



# AMAZON WATERS

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## CLOSE-UP

# ACTO strengthens dialogue and regional cooperation on Integrated and Sustainable Water Resources Management in the Amazon Basin

The largest basin in the world crosses the boundaries of the 8 Member Countries of the Amazon Cooperation Treaty Organization (ACTO), covering approximately half of the South American continent. It is also the most important source of water circulation worldwide. To ensure a coordinated and sustainable scientific, technical and political approach to water resources management in the Amazon Basin, ACTO executes and oversees the activities of the GEF Amazon Water Resources and Climate Change Project.

As a result, the Member Countries have established a fruitful and permanent technical and political regional dialogue on transboundary water resources management and climate change adaptation, including subjects like institutionality, sustainability and future cooperation in matters of water resources with a view to creating a concerted intergovernmental strategy: the Strategic Action Program (SAP), the project's main objective.

In the following interview, ACTO Executive Director Ambassador Mauricio Dorfler speaks of the results achieved since the start of the process in 2010.

**The GEF Amazon Project concluded the national and regional institutional assessment, having analyzed a broad spectrum**



(Source:ACTO)

Amb. Mauricio Dorfler, ACTO Executive Director

**of water agencies in the region. What initiatives have been developed to advance with regional action for integrated water resources management in the basin?**

In the last years the ACTO Member Countries, supported by the Permanent Secretariat, have been making great efforts to prepare a Strategic Action Program for the Amazon Basin, with financial and technical support from the countries themselves, the Global Environment Fac-

ity and the United Nations Environment Programme.

A key aspect of these efforts is improving knowledge about the institutions in place in each country to manage water resources in general and particularly in the Amazon. There has been considerable progress and we are currently in the final phase of validating and complementing the information. Supported by the GEF Amazon Project, the Perma-



ment Secretariat has made a number of suggestions to strengthen regional institutional cooperation on water resources under a transboundary approach. Particularly important among them are developing an Integrated Information System to support the implementation of a regional water resources management strategy in the Amazon Basin, and training human resources in matters like transboundary basin management, integrated water resources management and climate change adaptation. There is also a pilot project to develop a regional hydrometeorological network supported by ANA/ABC-Brazil.

We must recall that all Member Countries actions aim to improve life conditions or our Amazon people. In this context, there is no doubt that regional cooperation on institutional matters for transboundary water resources management will be an essential contribution.

**Each of the 8 Member Countries of ACTO contributed to preparing a regional proposal for the Transboundary Diagnostic Analysis (TDA) of the Amazon Basin, a task facilitated by the GEF Amazon Project. What are the priority topics defined by the Member Countries and how important are they for the region?**

We are actually still in the process of consolidating and supplementing the work done by the countries at the national level. The methodology included consultations in the countries with various institutions and representatives of the different sectors with a stake in the Amazon. The purpose of this regional cooperation initiative is to know from each member

country what their current situation is and what challenges and opportunities they see in matters that cross national borders in order to design joint strategies for the medium and long terms.

Problems like deforestation, pollution, receding glaciers, biodiversity loss and extreme events, among others, are doubtless among the most relevant ones for any type of future work. However, before detailing measures that might be adopted in a Strategic Action Program we must first reach a regional consensus.

**The GEF Amazon Project has developed several pilot projects focused on climate change adaptation in various places of the Amazon, among them the MAP region (Madre de Dios (Peru) Acre (Brazil) Pando (Bolivia)). Could these experiences be replicated in other points of the Amazon or other basins?**

The GEF Amazon Project was conceived by the ACTO Member Countries under an approach that enables a series of pilot and research activities that feed the regional strategy and activities planned. The deployment of the Early Warning System in the MAP region is a clear example of how knowledge can be shared, capacity built and cooperation established in a way that can feasibly be replicated in the other countries. In this case in particular, the results of the investment made will make it possible for the other Member Countries to have an early warning mechanism if that can be adapted to their national realities in the Amazon. Having shared systems to monitor hydrometeorological conditions and predict the behavior of rivers during extreme events like the unfortunate ones

we experienced in the last months will doubtless save thousands of lives and reduce social, economic and environmental impacts in the Amazon.

