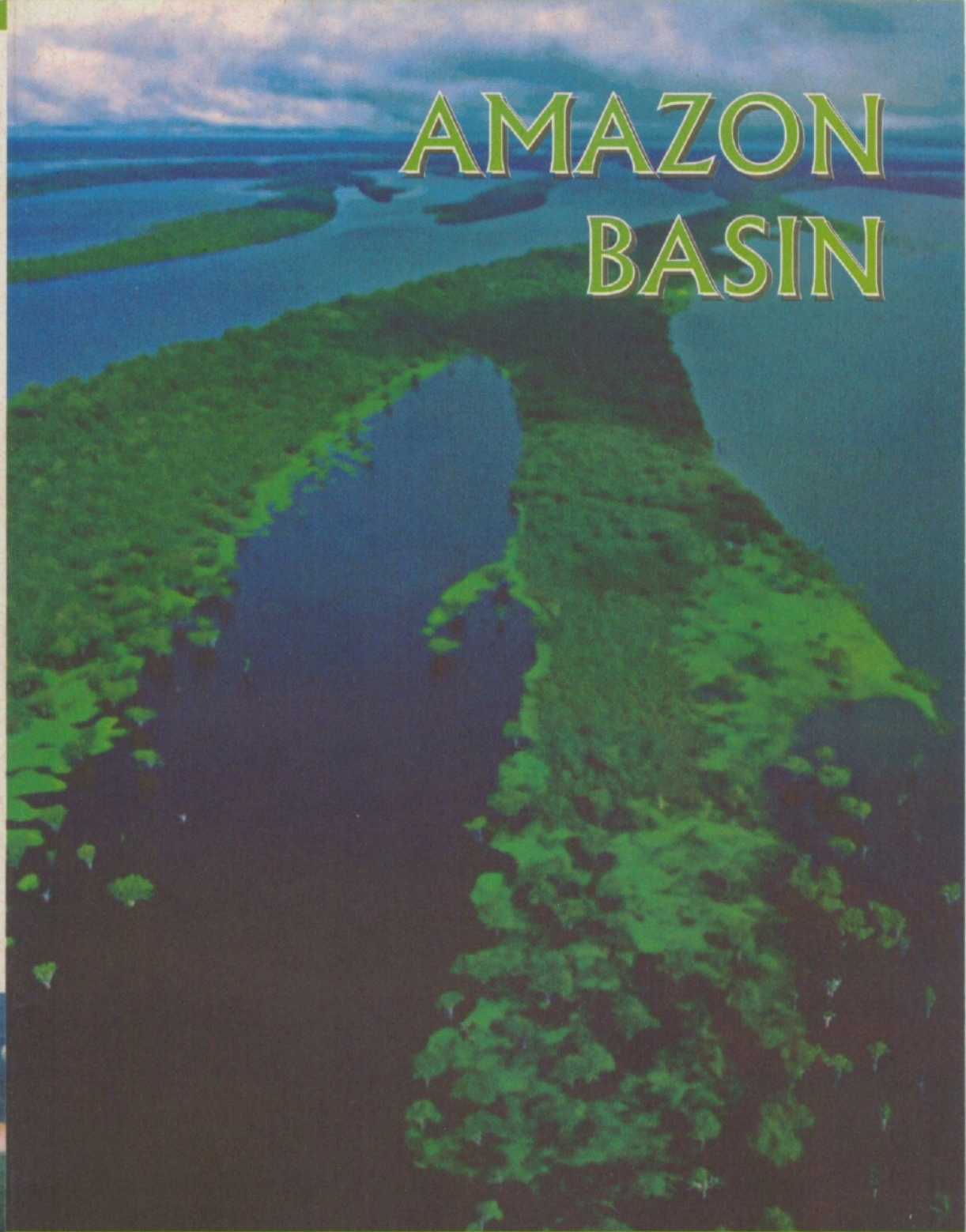


AMAZON BASIN



Other Initiatives

Large Scale Biosphere-Atmosphere Experiment in Amazonia – LBA:
The Large-Scale Biosphere - Atmosphere Experiment in Amazonia (LBA) is an international research initiative conducted from 1995-2005 and led by the INPE (Brazilian National Institute for Space Research). The LBA Project encompassed several scientific disciplines, or components. The LBA-ECO component was focused on how the tropical forest conversion, regrowth, and selective logging influence carbon storage, nutrient dynamics, trace gas fluxes, and the prospect for sustainable land use in Amazonia.

