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Towards a Strategic Actions Program for Integrated Management of Water Resources in the Amazon Basin

Source: Shutterstock



The SAP is key to carrying out an Integrated Water Resources Management in the Amazon Basin

The **Strategic Actions Program** (SAP) of the GEF Amazon Project: Water Resources and Climate Change is key to carrying out an Integrated Water Resources Management (IWRM) in the Amazon Basin. It is based on a Regional Transboundary Diagnosis Analysis (TDA), a document that consolidated nine priority regional transboundary issues, pilot pro-

jects and research projects. It has been developed considering a shared Vision among the eight ACTO Member Countries agreed at the Steering Committee meeting of June 26, 2015, in Brasilia.

The **SAP** is a negotiated policy document that requires commitment and support at the highest government level of the Amazon countries to reach the

implementation of policies and required investments in the Amazon Basin.

This issue presents a summary of the main physical, hydrological characteristics and the transboundary nature of the basin, and also a summary of: the regional Shared Vision, the results of Regional TDA and Strategic Response Lines agreed to develop the **SAP**.

SIX REASONS TO DEVELOP A STRATEGIC ACTIONS PROGRAM

- Protect the globally important river basin under threat.
- Provide collective responses regarding the rapid degradation of water resources, land and biodiversity.
- Promote the sustainable use of water as a strategic resource for the Amazon countries.
- Strengthen the capacity of the population to adapt to the threats of climate variability.
- Strengthen the technical capacity of countries for integrated management of water resources.
- Develop the Amazon region considering social, economic and environmental issues.

GLOBAL IMPORTANCE OF THE AMAZON BASIN

The Amazon Basin is the largest basin in the world, and covers over 6,118,000 km² and 44% of the land area of South America. The most important tributary basins of the Amazon River originate in Peru, in the Andes, and in the Guyanese highlands, Brazil and surrounding areas. The basin is characterized by a variety of climate zones and topography with elevations ranging from sea level to 6,500 m in



The Amazon River is born in the Apacheta Creek at 5000 meters, in the Andes, Arequipa, Peru

Source: Rui Faquini, Bco Imagens, ANA, Brazil



The Amazon Basin covers over than 6.118.000 km² and 44% of the land area of South America

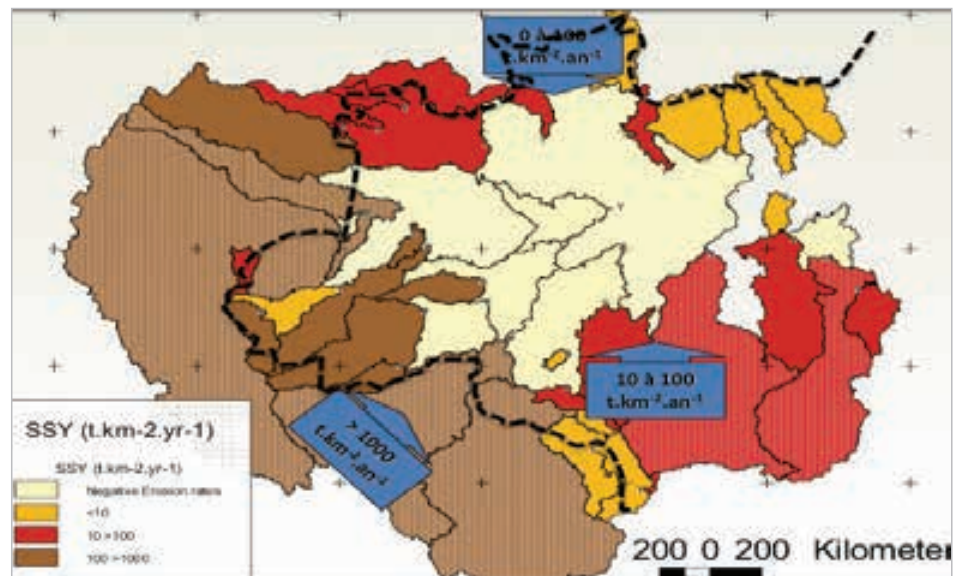
the Andes. Precipitation levels vary between 200 mm per year in the Andes to over 6,000 mm in some areas of the Amazon plains.

