in South America, covering an area of nearly 4 million km² in Brazil, Bolivia, Colombia, Ecuador, Peru and Venezuela.

As a result of this combination of factors, the Amazon Basin constitutes one of the most important and sensitive contributors to the global hydrological cycle, and, consequently, plays an important role in global climate variability. By affecting this regional tropical circulation system, anthropogenic interventions constitute an important potential contribution to modifying and influencing global climate change. The impacts of these changes also affect the Basin. Risks are not only due to projected climate change at the global level, but also to complex interactions with already existing threats, such as land clearance, forest fragmentation and fire. Over the next several decades there are significant possibilities for large-scale loss of biomass with a concomitant loss of biodiversity and livelihoods for people in the Basin.

Current research confirms that human activities trigger changes in precipitation, evaporation and discharge patterns all over the Basin, causing significant impacts on regional economic development and development opportunities, and increasing the vulnerability of its population to extreme hydrological and climatic events. Extreme climatic events have become more frequent and intense during the past decade. For example, the “El Niño” event of 1997 caused a very intense drought in the region, while the recent drought during 2005 affected large sections of the central and western Amazon Basin. This latter event was the most severe and intense of the past 100 years, and has shown the high vulnerability of the population in the Basin to extreme climate events. The drought dried up entire lagoons, triggered large-scale forest fires, resulted in fish kills, crop failures and losses of protected species, isolated villages, dried up rivers, exacerbated disease, and contributed to severe economic losses. However, the scientific knowledge on the occurrence and effects of these extreme events is still limited and urgently requires a better understanding of the complex interactions between the different factors, which control the ITCZ and affect global precipitation patterns.

Human activities on the landscape have led to a process of rapid biomass destruction (deforestation); however, most of the Basin is still covered by tropical rainforest. This large ecosystem is characterized by great biodiversity of global importance. For example, the Amazon Basin accounts for more than 56% of all broad leaf forest in the world, with more than 30,000 plant species, nearly 2,000 fish species, 60 reptile species, 35 mammal families, and approximately 1,800 bird species currently being recorded. The biotechnological possibilities and the consequent economic potentials of this great reservoir of vegetal and animal species are still underestimated and poorly understood.

The Amazon River Basin is not only the planet's largest, most biologically diverse watershed, but the ocean's largest single source of continental water, nutrients and other elements. The Basin contains the world's largest known reserves of bauxite (nearly 15% of the world total), and significant reserves of oil and other minerals that form the basis of a large-scale extractive industry. In addition, the region continues to support large-scale extraction of timber, agro-industrial production of soybeans, and extensive cattle raising, which exercise increasing pressure on the tropical ecosystems. Few of these activities support secondary industries.

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Today the population of the Amazon Basin is estimated at approximately 28 million inhabitants, mostly concentrated in relatively few urban areas (Belém, Manaus, R o Branco, Porto Velho, Boa Vista, Iquitos, Leticia and Macap , among others), and mainly living in the Brazilian portion of the Basin. The urban centers are all located along the main river and its tributaries. In the upper, Andean part of the Basin, a high percentage of the total population consists of indigenous communities. In the Brazilian lowlands of the Basin, the indigenous population is relatively small compared with the population of *caboclos* and immigrants (especially from the dry northeast regions of Brazil). The indigenous Amazonian nations belong mainly to the following ethno-linguistic groups: Quichua, Inga, Secoya, Huitoto, Andoque, Ynomami, Waimiri, Atroari, Matis, Mayorum, and Ticuna. All of these people groups are considered to be historically disadvantaged groups who should benefit from the protection and environmentally sound management of the Amazon River system.

In part, this situation is the result of historic settlement patterns that moved inland from the oceanic coasts, only to be limited by the geographic barrier created by the Andes, which, until recently, has constrained movement from the coastal areas into the Amazon Basin. Human migration into the Basin also has been constrained by the inhospitable nature of the River to non-indigenous populations. Consequently, the great challenge for the Amazon Basin is the fact that, despite being the world's greatest patrimony of biodiversity and sweet water resources, as well as a huge reservoir of natural resources of all kinds, it is populated by communities whose living conditions remain far below those of the other portions of the Basin countries. This places growing political and economic pressure on national governments not only to deal with an increasing environmental, economic and social complexity in such a sensitive region, but also captures worldwide attention and concerns about the future of the Amazon Basin.