**According to the recommendations of the IV Project Steering Committee, what are the priority tasks for 2015?**

In 2015 we hope to achieve regional consensus around a Shared Vision for Water Resources Management in the Amazon under a regional approach. In addition, we hope that the Member Countries approve the regional Transboundary Diagnostic Analysis that will serve as input to develop the Strategic Action Program. This program will initially be approved at the technical level and subsequently become a document endorsed at the highest political level of the Organization that is, the Council of Foreign Ministers.

**Considering the leadership achieved by ACTO in the basin's concerted management, how do you see ACTO's role in coordinating future regional action for transboundary water resources management in the basin?**

There is no doubt that the ACTO Member Countries have achieved a level of dialogue and understanding of the problems involved in managing transboundary water resources in the Amazon Basin with a high degree of success. As management tool, the Strategic Action Program will in turn mark a turning point in regional cooperation. ACTO will become a regional and international reference on the matter, which will allow it to ratify its commitment to respond to social demands on water resources.





INTERNATIONAL EVENT

# GEF Amazon - Water Resources and Climate Change Project displays adaptation actions as part of ACTO's participation in the COP20

Climate change poses a real threat to life on our planet. This fact led world's governments to meet from 1-12 December 2014 in Lima, Peru for the 20th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP20). The Amazon Cooperation Treaty Organization (ACTO) participated in the event by organizing the forum "Climate change in the Amazon region: ACTO actions" together with the Peruvian government. Its purpose was to report on member country initiatives and the impacts of successful ongoing regional projects like the Project: ACTO/UNEP/GEF - Integrated and Sustainable Management of Transboundary Water Resources consid-



ACTO Executive Delegation in COP 20, Lima

ering Climate Variability and Change in the Amazon Basin.

The Project is working on a series of Priority Adaptation Measures in response to the efforts made by ACTO Member Countries to protect the basin's local populations and ecosystems.

The global conference provided an excellent opportunity to publicize the Organization's initiatives and programs, as noted by ACTO Secretary General Robby Ramlakhan during his inaugural speech in the forum last December 7th. "We know quite well that life cannot exist without water. And climate variability and change can have serious impacts on the fresh water supply that we need to meet our daily necessities" he noted referring to the project's strategic importance for the region.



ACTO's Stand in COP 20 and assistants to the event.

ACTO Executive Director Ambassador Mauricio Dorfler highlighted the importance of the Amazon Cooperation Treaty, which involves 8 countries of the region that are managing water resources together through the GEF Amazon Project. He emphasized that floods, droughts and forest fires are immediate impacts of climate change in the Amazon, and concluded with a presentation about the GEF Amazon Project– Water Resources and Climate Change and other ACTO initiatives on subjects related to climate change.

The forum took place in the “Voices for the Climate” Forest Pavilion, located in Jockey Club, and was attended by count-

less authorities and the public in general. From 1 to 13 December the ACTO Stand remained open for visitation, showcasing activities of the GEF Amazon Project and other ACTO programs through audiovisual means and other dissemination materials.

During the panel “Water Resources in the Andean-Amazon Region” held in that same pavilion on 10 December, Hanny Quispe, water resources expert of the Peruvian National Water Authority, gave the presentation “GEF Amazon Project- Integrated and Sustainable Management of Transboundary Water Resources in the Amazon River Basin”, stressing the Project’s importance for the country and main activ-

ities undertaken in Peru. Among them are opinion surveys in the Peruvian Amazon, the Early Warning System in the Madre de Dios Department, an analysis of the legal framework for water resources management and the national Transboundary Diagnostic Analysis (TDA), among others.

It is important to note that ACTO also set up an institutional stand in the Army Headquarters (Pentagonito), seat of the COP20, through which it was able to inform people of its environmental initiatives, including the GEF Amazon Project and others in the areas of health, indigenous people, social inclusion and knowledge management.