The Amazon River, known as Apu Paru in a native language, is born in the Apacheta creek near the Nevado Mismi, Andes, in Arequipa, Peru. From there, the water flows into the Apurimac River, a tributary of the Ucayali, and then joins Marañón River to form the main channel of the Solimoes River. Then, Negro River joins Solimoes River next to Manaus, in the so-called Meeting of the Waters. From its origin, the river

flows through 6,991 km to the Atlantic Ocean and has over 1,000 tributaries.

The riverbed in Peru is 20 km wide, while in the outfall in the Atlantic the river reaches 200 km. The average depth of the Amazon River goes up to 200 m with a discharge of about 300,000 m³/s.

Amazonian ecosystems are really rich in biodiversity: there are more than 30,000 species of plants, nearly 2,000 species of fish, 60 species of reptiles, 35 families of mammals and approximately 1,800 species of birds, according to the Research Institute of the Peruvian Amazon (IIAP).



Flow of Materials in Suspension transported by the Amazon River

Source: pluraenlambayaque.blogspot

Source: GEF Amazon Project

EROSION AND SEDIMENT TRANSPORT IN THE AMAZON BASIN

The erosion in the Andean region is the main source of suspended solids transported by the Amazon river. Estimates of the flow of materials in suspension (MES) transported to the Atlantic Ocean vary over time, according to various studies: 500x106 T/year (Gibbs, 1967) 1,100x106 - 1,300x106 T/year (Meade et al, 1985 , Richey et al, 1986; Meade, 1988) and Filizola (2003) estimates sediment transport in 600x106 T/year, etc.



The Integrated Hydrological System of the Amazon Basin is made up by 10 Sub-basins



Droughts and floods are the extreme weather events, the more frequent in the Amazon Basin

THE TRANSBOUNDARY NATURE OF THE AMAZON BASIN

The Amazon Basin is a hydrological system made up by 10 sub-basins, of which the largest are the sub-basins of the Negro, Xingu, Madeira, Tapajos and Jurua rivers (located in Brazil).

In order to have a digital cartographic base for planning, conservation and sustainable management of water resources in particular, the Andean Community of Nations (CAN) established the delimitation and codification of hydrographic units, hierarchically

AREA OF THE AMAZON BASIN ACCORDING TO HYDROLOGICAL, ECOLOGICAL AND, POLITICAL AND ADMINISTRATIVE CRITERIA

Country	Country Surface (Km ²)	Area of the Amazon Basin (Km ²)			Regional Importance of the Amazon Hydrological Basin (%)	National Importance of the Amazon Hydrological Basin (%)
		Hydrological	Ecological**	Political and Administrative		
Bolivia	1.098.581	724.000	567.303	724.000	11.83	65.90
Brazil	8.514.876	3.869.953	4.196.943	5.034.740	63.25	45.45
Colombia	1.141.748	345.293	452.572	477.274	5.64	30.24
Ecuador	283.561	146.688	76.761	115.613	2.40	51.73
Guyana	241.960	12.224	214.960	214.960	0.20	5.69
Peru	1.285.216	967.176	782.786	651.440	15.81	75.25
Suriname	142.800		143.800	142.800	0.00	0.00
Venezuela	916.445	53.000	391.296	53.000	0.87	5.78
Total	13,598,187	6,118,334	6,825,421	7,413,827	100.00	44.99

Source: United Nations Environment Programme, 2009.

defining river basins, inter-basin and domestic basins, starting from the continental dimension (Level 1) until the Levels 2 and 3.

THE AMAZON BASIN AND CLIMATE VARIABILITY

Most of the basin is covered by dense tropical vegetation that acts as a giant consumer of heat, releases large amounts of water vapor and carbon (through deforestation, drought and fire) into the atmosphere, thus constituting an important factor for the global climate.