PRODES - Project: Satellite Monitoring of the Amazon Forest:
Carried out since 1998 by the Brazilian National Institute for Space Research, the project produces annual estimates of deforestation rates in the Amazon Forest using satellite images, pointing out the location and extent of deforestation in the Amazon Region, allowing the government to focus its actions on the deforestation control.

Hydrology of the Amazon Basin Project - HiBAm
The HiBAm project, carried out since 1997, is a result of technical cooperation between Brazil, Bolivia, Ecuador, Peru and France, and aims to develop hydrological studies in the Amazon River Basin, including aspects such as sedimentology and water geochemistry.

Pilot Program for Rain Forest Protection in Brazil & the Sustainable Amazon Program
Implemented since 1992, this program is a joint venture between the Brazilian Government and the international community and aims to demonstrate the compatibility of conservation of biodiversity and sustainable development of the Amazon Region, reducing the deforestation rates and its environmental impacts. It is financed by the G7, the European Union and the Netherlands, whilst the Sustainable Amazon Program is part of the Pilot Program.

The Brazilian National Water Resources Plan
The Brazilian National Water Resources Plan encompasses a set of programs for the development of sustainable use of water resources in Brazil and includes a regional program specially designed to the Amazon Basin, due to its singular characteristics and importance.

National Program for the Development of Water Resources – Proágua Nacional
The program, financed by The World Bank, aims to promote efficient allocation and rational and sustainable use and participatory management of water resources in Brazil and its States and to provide reliable and sustainable water supply in selected areas. In the Amazon Basin, it also intends to strengthen the institutional framework of water resources management in the region.

The Integrated and Sustainable Management of Transboundary Water Resources in the Amazon River Basin – The GEF Amazonas Project

Aiming to strengthen the institutional framework for planning and executing, in a coordinated and coherent manner, activities for the protection and sustainable management of the land and water resources of the Amazon River Basin, it was proposed de GEF Amazonas Project. This project endeavors to realize a shared vision for sustainable development in the region, based upon the protection and integrated management of transboundary water resources and adaptation to climatic changes.

ACTO is the agency designated by the eight signatory countries of the Amazon Cooperation Treaty as the local executing agency for this project. The ACTO will receive technical and administrative support in developing and implementing the project from the General Secretariat of the Organization of American States, through the Unit for Sustainable Development and Environment, and the OAS National Offices in the participating countries, and from the United Nations Environment Program (UNEP), as GEF implementing agency for this project.

The institutions responsible for water resources management in each country—the designated national focal points for the Inter-American Water Resource Network (IWRN) - act as the National Executing Agencies for the project. These institutions have responsibility for monitoring and executing the technical activities of the project, in coordination with and supported by the Permanent National Commissions, as described early. The National Executing Agencies have been identified as follows:

- Bolivia: National Hydrology and Meteorology Service
- Brazil: National Water Agency of Brazil (ANA)
- Colombia: Institute of Hydrology, Meteorology, and Environmental Studies
- Ecuador: National Water Resources Board
- Guyana: Guyana Water Authority/Hydraulic Research Division
- Peru: National Institute of Natural Resources (INRENA)
- Suriname: Ministry of Public Works
- Venezuela: Directorate of Hydrographic Basins/Ministry of Environment.

SIPAM:

The System for Protection of the Amazon Region (SIPAM) is a Brazilian institution created to collect and integrate information about Amazon and to provide update knowledge in order to promote articulation, planning and coordination of the government actions in the region, aiming its protection, social inclusion and sustainable development. It is made up of a net of integrated remote sensing systems, radars, meteorological stations and data loggers that covers the entire region and by which it is possible the complete monitoring and on-line information on the Amazon Region.

The National Conservancy Units System- SNUC & Protected Areas in Amazon Region Program – ARPA

The National Conservancy Units System was established by the Brazilian Federal Law nº 9985/00. It is an instrument of the Brazilian National Environmental Policy that sets criteria and normative for creation, implementation and management of conservancy units in Brazil. This system aims the long term conservation in situ of biodiversity and sets the organization of the conservancy areas according to its management objectives and main uses: complete protection and sustainable use.