## NEWS OF COMPONENT I

# GEF Amazon Project holds a broad consultation process in the region

One of the most important factors to advance integrated and sustainable water resources management is knowing and taking into account what the Amazon people need and want in terms of their economic and social development, sanitation, water supply and public health, among others.

As such, the Member Countries of the Amazon Cooperation Treaty Organization

(ACTO) have been conducting a broad national consultation process in their Amazon regions on the needs, interests and goals of the population through opinion polls, as well as qualitative and quantitative research, aiming to analyze the links between human activities and integrated water resources management.

The surveys are being conducted under the GEF Amazon - Water Resources

and Climate Change Project Component I - Vision for the Amazon Basin, and will make it possible to document, analyze and develop scenarios for a shared vision of the basin's future.

Thirty-six in-depth interviews (qualitative research) and 1,200 surveys (quantitative research) were conducted in 6 provinces of the Ecuadorian Amazon—Sucumbíos, Orellana, Napo, Pastaza, Morona Santiago, Zamora Chinchipe—as well as in the province Andina de Azuay.

In Peru, 45 qualitative interviews were done in nine Amazonian provinces: Maynas, La Convención, Coronel Portillo, San Martín, Leoncio Prado, Oxapampa, Satipo, Utcubamba and Tambopata. In addition, 1,627 quantitative interviews were performed in 16 provinces of 9 departments: Cusco, Junín, Pasco, Madre de Dios, Amazonas, Huánuco, Loreto, San Martín and Ucayali.

Interviews are also advancing in Brazil, Colombia and Guyana, where 3,840 surveys are programmed in total.

The survey findings will provide valuable information for the Strategic Action Program developed under Component III, the project’s main objective.



(Source: Google, Amazon- Ecuador)

Opinion polls along the Amazon



# Equipment for the Early Warning System was delivered in the MAP Region

Equipment for the Early Warning System of the MAP region (Madre de Dios-Peru, Acre-Brazil and Pando-Bolivia) was officially delivered in the presence of representatives from the Departmental Governments of Pando (Bolivia) and Madre de Dios (Peru), the Acre State Government (Brazil), and the Madre de Dios Water Authority, as well as from the Amazon Cooperation Treaty Organization (ACTO) and the GEF Amazon Project.

Two servers, the TerraMA2 monitoring platform for extreme climate events

Warning System's TerraMA2 Platform was developed by the Brazilian National Institute for Space Research and installed in the MAP region free of charge. It has the advantage of allowing each party to develop its own operational system to monitor environmental risks and detect natural disasters using data from web services, satellites and weather radars, as well as data from fixed points like stations and instruments accessed in real time. Among others, the system pro-

do Departmental Emergency Operations Center (COED-PANDO) in Cobija, Bolivia. The communication system was deployed in the seat of the Acre Military Fire Corps (CBMAC) in Epitaciolandia, Brazil. The platform is already operating in the Situation Room of Rio Branco, Brazil.

The MAP region's Early Warning System will be integrated to the National Water Resources Information System (SNIRH), in synergy with the regional governments of Peru and Bolivia, main-



Fuente: Proyecto GEF Amazonas



[Source: GEF Amazon Project]

**TERRAMA2 Monitoring Platform for extreme climate events's Presentation**

**Equipments arrival to COED in Cobija, Bolivia**

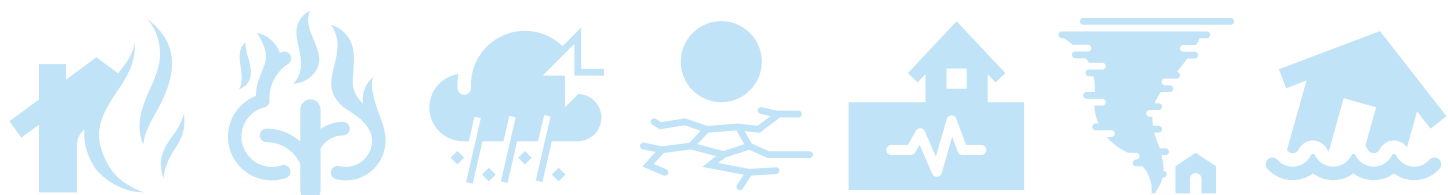
and a radio communication system were installed through the Project in Bolivia and Peru from 24 to 28 November 2014. These devices will be used for monitoring and warning the population in advance of natural disasters. The Early

warning System provides warnings about floods, droughts, forest fires and landslides.