Considering extreme weather events, the more frequent and severe droughts



A dense vegetation acts into the global climate

Source: Rui Faquini, Bco. De Imagens, ANA, Brazil

Source: Rui Faquini, Bco de Imagens, ANA, Brazil

Fuente: Programa de las Naciones Unidas para el Medio Ambiente (PNUMA), 2009.

Source: GEF Amazon Project

occurred in recent decades and led to massive forest fires. Between 2005 and 2012, two droughts and three floods with significant socio-economic and environmental impacts were recorded, so it is urgent to adopt climate variability adaptation measures that are the subject of specific pilot projects of the GEF Amazon Project.

Fuente: PravdaNews.jrc.com.br



THE AMAZONIC SOCIETY

The total population of the Amazon is approximately 53.5 million people, with about 33.5 million inhabitants in the river basin. The population is heterogeneous with different sociocultural characteristics. There are 420 different indigenous peoples, (with 86 languages and 650 dialects) that usually move across national borders and are severely affected by socioeconomic and envi-

Source: Google- Eticasocial



There are 420 different indigenous peoples

ronmental changes in this region, significantly reducing its population.

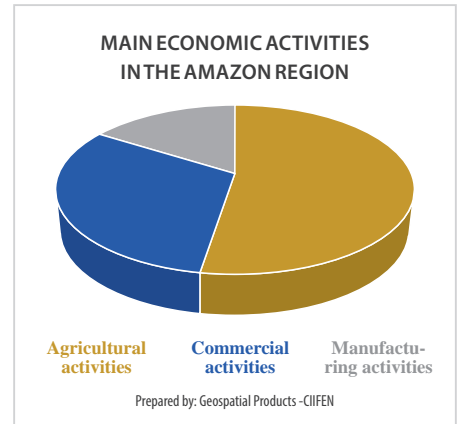
The main Amazonic urban centers are: Manaus and Belem in Brazil, Santa Cruz in Bolivia, Iquitos in Peru and Leticia in Colombia.

In the Amazon region, high illiteracy rates of the adult population ranges from 12% to 93% depending on the region, according to censuses from various countries. In this context, rates of illiteracy, chronic malnutrition and limited access to food are important factors in assessing poverty.

ECONOMIC ACTIVITIES

In general, the economic activities in the Amazon region are based on the exploitation of natural resources (minerals, forests, etc.), on agricultural activities, trade and small-scale tourism. After the rubber boom era and especially after World War II there has been a change in land use to the exploitation of forest, agricultural and livestock, causing a significant increase in population, the construction of infrastructure for power generation, roads, mining and oil.

There is always a huge variety of mineral and energetic resources in the basin, such as: gold, bauxite, zinc, coal, manganese, iron and many other mine-



Source: Compiled from Focal Points information of ACTO

erals, as well as large reserves of oil and natural gas. Due to inadequate form of exploitation, gold mining remains the most environmentally destructive by the indiscriminate use and pollution of rivers with mercury and arsenic.

Source: Google-InfoRegionpe



Economic activities are based on the exploitation of natural resources and commerce



Source: GEF-Amazon Project

Urban centers as Belem in Brazil show the socio-cultural diversity in the Amazon

THE SHARED VISION

Water resources are strategic for the balanced and sustainable development of the peoples of the Amazon River Basin. These resources are subject to the protection and conservation for their multiple uses with the purpose of improving the quality of life* of present and future generations, respecting the ethnic and cultural diversity and the sovereignty of the Member Countries.

The integrated management of the water resources is made feasible with the participatory management, the exchange of information, research, the implementation of actions of adaptation to variability and climate change, through the regional cooperation and the support of adequate institutions

** or live well in harmony with Mother Earth, concept recognized by some Amazon countries.*

Source: fairing.net



The water flows of Negro river joins Solimoes river in the so-called Meeting of Waters.