During the last two decades the Amazon Basin experienced an exploding population rate coupled with high levels of immigration into the Basin and extensive transboundary migrations. This has led to a heightened regional socio-cultural identity of the population as well as to social conflicts. In fact, the population growth rates range between 5.2% and 7.2%, well above the national averages of the Amazon Basin countries. Even so, the population density of the Amazon Basin is still very low compared to the national standards.

Development efforts in recent decades also have led to significant changes in the Amazonian environment. The proliferation of roads and highways, the increasing demands of international markets for agricultural and forest products, new waves of immigration and settlement, and oil and gas exploration has contributed to the rapid growth of cities and towns in the region's interior. Nevertheless, these efforts not only were unable to enhance the quality of life of the Amazonian population, but also contributed to the current problems of deforestation, erosion, sedimentation, and water pollution, that are expected to increase. The resulting alteration of water, energy, carbon, and nutrient cycles from changes in, inter alia, plant cover can lead to and exacerbate local, regional, and global climatic and environmental consequences.

To mitigate the negative environmental and social impacts of the ongoing development process, a great number of local, regional and international initiatives have been launched,

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realized by hundreds of NGOs, regional and international organizations, and research institutions. There are thousands of intervention projects and experiences dealing with environmental, social and economic issues, mostly independently executed and isolated from each other. The organization of this enormous quantity of disconnected and dispersed information and data, generated by these activities, in accessible information systems and data banks is one of the important future challenges facing regional stakeholders and decision makers. Assembling, analyzing, and synthesizing this information into an agreed regional strategy for the management of the Amazon Basin and its resources is critical to defining and implementing a regional approach to integrated resource management for the benefit of all.

In this context, the ACTO was assigned the historic mission of enhancing the political, economic and social integration of the Amazon River Basin. This is a vital necessity to mitigate and avoid the increasing process of exploitation of the Basin's resources, destruction of its biodiversity, and degradation of the quality of life of its fast growing population. Despite all the difficulties and obstacles to such a complex process as creating a multinational agency, the political will of the Amazonian countries in establishing a mechanism for the common management of the resources of this important region is a clear statement and most important first step toward identifying and implementing sustainable solutions to these urgent issues.

Considering the local, national, regional and global importance of the Amazonian water resources, and its role in the context of global climate change and variability and human social and economic development, this project constitutes a fundamental element of a process to enable the ACTO to fulfill its mission within this critical global region, and facilitate achievement of the national goals and international undertakings of the eight Basin countries.

Objectives

The overall objective of this project is to formulate a Transboundary Diagnostic Analysis (TDA) of the Amazon Basin, incorporating all available hydrological and hydro-climatological data and information. The core activity of TDA formulation consists in synthesizing the available knowledge on the water resources and climate of the Basin, and providing the technical basis necessary for the formulation of scientifically sound strategic responses that will serve as input for the formulation of the Strategic Action Program.

Environmental Benefits

The development and documentation of a sound technical and scientific understanding of the issues of concern facing the Amazon Basin is a priority step in the formulation of appropriate and relevant responses to environmental concerns in the Basin. During the project development phase, it became very clear that considerable scientific effort has been devoted to understanding elements of the Amazonian ecosystem and its associated hydrological and geological elements. Much of this effort is documented in technical and scientific journals, professional documents, reports, proceedings of meetings, and other literature, very little of which has been compiled and analyzed from the perspective of understanding the Amazon Basin as a unit. Much of the scientific effort, for example, has focused on specific aspects of the river system—such as its unique biology or the characteristics of specific organisms, or on specific areas of the system—such as the confluence of the clear humic waters of the “Black Amazon” with the sediment laden waters of the “White Amazon”, without integrating this

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information into a detailed understanding of the system as a whole. Through the process of TDA formulation, these individual studies, in combination with the targeted research activities of Subproject II.1 and foundational activities for climate change adaptation of Subproject II.2, will synthesize these various studies and research efforts into an understanding of the Amazon Basin. Clearly, the syntheses that have been completed, such as the GEF-supported Global International Waters Assessment (GIWA), will form important contributions within the framework of the TDA, which will complement these with new and additional knowledge to allow determination and prioritization of key transboundary threats facing the Basin.