The TerraMA2 platform servers were installed in the offices of the Peruvian National Water Agency (ANA) in Puerto Maldonado, Peru, and in the Pan-

do Departmental Emergency Operations Center (COED-PANDO) in Cobija, Bolivia, respectively, through the region's emergency operation centers and other institutions involved.

To learn more about the TerraMA2 platform see [www.dpi.br/terrama2](http://www.dpi.br/terrama2)



REGIONAL COOPERATION

# What is the current state of knowledge on groundwater in sedimentary aquifers of the Amazon region?

Despite the large volume of surface water in the Amazon Basin many communities survive on groundwater, a reserve that the Member Countries of the Amazon Cooperation Treaty Organization (ACTO) consider strategic. Groundwater is the ecologic foundation of the Amazon region, whose size is equal to half of the South American continent.

In view of the above, the Member Countries are discussing a first project proposal for Environmental Protection and Sustainable Management of Groundwater in the Amazon Region. Its purpose is to strengthen cooperation in matters of transboundary groundwater resources among the governments of Bolivia, Brazil, Colombia, Ecuador, Peru and Venezuela, with the participation of Guyana and Suriname. It will also develop a Strategic Action Program for groundwater in the Amazon aquifer, which covers the Amazon and Orinoco Hydrogeological Provinces. This involves studying the technical, scientific,

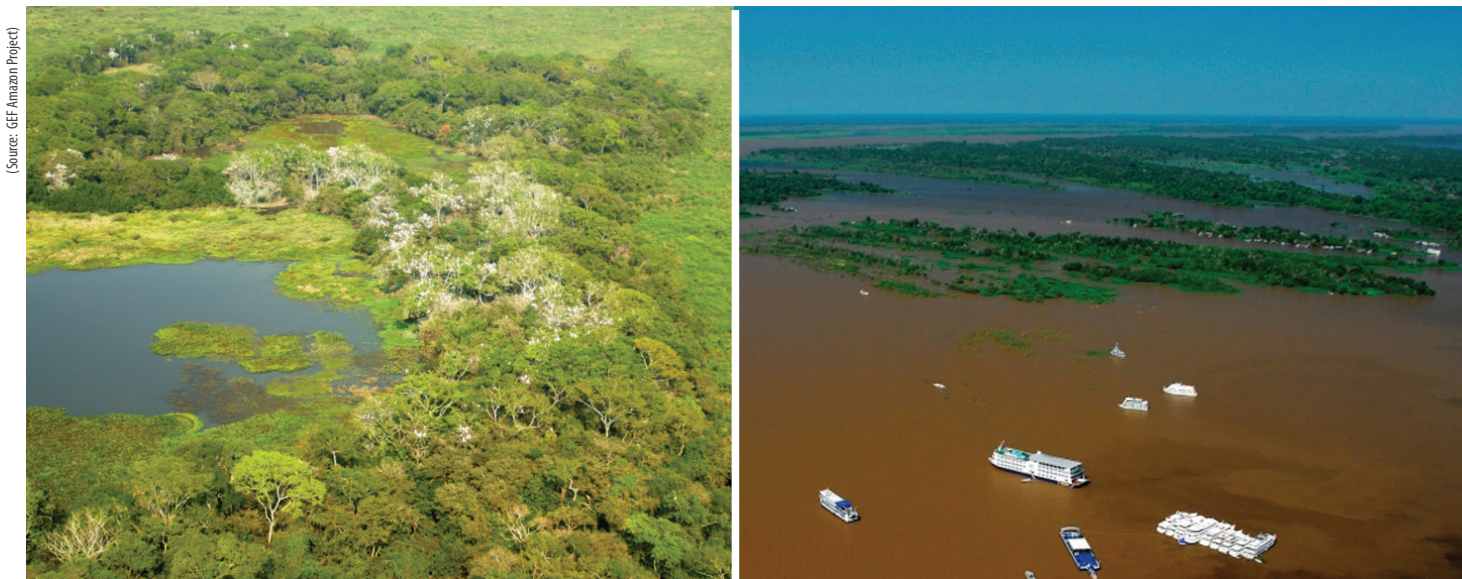
institutional, legal and financial aspects for its environmental protection and sustainable management.