NINE PRIORITY REGIONAL TRANSBOUNDARY ISSUES OF THE AMAZON BASIN

1	Water pollution
2	Deforestation
3	Biodiversity loss
4	Extreme hydroclimatic events
5	Erosion, Sedimentation and Transport of Sediments
6	Land use change
7	Loss of glaciers
8	Major infrastructure Works
9	Integrated Management of Water Resources



Water Resources require a participative management

Source: Rodrigo Baleia/Folhapress

BACKGROUND

In 2003, the Amazon countries through ACTO, in collaboration with the United Nations Environment Program (UNEP), sought the support of the Global Environment Facility (GEF) to develop a project proposal entitled "Integrated and sustainable management of transboundary water resources in the Amazon River Basin considering climate Variability and change "(ACTO / UNEP / GEF Amazon Project). Approved in 2009, the project started its activities in 2010.

OBJECTIVE

The Project's main goal is to develop a Strategic Actions Program (SAP) for the Amazon Basin and create an enabling environment for its future implementation, based on:

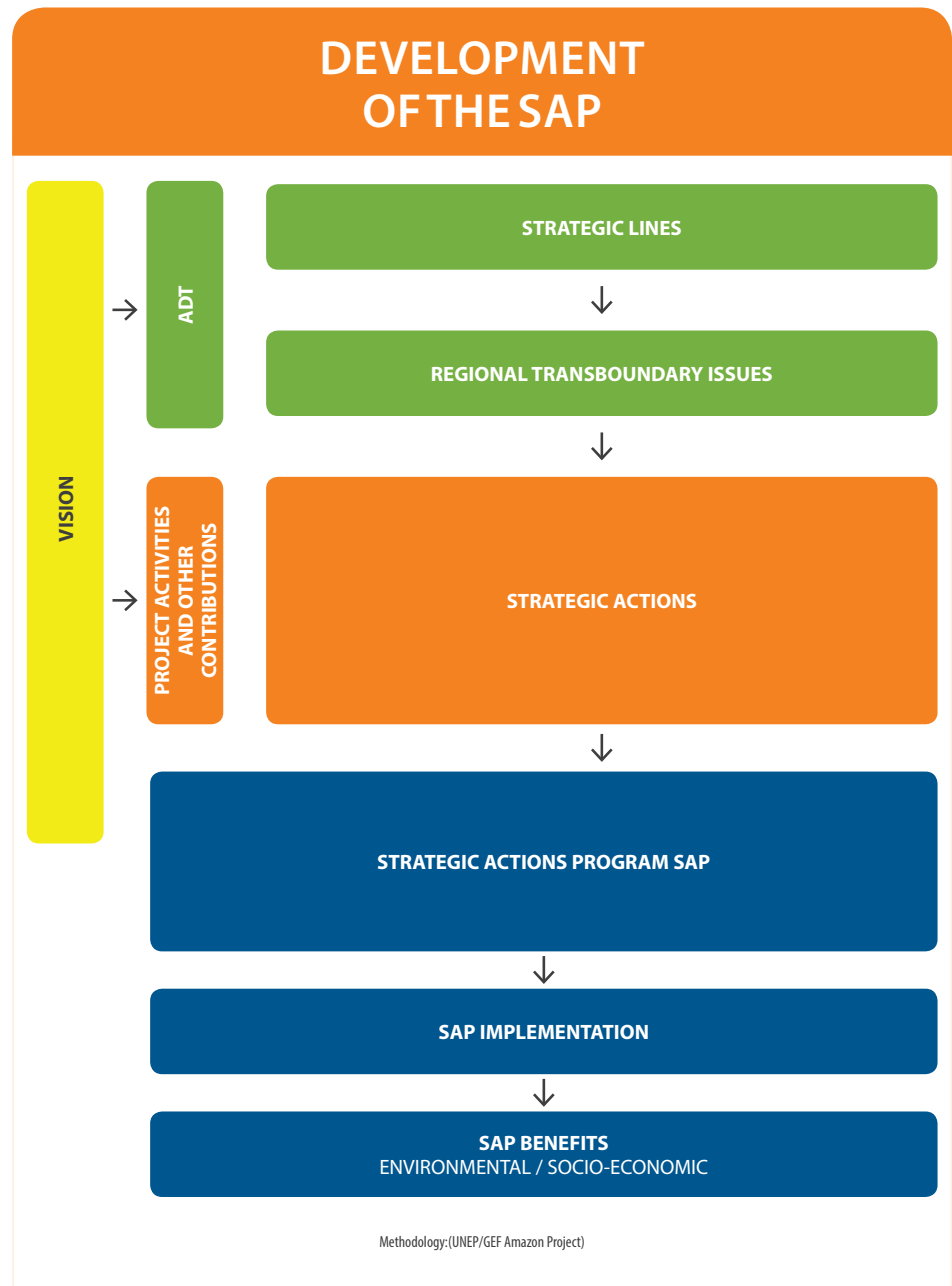
- Shared Vision on Integrated and Sustainable Management of Transboundary Water Resources in the Amazon Basin, considering Climate Variability and Change
- Regional Transboundary Diagnostic Analysis (TDA)
- Results and recommendations on the project's activities and other regional initiatives developed by ACTO.