Overall Outcome

The outcome will be (i) the shared knowledge of the key scientific and technical aspects and identification of priority issues of concern related to a sustainable IWRM of the Amazon Basin and (ii) an agreed agenda of issues to be addressed in the SAP.

Consistency with National/Regional Priorities and Plans

The eight participating countries are signatories to the Amazon Cooperation Treaty (ACT), a legal instrument signed in 1978 for the purpose of fostering integrated and sustainable development of the Amazon River Basin through bilateral or joint activities among the countries involved. Among the Treaty's objectives, particular importance is assigned to the implementation of joint activities and exchanges of information to promote harmonious development in the Amazon territories so as to ensure better environmental protection and the rational use of water resources (Articles V and XV of the ACT). The signatory countries clearly intended that the Amazon Basin and its natural resources be considered as a single entity, even though management actions and activities would remain under the purview of the various countries whose territories are part of the Basin.

Against this background, the countries of the Basin, through the Amazon Cooperation Treaty Organization (ACTO) which was established as the executive agency of the Treaty, have requested support from the Global Environment Facility (GEF) in the preparation of a comprehensive and strategic action program for the management and sustainable utilization of the natural resources of the Basin as a hydrobiogeographic unit. Since the 1980s, the eight Basin countries have implemented a process of systematizing statutes on environmental protection and natural resources development that has been guided to a significant extent by the countries' individual commitments and undertaking with respect to international agreements and conventions. In this context, Bolivian Statute 1.333/92 (environment statute), Brazilian Statute 6.938/81 (national environmental policy statute), Columbian Statute 99/93 (general environmental statute), and Peruvian Statute 28.611/05 have been enacted. Ecuador's Decree 3.516/03 likewise consolidated that country's environmental legislation. Since the 1990s, norms relating to the management of water resources, which adopt the principles of decentralized and participative management, as well as the concept of hydrographic basins as the unit of management, have been promulgated by some member states (Brazilian Statute 9.433/97 and Venezuelan Statute 38.595/07). All of the Basin countries are signatories to various international agreements, including the United Nations Framework Convention on Climate Change and the United Nations Convention on Biological Diversity, as well as various United Nations declarations (e.g., such as those concluded in Stockholm, Rio de Janeiro, and Johannesburg).

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Consistency with the GEF Strategies and Programs

The convergence of the importance of the water resources of the Amazon Basin as a high value global environmental resource and as an area critical to human economic and social development in the Latin American region provides an ideal case study for the conduct of innovative demonstration projects for reducing contamination, reconciling competing uses amongst a wide range of stakeholders, and responding to climate-related variations in water flows and availability—strategic priorities identified under GEF-4. An essential element of this response will be reconciling competing uses and formulating agreed actions by the Basin governments and their communities, while catalyzing the necessary actions and funding to resolve shared transboundary concerns. The project, therefore, is wholly consistent with Strategic Objective 1, and contributes to the initiation of actions consistent with Strategic Objective 2, of the Strategic Programs for GEF-4.

Coordination and Linkages to the Umbrella Project

Each of the Basin countries currently implements a set of national policies and laws through appropriate national and local level institutions that meet minimum standards of practice established within each country. In addition, numerous universities, research organizations—both governmental and nongovernmental, and interest groups, including private sector corporations, are undertaking studies and research projects in the Basin that are centered around mission-specific or sectorally-focused purposes. Examples of these latter types of research efforts would be the conservation programs carried out by IUCN and TNC, and petroleum exploration carried out by oil companies, amongst others. There is limited exchange of information or consideration of the research results within the context of the Basin as a whole. The result is discontinuities in regulations, enforcement, economic development, and resource management activities that can limit the potential for the water resources of the Amazon Basin to reach their highest and best uses. These discontinuities also reduce the opportunities available to the Basin countries to maximize the social and economic benefits associated with the sustainable use of these resources.

Notwithstanding this situation, the national plans and policies of the Basin countries, as articulated through the ACT, do seek to promote the joint utilization and optimization of the Basin's resources. Such joint utilization must be predicated upon a common understanding of the priority issues facing the Basin, which in turn must be firmly grounded on shared and accepted scientific and technical knowledge. The outcome of this subproject, the agreed scientific and technical understanding of the priority transboundary issues facing the Basin countries, is wholly consistent with the national undertakings of the Basin countries in this regional context and forms the firm foundation upon which strategic responses can be formulated. This outcome is consistent with the country undertakings with respect to, *inter alia*, the Millennium Development Goals as agreed at the World Summit on Sustainable Development (WSSD) which identified water resources as a key component for economic development and poverty reduction and which form the priority activities under GEF-4.