During the Regional Meeting “Current knowledge on Groundwater in Sedimentary Aquifers of the Amazon Region of the ACTO Member Countries” technicians of the lead groundwater agencies of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela shared the state of the art in groundwater matters in the above-referred Hydrogeological Provinces. Its purpose was to build multilateral partnerships and conduct groundwater studies to protect the environment and ensure sustainable management in the region. Held on 24-26 July 2013 in Manaus, Brazil, the meeting was organized by the National Water Agency (ANA-Brazil), the Brazilian Cooperation Agency (ABC) and the Amazon Cooperation Treaty Organization (ACTO) that gathers the 8 Amazon countries.

At the meeting the countries also discussed the situation of groundwater in

the study area and surface and groundwater activities developed by the GEF/UNEP/ACTO Water Resources and Climate Change Project in the region of the Three Frontiers. Brazil presented the study: “Assessment of aquifers in the sedimentary basins of the Amazon Hydrogeological Province”, which started in 2011, providing valuable information for the countries’ discussions. This resulted in a first Project Proposal for Environmental Protection and Sustainable Management in the Amazon Aquifer System, which the countries are currently studying and adjusting.

It is important to note that the Amazon Transboundary Aquifer System encompasses the Amazon and Orinoco Hydrogeological Provinces, with a surface area of 6,200,000 km<sup>2</sup> in the Amazon Basin of Bolivia, Brazil, Colombia, Ecuador and Peru, and 880,000 km<sup>2</sup> in the Orinoco Basin of Colombia and Venezuela. The Cassiquiare Canal between Venezuela and Brazil joins these basins.



(Source: GEF Amazon Project)

In the Amazon many communities survive on groundwater, a strategic reserve of the region

EVENTS

# Validation Workshop Regional Proposal of the Transboundary Diagnostic Analysis (TDA) and Basic Index of the Strategic Action Program (SAP), and IV Project Steering Committee

Representatives of the 8 Member Countries of ACTO participated in the Validation Workshop Regional Proposal of the Transboundary Diagnostic Analysis (TDA) and Basic Index of the Strategic Action Program (SAP), and in the IV Steering Committee of the GEF/UNEP/ACTO Project Amazon - Water Resources and Climate Change, held on 20-21 November 2015 in Brasilia, Brazil.

Inaugurating the meeting were Marcelo Mazzola, water resources expert of the Brazilian National Water Agency, ACTO Secretary General Ambassador Robby Ramlakhan and UNEP representative Isabelle Vanderbeck.

During the workshop the first draft of the regional TDA was presented for validation. The document emphasizes the problems identified in national workshops and consolidates seven priority transboundary problems that form the basis for the regional proposal. The delegates analyzed the document and accepted it.

They also analyzed the first draft of the SAP's consolidated index, as well as methodological guidelines to agree on a timeframe for the SAP's formulation and approval. Representatives were invited to submit comments.

Workshop participants were also informed of progress in validating data and information sources for the Hydroclimatic Vulnerability Atlas.

In addition, during the IV Project Steering Committee sessions the coun-

tries reviewed the year's Project activities and results and approved the Work Plan and Budget for 2015. One of the guidelines defined was that June 2015 should be the deadline to conclude contractual commitments as well as national pilot projects and activities geared to implementing the future SAP.