Impacts of Deforestation due to illegal mining

A SHARED VISION FOR THE AMAZON BASIN

The Shared Vision for Integrated Water Resources Management in the Amazon River Basin is defined by the needs and aspirations of the Amazon society, its social and economic development, sanitation, water supply and health. A broad national process for consultations was carried out in each of the countries of the Amazon basin, based on opinion polls, including quantitative and qualitative research to analyze the links between human activity and water resources management.



Vulnerable population in Marajó Island due to the sea level rising.

NINE PRIORITY REGIONAL TRANSBOUNDARY ISSUES

During the 11 National Workshops on Transboundary Diagnostic Analysis (TDA), held by the eight Amazon countries, more than 50 critical transboundary issues were identified, and they were consolidated as nine Priority Regional Transboundary Issues of the Amazon Basin and validated in the IV Meeting of the Steering Committee, on November 20 and 21, in Brasilia.

THE THREE STRATEGIC LINES OF RESPONSE OF THE SAP

STRENGTHENING OF THE IWRM

ADAPTATION TO CLIMATE VARIABILITY AND CLIMATE CHANGE

KNOWLEDGE MANAGEMENT



Source: Marcella Cadilhe/EMV TempososdoBrasil.blogspot.com

Amazon river pollution, a threat to life

STRATEGIC ACTIONS PROGRAM (SAP)

The Strategic Actions Program (SAP) seeks to address the Priority Regional Transboundary Issues and its Root Causes identified in the Regional TDA, and it is summarized in three Strategic Lines of Response:

- Strengthening of the IWRM
- Adaptation to Climate Variability and Climate Change
- Knowledge Management

Each Strategic Line refers to selected transboundary issues that require response through regional strategic actions that together form the SAP, together with the financial and political mechanisms that are adequate for its implementation.

ACTIVITIES CARRIED OUT TO DEVELOP THE TRANSBOUNDARY DIAGNOSTIC ANALYSIS (TDA)

Regional TDA approved: June 2015.

Participatory identification and technical analysis of transboundary challenges and environmental issues, its impacts and root causes, as well as strategic lines of response.

- 11 National Workshops in the 8 Member Countries (2013-2015)
- 480+ National participants
- 50+ Transboundary issues identified
- Consolidation and validation of a regional TDA proposal based on national processes, results of the project's scientific activities and regional debate.
- 3 Regional TDA Workshops (2014-2015).

STRATEGIC LINE I STRENGTHENING OF THE IWRM

Six (6) of the nine issues - Water Pollution, Deforestation, Loss of Biodiversity, Erosion, Transport of Sediments and Sedimentation, Land Use Change and Impacts of Large Infrastructure Projects - clearly point to the need to strengthen national institutions and ACTO to create objective conditions for an effective IWRM at the regional level.