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Activities, Outputs, Outcomes:

Activity: II.3.1 TDA Formulation

This activity comprises three major elements: (i) identification and synthesis of existing knowledge on the natural resource base of the Amazon Basin; (ii) synthesis and integration of the outputs derived from the targeted research and foundational activities being undertaken within Subprojects II.1 and II.2 and, (iii) analysis and determination of priority transboundary concerns and strategic responses for inclusion in the SAP.

The outputs of this action will be: the documented scientific knowledge on the water resources and hydro-meteorological conditions of the Amazon Basin and identified gaps in knowledge and compiled essential (existing) baseline information from which priority interventions and key strategic actions can be developed. In addition, these outputs will be essential to the subprojects developed under Component II and specifically the formulation of the SAP.

The outcomes of this action will be: (i) The shared knowledge of the key scientific and technical aspects and identification of priority issues of concern related to a sustainable IWRM of the Amazon Basin and (ii) an agreed agenda of issues to be addressed in the SAP.

Total Cost: US \$ 546,466 – GEF Grant: US \$ 100,000 – Co-financing: US \$ 446,466

Activity II.3.1. Element 1

Identification and synthesis of existing data and information. This element will contract an assistant to the PCU, who, building upon the results of the subprojects of the Components I and II will assemble, document, and synthesize the existing database on IWRM and related issues of the Amazon Basin. This element will contribute to the identification of knowledge gaps and together with new data to be acquired under Element 2, will form a contribution to the integrated information system (IIS) to be developed under Component III, as well as informing the diagnostic analysis necessary to define priority concerns within the Amazon Basin to be undertaken by Element 3.

The outputs of these actions will be: a synthesis report on the state of knowledge of the natural resource base of the Amazon Basin, which will form a contribution to the integrated information system to be developed under Component III.

The outcomes of these actions will enable the conduct of the diagnostic analysis, which is an essential prerequisite for the formulation of an intervention strategy necessary to integrate water resources management activities within the Amazon Basin.

Activity II.3.1. Element 2

Synthesis and integration of the outputs derived from the targeted research and foundational activities. In addition to the data to be acquired under Element 1, new information on transboundary concerns will be generated as outputs of this subproject. These outputs will be focused on knowledge of the key biological, economic, ecological issues

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related to IWRM, groundwater systems, sediment transport dynamics and knowledge of hotspots exposed to greatest risk from natural climate change related hazards will be synthesized and integrated into a common framework of available data to form a comprehensive knowledge base on the Amazon Basin as a single unitary entity. This knowledge, an input to Element 3 below, will ultimately result in the formulation of a program of strategic actions that will allow governmental and nongovernmental entities at the Basin, national, and local levels to implement IWRM at the level of the Amazon Basin, and contribute to the informational mechanisms that will ensure appropriate consultation and exchange of information to enable the application of the principles of IWRM in the Basin.

The outputs of these actions will be: a synthesis report on the state of knowledge of those elements of the natural resource base of the Amazon Basin that had been identified as major gaps in understanding during the project preparation activities. This knowledge also will form a contribution to the integrated information system to be developed under Component III.

The outcomes of these actions will enable the conduct of the diagnostic analysis, which is an essential prerequisite for the formulation of an intervention strategy necessary to integrate water resources management activities within the Amazon Basin.

Activity II.3.1. Element 3

Analysis and determination of priority transboundary concerns. The data acquired under Elements 1 and 2 will be consolidated, synthesized, and analyzed at the level of the Amazon Basin to develop proposals for the strategic responses necessary for the application of the principles of IWRM within the Amazon Basin. The results will be presented on a Workshop, edited and published.

The output of these actions will be: a documented diagnostic analysis identifying the key transboundary concerns to be addressed by the SAP.

The outcomes of these actions will enable the development of the SAP, with focus on the institutional development needs within the Basin.