Protected Areas in Amazon Region Program – ARPA is a Brazilian program aimed at expansion, consolidation and keeping up of part of the National Conservancy Units System, encompassing more than 50 million ha and promoting sustainable development. The main activities carried out include identification of areas where representative samples of biodiversity can be found, promotion, creation and consolidation of conservancy areas, promotion of strategies for financial viability to the conservancy areas and monitoring and assessment of the effectiveness of the actions executed.

HOW DOES THE AMAZON COMPARE WITH OTHER RIVER BASINS?

Water Resources

Hydrological Monitoring

The National Water Agency of Brazil (ANA) holds the one of the largest hydrological monitoring network in the world, with more than 450 raingages and 270 streamgages in the basin, most of than encompassing data-logger and satellite transmission. On line hydrological information is available on the web-site <http://hidroweb.ana.gov.br/>



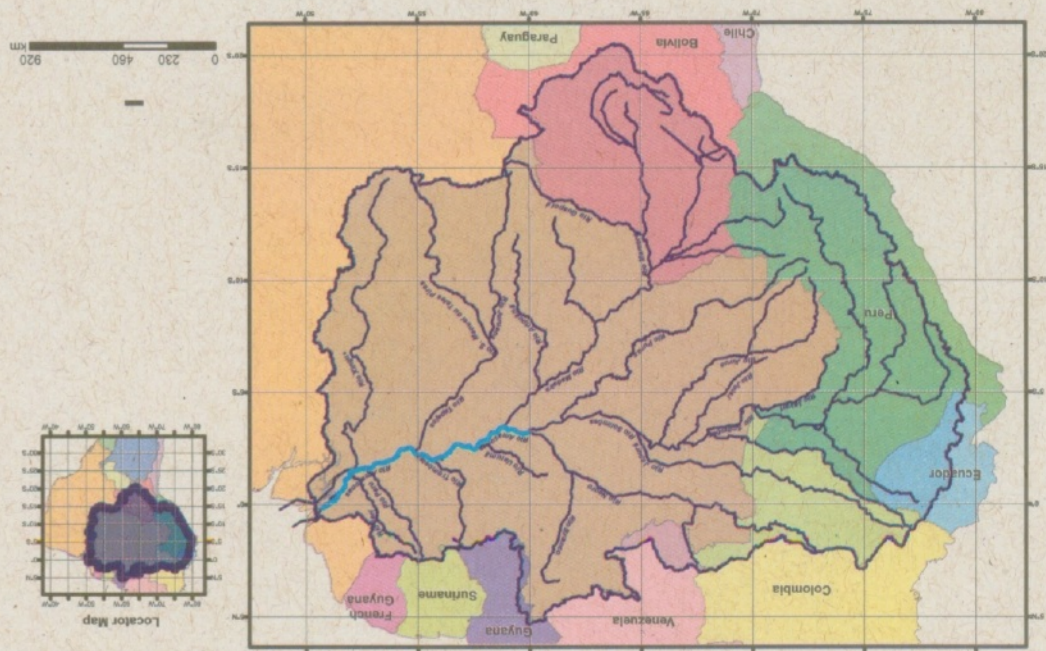
Training

ANA promotes the International Course for Discharge Measurement in Big Rivers, in Manacapuru, state of Amazonas. Since its beginning, more than 600 people from South America and other regions of the world were trained in techniques of flow measurement in rivers where the discharges may reach values such as 500,000 m³/s in the estuary of the Amazon River.

The Organization of the Amazon Cooperation Treaty (ACTO)

Bolivia, Brazil, Colombia, Ecuador, Guiana, Peru, Suriname and Venezuela are signatories to the Amazon Cooperation Treaty (ACT), a legal instrument signed in 1978 with 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 insure better environmental protection and the rational use of water resources. The Organization of the Amazon Cooperation Treaty (ACTO) was created in 1998 by means of a Protocol of Amendment of the ACT as a mechanism for institutionally improving and strengthening the process of cooperation among the countries within the framework of the ACT.

THE AMAZON RIVER BASIN



The Amazon River Basin is the largest river basin of the world and occupies the entire central and eastern area of South America, lying to the east of the Andes mountain range and extending from the Guyana Plateau in the north to the Brazilian Plateau in the south. The basin covers more than 6,100,000 km², or 44% of the land area of the South American continent, extending into Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela.

WHAT IS THE IMPORTANCE OF THE AMAZON BASIN?

Most of the basin is covered by tropical rainforests, accounting for more than 56% of all broad leaf forests in the world. Its ecosystems are characterized by great biodiversity, with more than 30,000 plant species, nearly 2,000 fish species, 60 reptile species, 35 mammal families, and approximately 1,800 bird species.