In this first Strategic Line, there are specific Strategic Actions proposed for each of the issues identified.

STRATEGIC LINE II ADAPTATION TO CLIMATE VARIABILITY AND CLIMATE CHANGE



Ecoportal.net

Strengthening national institutions Deforestation in the Amazon may be controlled.

Adaptation to Climate Variability and Climate Change requires the development of a Network for Hydrometeorological Monitoring of the Amazon Basin and a Regional Pilot Forecasting and Warning System for Hydrometeorological Extreme Events in the Amazon Basin.

Additionally, the Loss of glaciers impacts directly and indirectly the availability of water for the people in the region. Hereby, the Strategic Action should create adaptation measures for the collapse of the systems of water supply dependent on the existence of glaciers.

STRATEGIC LINE III KNOWLEDGE MANAGEMENT

This Strategic Line involves three transversal themes: the Integrated Information System (IIS), the Strengthening of Scientific Knowledge and Regional Cultural and Educational Activities.

The Integrated Information System (IIS) will be developed to allow the access

to databases on water resources in the basin, considering the plans for the creation of an Amazonian Regional Observatory.

The Scientific Knowledge on Water Resources and other themes regarding the Strategic Agenda for Amazonic Cooperation of the ACTO will be strengthened through the identification and implementation of relevant scientific projects on IWRM.

The organization of regional cultural events will serve to join the Amazon countries, so they will be targeted through the creation of regional cultural activities related to water resources in the Amazon basin.



The erosion in the Amazon contributes to global climate change

SAP IMPLEMENTATION

SAP is designed as a portfolio of Strategic Actions Projects that respond to the Priority Regional Transboundary Issues, so it seeks funding for each project.

SAP also suggests the development of a National Action Plan (NAP) in each of the eight Amazon countries to ensure the implementation of the Strategic Actions and also its monitoring and evaluation.



Regional cultural events serve to join the Amazon Countries

SAP implementation will be carried out by PS-ACTO together with the financing institutions, UNEP and government institutions. It is expected that the implementation of the SAP will be funded by multiple sources.

The set of SAP activities and its progress will be announced to local, national and international stakeholders, for which it is expected a Strategic Communication Plan (SCP) that identify the different stakeholders.

A plan of Monitoring and Evaluation will be developed and will be coordinated by PS-ACTO. Each member country should then provide information on its progress considering defined indicators for each of the Strategic Actions.

REGIONAL STRATEGY: CHALLENGES AND OPPORTUNITIES

- Addressing the integrated and

sustainable water resources management models of the Amazon basin from a regional perspective, considering the river basin as a management unit.

- Agree on a shared vision from a regional perspective on the major issues of transboundary nature in the Amazon basin.
- Implement coordinated strategies across national borders, such as monitoring water quality and sources of pollution, hydro-meteorological monitoring frameworks and availability of data and effective response to extreme events, among others.
- Promote regional cooperation to implement coordinated actions of water management in transboundary basins, including early warning systems for extreme events.
- Establish institutional mechanisms for regional coordination and information exchange among countries to facilitate cooperation on water issues and climate change.



Dance and music for the Amazon cultural Exchange



ATCO (2015) **Amazon Treaty Cooperation Organization** - Permanent Secretary (PS/ATCO) Secretary General: Amb. **María Jacqueline Mendoza Ortega**, Administrative Director: **Carlos Aragón**, Coordinator of Social Affairs, Transport, Infrastructure, Communication and Tourism **Carlos Arana Courrejoles**, Coordinator of Indigenous Affairs **Sharon Austin**, Coordinator of Environment **Antonio Matamoros**, Coordinator of Health **Antonio Restrepo**. Photos: ATCO Archive. ATCO Address: SHIS QI 05, Conjunto 16, Casa 21, Lago Sul, CEP 71615 Brasília DF, Brazil. Tel. +5561 32484119 www.otca.info GEF Amazon Project Coordinators: **Norbert Fenzl /MariaApostolova**. Bulletin Production:comunicacionescorvalan@gmail.com

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