Activity I.3.1 - TDA Formulation							
Budget Item	Total GEF Funding	Year 1	Year 2	Year 3	Year 4	Co-financing/Counterpart	Total
Consultant for TDA formulation	48,000	-	-	24,000	24,000	-	48,000
Subscription of scientific journals, journal database:	10,000	-	-	10,000	-	300,000	310,000
Validation Workshop	19,100	-	-	-	19,100	-	19,100
Editing and publishing the TDA Document	19,900	-	-	-	19,900	146,466	166,366
Sub-Total	97,000	-	-	34,000	63,000	446,466	543,466
M&E	3,000	-	-	1,500	1,500	-	3,000
Total	100,000	-	-	35,500	64,500	446,466	546,466

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Activity II.3

Project objective and Outcomes	Description of indicator	Baseline level	Mid-term target	End-of-project target
Objective II.3 Key issues of transboundary concern relating to water resources management and management of climate change impacts are identified and prioritized	TDA is completed	Knowledge of critical issues is mission-specific and/or sectorally-focused; Limited knowledge is available at the level of the Basin	Targeted research and foundational activities being implemented and knowledge becoming available for inclusion in the TDA	Knowledge is available for use in the TDA; the TDA informs the strategies included within the SAP
Outcome 1: Scientific and technical knowledge necessary to create an agreed agenda of issues needing to be addressed in preparing the SAP is available	TDA is published	Few basin-level assessments available	Existing knowledge is synthesized and available for use in the TDA	TDA informs the strategies included within the SAP; Knowledge base validated by the scientific community

Project Outputs	Description of indicator	Baseline level	Mid-term target	End-of-project target
Output 1: Existing knowledge base compiled	Synthesis report prepared and published	Limited basin-level information compiled	Data sources are identified and acquired	Data are available for use in the TDA and are included in the integrated information system
Output 2: New knowledge from targeted research and foundational activities integrated into the knowledge base	Synthesis report prepared and published	No assessment of Basin management organizations exist	--	Data are available for use in the TDA and are included in the integrated information system
Output 3: TDA formulated	TDA published	Informal	--	TDA identified priority transboundary concerns to be addressed in SAP

Incremental Cost Analysis

Baseline

The stakeholders of the Amazon Basin have completed and ongoing scientific and technical activities within the Basin that serve multiple purposes, including provision of proprietary knowledge, support to ongoing and proposed interventions, and, in the case of the academic community, development of skills that can be retained or utilized in the pursuit of knowledge. Little formal basin-level synthesis has been undertaken to identify, quantify, and prioritize issues of concern at the Basin level. Thus, there is a gap in the knowledge available to assist governments and individuals in managing the land and water resources of this shared Basin.

Increment

The need for coordinated action by governments at the Basin, national, and local levels is necessary for the optimization of opportunities for integrated management of the land and water resources of the Basin, and for integrated management of the natural resources of the Amazon Basin. Knowledge of the priority concerns facing the Basin is an essential element for creating a sound scientific and technical foundation for such action. This knowledge, likewise, is fundamental to the pursuit of sustainable opportunities for economic development in the Basin. Thus, the acquisition and synthesis of knowledge is required to undertake a transboundary diagnostic analysis (TDA) and support the development of strategic actions necessary to contribute to the sustainable use and development of the water resources of the Amazon Basin in a manner consistent with the principles of IWRM.

Alternative

Under the alternative scenario, the information needs for the conduct of a transboundary diagnostic analysis are met through a combination of synthesis of existing knowledge, acquisition of new information through targeted research, and completion of foundational activities relating to climate change adaptation. Nevertheless, information without analysis will not fulfill the need for an agreed scientific and technical foundation for the determination of priority strategic actions at the level of the Amazon Basin. Consequently, under the alternative scenario, the information available and acquired will be synthesized and analyzed to prioritize issues of concern that can be presented to, and agreed by, stakeholders throughout the Basin. This agreement is necessary to inform and implement IWRM in the Amazon Basin. This agreement also is an essential element in the formulation of strategic actions for the integrated management of the Amazon Basin. Consequently, the compilation and interpretation of specific information through the TDA process is a fundamental action to enable the preparation of a sound strategy for the shared management of the Basin.

Incremental Reasoning

A sound technical and scientific basis for the development of innovative and shared management strategies for the Amazon Basin will enable the ACTO and its member countries to develop and implement appropriate measures to manage the land and water resources of the Amazon Basin in a sustainable manner. The knowledge to be compiled through these actions initially will allow informal communications and interactions between land and water resource management agencies in the Basin, and ultimately contribute to meeting the information needs of all stakeholders engaged in land and water resource management within the Basin.