The Amazon River basin is also an important source of natural resources for human-economic development. It contains some of the world's largest known reserves of bauxite (nearly 15% of the world total), and industries within the basin are some of the largest suppliers of iron and steel to world markets. Wood and wood by-products, gold, and tin are other products from the basin that are increasingly in demand for export.

The denser vegetation and large volumes of water that circulate throughout its extensive drainage network produce clouds over the basin that generate high levels of precipitation and release heat, affecting the regional climate through tropical circulation patterns.

The population of the Amazon River Basin is estimated at approximately 10 million persons, mostly concentrated in urban and semi-urban areas (Iquitos, Leticia, Manaus, Rio Branco, Porto Velho, Boa Vista, and Macapa), among others along the banks of the river and its main tributaries. A high percentage of the total population consists of indigenous communities settled mainly along the banks of the river and its tributaries, and belonging, inter alia, to the following ethnolinguistic groups: Quichua, Inga, Secoya, Huitoto, Andoque, Yoronm, Waimiri, Aroara, Matsigenka, Mayoruna, and Tucuna. In recent decades, there has been an accelerated process of immigration into, and settlement within, the Amazon River Basin. Population growth rates range from 5.2% to 7.2%, well above the national averages for the Amazon countries. These factors, combined with the high levels of poverty, place constant pressure on the region's natural resources, and in particular on residual native forests.

The Amazon River basin encompasses more than 15,000 km of waterways. The most important are the Aracuzas, Solimões, Madeira, Negro, Branco, Purus, Juruá, Tapajós, Trombetas and Xingu waterways. They are responsible for the transport of most of the passengers in the Amazon River Basin as many localities are only reached through them and many others only during the floods period. The transport of cargoes is also very important. Products to export, such as oil and its end products, soybean, and bulk minerals, for instance bauxite, can only reach their final destination through those waterways.

Great part of the hydroelectricity potential of South America also comes from the Amazon River Basin, reaching up to 100,000 MW. Currently, there are 24 hydroelectric power stations in operation, with installed power of 7,722 MW and, in Brazil alone, it is planned the construction of three new power stations (Ururu and Santo Antonio, in Madeira River and Belo Monte in Xingu River), increasing the current generating capacity in 18,662 MW.

WHAT ARE ITS TRIBUTARIES?



The Amazon river system encompasses more than 1,000 tributaries and is divided into 10 sub-basins, the largest being Negro, Xingú, Madeira, Tapajós, and Juruá sub-basins. The Negro River sub-basin (comprised of the Negro and Branco river systems) is the largest in area, accounting for nearly one-fourth of the total land surface of the basin. In terms of discharge, from a hydrological standpoint, an estimated 65% of the Basin's total flows into the Atlantic Ocean comes from the Solimões and Madeira Negro River sub-basin. The greatest demand for water is found in the Madeira, Tapajós, and Xingú sub-basins, where irrigation accounts for 90% of the demand.

WHAT IS THE MAIN CHALLENGE OF MANAGING THE AMAZON RIVER BASIN?

The main challenge is to utilize the potential water resources, taking into account its multiple uses, in order to promote the sustainable development of the basin, harmoniously with the basin countries.

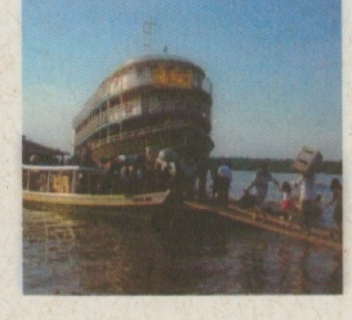
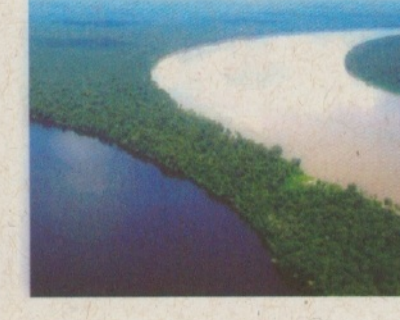
Expansion of human activities and consequent impacts in the urban environments and the political and social organization of institutions in the basin are the main water management issues. Among those related to the expansion of human activities, it can be cited:

- water pollution, specially from mining residues and discharge of untreated sewage into the rivers in major cities of the basin;
- communities and natural habitats unbalanced, due mainly to deforestation, which, in turn, causes soil losses and erosion, loss of biodiversity and silt up of rivers. This disturbance can also be caused by overexploitation of fishing, loss of areas with high biodiversity and conversion of forest into cropland and pasturands, among others;
- Soil degradation, caused by expansion of agriculture, mining and lack of best practices in soil conservation, resulting in silt up of rivers.