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Because this diagnostic analysis is conducted at the level of the Amazon Basin, limited national benefit will accrue from the compilation of information on the land and water resources in the Basin. The value of such benefits to individual stakeholders greatly exceeds the commitment of national funds to the conduct of the activities that underpin the knowledge base to be utilized in the diagnostic analysis. In the absence of the basin-level approach proposed in this project, the acquisition and utilization of knowledge on the land and water resources of the Basin by stakeholders will remain fragmented. The application of GEF resources represents an appropriate application of incremental funding in the acquisition and dissemination of knowledge necessary to implement the principles of IWRM in the Basin. This knowledge is the foundation upon which strategic actions can be built.

Budget

Co-financing

Sources of Co-financing	Type of Co-financing	Amount
Project Government Contribution	In-kind	140,466
Bilateral Aid Agency(ies)	(select)	
Multilateral Agency(ies)	(select)	
Private Sector	(select)	
NGO	(select)	
Others	In-kind	250,000
Total co-financing		390,466

Project Management Budget

Cost Items	GEF (\$)	Other sources (\$)	Project total (\$)
Personnel	0	0	0
Office facilities, equipment, vehicles and communications	0	0	0
Travel Cost for Project Management	0	0	0
Total	0	0	0

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Consultants working for technical assistance components

Component	Estimated person weeks	GEF(\$)	Other sources (\$)	Project total (\$)
Local consultants - <i>provide unit costs</i>				
International consultants - <i>provide unit costs</i>				
Total				

Consultants to be hired for the project

<i>Position Titles</i>	<i>\$/ person week</i>	<i>Estimated person weeks</i>	<i>Tasks to be performed</i>
For Project Management			
Local			
International			
For Technical Assistance			
Local			
International			

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Timetable

Subproject II.3 Transboundary Diagnostic Analysis / Activities	YEAR 01				YEAR 02				YEAR 03				YEAR 04			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter												
Activity II.3.1 TDA Formulation																
Identification and synthesis of existing knowledge																
Synthesis and Integration of the outputs derived from the targeted research and foundational activities																
Analysis and determination of priority transboundary concerns																
Publishing/dissemination of results																
Reports to the PCU																

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Cost Effectiveness

This activity continues the process of knowledge acquisition and synthesis that has been initiated within the Amazon Basin by several of the Basin countries and ACTO, and which was initiated through the project preparation activities employed in the articulation of this project. This activity is consistent with the mandate given ACTO by the member states to promote the rational use of water resources, taking into account the role that Amazonian rivers play in the social and economic development of the region, as well as with the declarations of the contracting parties that they will make common efforts for the rational use of water resources (ACT, Article V). By drawing on the existing scientific literature and gaining access to information currently held by Basin stakeholders, there was limited and tightly focused need for new or additional information with which to conduct the diagnostic analysis of transboundary priority concerns. This additional information will be developed through complementary subprojects contained within Component II of this project. By publishing this information within the TDA and through the integrated information system to be developed under Component III, this knowledge base will be available to other stakeholders and interested parties in support of actions and activities affecting the Amazon Basin and other large river basins worldwide.

Risk Analysis

Risk	Rating (L/M/H)	Risk Mitigation Measures
Lack of access to information limits the application of knowledge at the Basin level	Low	Involvement of Basin stakeholders
Targeted research and foundational activities fail to provide timely information	Moderate	Creation of an effective project management team (Component IV); provision of effective and timely project oversight; application of adaptive management principles
Information is not incorporated into the integrated information system	Low	Creation of an effective project management team (Components III and IV)

Sustainability

Knowledge is not static. However, the scientific method, which underlies and supports the conduct of IWRM in large river basins, is such that the knowledge base will be utilized in the formulation of future actions. The availability of this knowledge base, through *inter alia* an integrated informational system, will contribute to ensuring that current knowledge is effectively employed by Basin stakeholders in identifying and executing sustainable actions and activities within the Basin. Housing the information system within the designated basin management agency (ACTO) will contribute to ensuring that the available knowledge base is maintained and current, and readily available for use in integrated land and water resources management programs, plans, and decision-making practices.

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Replicability

Utilization of current and available scientific and technical knowledge in the development of the transboundary diagnostic analysis will contribute to a focus on agreed priority issues. In addition, utilization of this information at the national levels within the Amazon Basin will contribute to the adoption of sound land and water resource management practices and policies at the national and local levels. Dissemination of this knowledge through basin information systems, as proposed under Component III, will encourage joint action at the national and local levels to the benefit of the Basin as a whole.

Execution Arrangements

The Project Coordination Unit (PCU) will coordinate execution of the foundational activity projects under the oversight of the Executing Agency (EA). The PCU will be responsible for the day-to-day execution of the project activities, including project quality assurance and quality control (QA/QC). Subject to the recommendation of the PCU, the EA will be responsible for the contracting of appropriate personnel, and the disbursement and accounting of funds. With input from the PCU, the EA will compile and submit periodic financial reports and supporting documentation to UNEP, as the GEF Implementing Agency (IA).

Public Participation Mechanisms

This subproject is designed to develop the TDA, and contribute to a scientifically- and technically-sound SAP. Knowledge, documented and prioritized within the TDA, is necessary to integrate the principles of IWRM into the land and water resource management activities and decisions of both governmental and nongovernmental stakeholders in the Basin. Through the conduct of the data gathering elements of this Activity, key scientific and technical stakeholders will contribute to the establishment of the knowledge base; through the data dissemination elements set forth under Component III, key stakeholders will have access to the knowledge base. Access to, and the subsequent validation of the knowledge base by stakeholders, will complement the determination of priority actions to be identified through the TDA process. Dissemination of this knowledge will encourage public officials, legislators, and decision-makers to support and participate in sound land and water resource management practices and local and individual decision-making. The dissemination of this output will form part of the public information and education strategy to be developed as an output of Component III.

Monitoring and Evaluation (M&E)

Day-to-day monitoring of project activities will be conducted by the PCU, who will be responsible for technical oversight, QA/QC, and reporting in accordance with the requirements as set forth in the umbrella project. IA staff, in coordination with the EA and PCU staff, will conduct semi-annual monitoring missions to ensure that project activities and reporting are executed in a timely and professional manner. These monitoring missions will be timed to coincide (precede) with Steering Committee meetings to allow for dynamic and adaptive management of the project. A mid-term evaluation will be conducted under the auspices of the IA, with the evaluation report utilizing the mid-term targets identified in the Logical Framework Analysis to ensure that the execution of the project is proceeding in accordance with the project design. The results of this evaluation will be communicated to the PCU at the Steering Committee meeting immediately following the evaluation mission. This

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evaluation will include recommendations for changes to the project, based upon the outputs and outcomes achieved through the period of the mid-term evaluation. Upon completion of the project activities, the IA will complete a final evaluation.

PART 3

PROJECT ANNEXES

**Integrated and Sustainable Management of Transboundary Water Resources
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The M&E Matrix

Subproject II.3 Transboundary Diagnostic Analysis	Description of Indicator	Baseline Level	Mid-term Target	End-of-project Target
<p>Objective II.3.1: Key issues of transboundary concern relating to water resources management and management of climate change impacts are identified and prioritized</p>	<ul style="list-style-type: none"> ▪ (S) TDA is completed 	<ul style="list-style-type: none"> ▪ Knowledge of critical issues is mission-specific and/or sectorally-focused; Limited knowledge is available at the level of the Basin 	<ul style="list-style-type: none"> ▪ Targeted research and foundational activities being implemented and knowledge becoming available for inclusion in the TDA 	<ul style="list-style-type: none"> ▪ Knowledge is available for use in the TDA ▪ The TDA informs the strategies included within the SAP
<p>Outcome II.3.1: TDA is validated by basin constituency, including national ministries</p>	<ul style="list-style-type: none"> ▪ (S) TDA is published 	<ul style="list-style-type: none"> ▪ Basin-level assessments and existing information ▪ Outputs and results from pilot activities ▪ Findings from targeted research 	<ul style="list-style-type: none"> ▪ Existing knowledge is synthesized and available for use in the TDA 	<ul style="list-style-type: none"> ▪ TDA informs the strategies included within the SAP ▪ Knowledge base validated by the scientific community
<p>Outputs II.3.1: Documented scientific knowledge of water resources and hydro-meteorological conditions; identified gaps in knowledge identified; essential existing baseline information from which priority interventions and key strategic actions can be developed compiled</p>	<ul style="list-style-type: none"> ▪ (S) Existing information 	<ul style="list-style-type: none"> ▪ Limited basin-level information compiled 	<ul style="list-style-type: none"> ▪ Data sources are identified and acquired 	<ul style="list-style-type: none"> ▪ Data are available for use in the TDA and are included in the integrated information system
	<ul style="list-style-type: none"> ▪ (S) Synthesized report 	<ul style="list-style-type: none"> ▪ Outputs derived from the targeted research and foundational activities ▪ Existing information and data from the Basin 	<ul style="list-style-type: none"> ▪ Draft TDA 	<ul style="list-style-type: none"> ▪ Data are available for use in the TDA and are included in the integrated information system
	<ul style="list-style-type: none"> ▪ (T) Principal causes of priority transboundary degradation validated 	<ul style="list-style-type: none"> ▪ Draft TDA 	<ul style="list-style-type: none"> ▪ Validation Workshop 1 	<ul style="list-style-type: none"> ▪ TDA identified priority transboundary concerns to be addressed in SAP