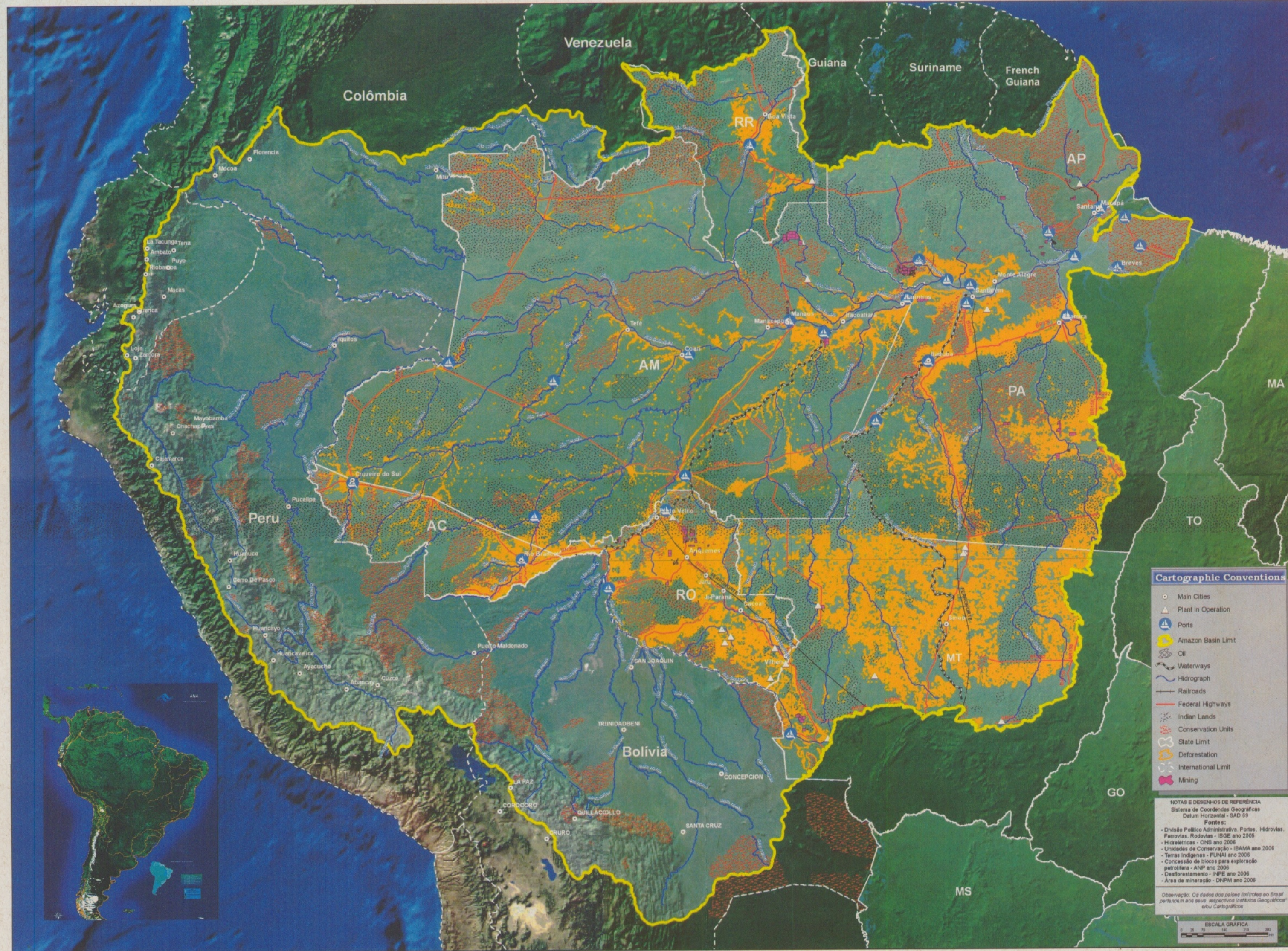
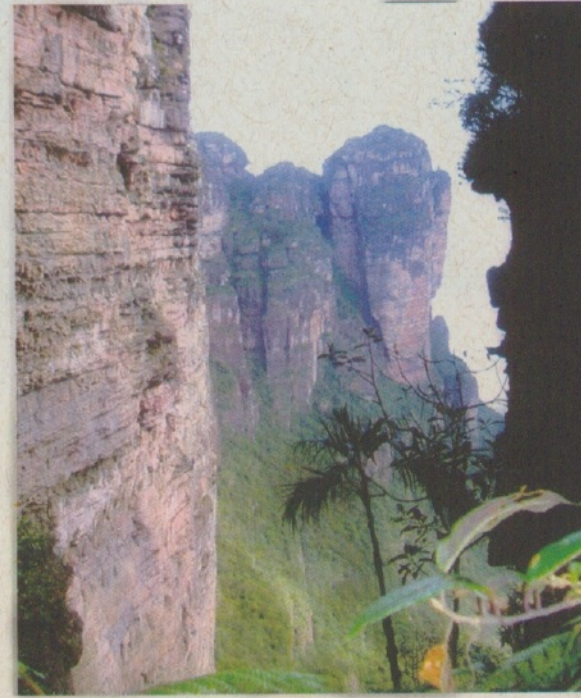
On the other hand, the aspect regarding the hydrological cycle can be summarized as follows:

- Critical events, due to the intense periods of droughts and floods and lack of exchange of hydrological information among the basin countries;
- Water use conflicts: construction of hydroelectric power station versus navigation, expansion of croplands and construction of ports to export, which can cause water pollution, among others.

And finally, there are some aspects concerning political and social organization: fragility of political and institutional framework for water resources management in the region and inadequacy of some water management instruments to the local characteristics of excess of water.



Arquivo Moss / Projeto Brasil das Águas

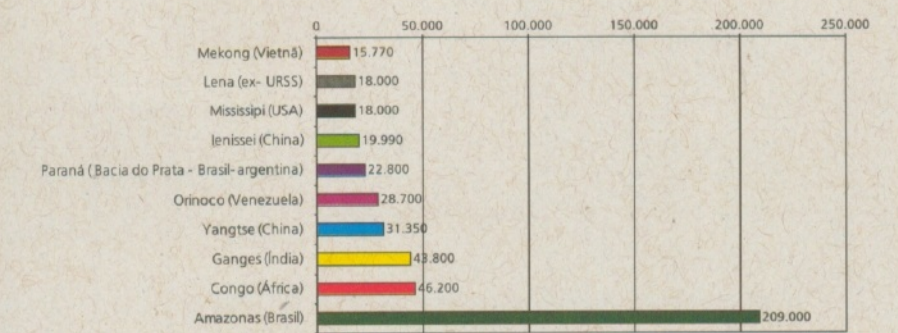


HOW DOES THE AMAZON COMPARE WITH OTHER RIVER BASINS?

The basin area of 6.1 million km² is almost twice the area of almost as large as the Australian mainland (73.72 million km²) and represents about 80% of the Australian mainland. Besides the fact of being the largest river basin, the Amazon Basin also holds the impressive average annual flow of 209,000 m³/s into the Atlantic Ocean. Its flow is larger than the sum of flows from the other nine largest rivers in the world.

A recent expedition to the Andes, carried out in June 2007, has found out that the Amazon River is also the longest river in the world. The Amazon river is approximately 7,100 km, resulting 275 km longer than the Nile.

Largest Rivers in the World in terms of Picharge (m³/s)



KEY FACTS AND FIGURES ON THE AMAZON RIVER BASIN

- Largest River Basin of the World -> 6.1 million km² (Oceania: 8,9 million km² and Europe 10,4 million km²) encompassing areas of 8 countries: Bolívia, Brazil, Colômbia, Ecuador, Guiana, Peru, Suriname and Venezuela
- Largest River discharge of the World: 210,000 m³/s (mean long-term discharge)
- Longest river in the world: 7,100 km (Nile: 6,695 km)
- Encompasses more than 1,000 tributaries.
- Accounts for more than 56% of all broad leaf forests in the world.
- Population: 10 million inhabitants
- Hydroelectric potential: up to 100,000 MW
- More than 15,000 km of waterways
- Holds more than 30,000 plant species, nearly 2,000 fish species, 60 reptile species, 35 mammal families, and approximately 1,800 bird species.