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International Waters Results Template for Foundational/Capacity Building Projects

PROCESS OUTCOMES AND INDICATORS

Process INDICATORS	Process INDICATORS (report vs. baseline if possible)	
Project Element	Catalytic	Project
Stakeholders provide information necessary for the compilation of the TDA; TDA validated by the stakeholders; TDA identified priority transboundary issues of concern to be addressed in the SAP	Knowledge base is available for use by stakeholders in decision making; stakeholder decisions informed by and consistent with the practice of IWRM	TDA is compiled, agreed, and validated by stakeholders

STRESS REDUCTION OUTCOMES AND INDICATORS

Stress Reduction OUTCOMES	Stress Reduction INDICATORS (report vs. baseline if possible)	
Project Element	Catalytic	Project
TDA identifies key transboundary stressors; priority stressors are addressed in the SAP	Stakeholders build on the knowledge base	SAP addresses priority transboundary concerns

ENVIRONMENTAL/WATER RESOURCES STATUS OUTCOMES AND INDICATORS

Environmental/Water Resources (& Socioeconomic) Status OUTCOMES	Environmental/Water Resources (& Socioeconomic) Status INDICATORS	
Project	Catalytic	Project
Priority threats to sustainable utilization of the natural resource base of the Amazon Basin are identified; knowledge is disseminated and available for use by stakeholders	Stakeholder decisions informed by and consistent with the practice of IWRM	SAP addresses priority transboundary concerns

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Logical Framework Matrix

Subproject II.3 Outcome Transboundary Diagnostic Analysis	Outcome Indicator	Means of Verification	Assumptions/Risks
Principal causes and effects of priority transboundary degradation issues in the Amazon River Basin identified based on existing information, and project findings from targeted research, visioning process, analysis of the legal and institutional framework, and the vulnerability assessment	<ul style="list-style-type: none"> ▪ TDA defines the strategies included within the SAP ▪ TDA is validated by Basin constituency, including national ministries 	<ul style="list-style-type: none"> ▪ TDA document including an assessment of climate change impacts on the Basin ▪ Minutes of the workshop ratifying the content of the TDA and climate change impact assessment 	<ul style="list-style-type: none"> ▪ All stakeholders are committed to the activity and will collaborate and participate actively in it

Activities & Outputs	Achievement Indicator	Means of Verification	Assumptions/Risks
<p>Activity II.3.1: TDA Formulation</p> <p>Output II.3.1: Documented scientific knowledge of water resources and hydro-meteorological conditions; identified gaps in knowledge identified; essential existing baseline information from which priority interventions and key strategic actions can be developed compiled</p>	<ol style="list-style-type: none"> 1) Existing information identified and synthesized 2) Outputs derived from the targeted research and foundational activities integrated and synthesized 3) Principal causes of priority transboundary degradation validated 	<ul style="list-style-type: none"> ▪ The TDA document available on the project website and in published form with the PCU and ACTO ▪ Minutes of the workshop ratifying the content of the TDA available with the PCU, ACTO and on the Internet 	<ul style="list-style-type: none"> ▪ Governments support the specific targeted research performed, which they subsequently ratify ▪ The data and information gathered and produced and their analysis are reliable ▪ Governments are committed to uptake the results of analysis

Maps

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Fig.1 The hydrographic Amazon River Basin (Revenga, 1998)



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