The IV Steering Committee also recommended working with the GEF focal points to identify funds for the SAP.



Assistants to the Validation Workshop Regional Proposal of the Transboundary Diagnostic Analysis and to the IV Steering Committee of the GEF Amazon Project

(Source: GEF Amazon Project)

NEWS OF COMPONENT III

# Discussions of the Purus Sub-Basin Risk Governance Model produce specific strategies to respond to Climate Change

Through the workshop on Climate Change, Adaptation Capacity and Risk Governance in the Purus transboundary Sub-Basin held under Component III of the GEF Amazon Project – Water Resources and Climate Change participants learned how the sub-basin's inhabitants are facing the impacts of extreme climate events and discussed the Governance Model, a Proj-

ect output produced under the Priority Adaptation Measures activity.

Project consultant Nirvia Ravena presented her work in the city of Rio Branco, Acre state capital, on 27-28 August 2014. Representatives of three municipal offices, the Civil Defense, project consultants and civil society representatives of Acre three municipalities affected by extreme weather events attend-

ed the workshop: Sena Madureira, Manoel Urbano and Santa Rosa de Purus.

The Risk Governance Model considers **the interdependence** of human, physical and institutional variables, among others, as ecosystem characteristics, which enables a detailed understanding of the risks. In this sense, an interdisciplinary work team formed by experts in meteo-



(Source: GEF Amazon Project)



(Source: Nirvis Ravera)



Impacts of Climate Change in life conditions

Sanitation is one environmental variable studied in the Risk Governance Model.

rology, computer intelligence, hydrology, anthropology, political science and communication was contracted. Meeting participants reviewed many of the model's variables and experiences of affected local populations, noting that communities create their own strategies to face the problems and move forward.

Analysis of extreme event variables produced valuable information for the project. The first occurs when water quality deteriorates, causing ailments like as hepatitis and parasitic diseases. Droughts, in turn, increase the risk of accidents, since canoes hit against sand banks that form in the middle of the river.

Damages to urban infrastructure during floods was another variable studied. Among the points mentioned was the destruction of pavement, residential floors and walls. Electricity outages are also a problem. Mention was additionally made of the need to improve the sewerage system.

Extreme floods and droughts also cause problems in river freight, includ-

ing long delays. Ships become stranded, goods and foods become rare and prices go up. Participants explained that these problems can be minimized by increasing local food production, thereby reducing dependence on external sources.

Upon examining the variable Damages to Family Farming, participants noted that during extreme droughts crops like maize and rice often burn, while during floods crops like fruit end up rotting.

Institutional Capacity is a new variable in the Model that brought up a lot of information. Issues included who is responsible for assisting families at risk and analysis of the institutional capacity installed in the municipalities.

Workshop participants agreed on certain ways to govern risk according to specific local situations, seeking to implement policies for preventive action, aid, and recovery in the event of natural disasters.

Among the Governance Model's underlying principle, participants empha-

sized **Policy Effectiveness**, which is key to establishing partnerships between government agencies and civil society to consolidate civil defense policies. **Social Participation** ensures that all stakeholders are committed to preparing risk governance models. **Social Equity** can be achieved through strategies to overcome the vulnerability of populations that live in risk areas. Finally, **Respect to Territorial, Cultural and Environmental Diversity** is the basis to prepare risk governance models, building on knowledge of different municipal realities.

After learning about the variables of the Risk Governance Model, attendants participatorily defined how climate change is affecting risk governance in the municipalities. They also designed strategies to respond to adverse climate conditions in order to enable sustainable management of natural resources in the Purus subbasin, an activity that will be replicated in other basins affected by extreme climate events.



(c) ACTO 2014 Amazon Cooperation Treaty Organization-Permanent Secretariat (ACTO-PS) Secretary General **Amb. Robby Ramlakhan**, Executive Director **Amb. Mauricio Dorfler**, Administrative Director **Carlos Aragón**, Coordinating Office for Social Affairs, Transport, Infrastructure, Communication and Tourism **Carlos Arana Courrejollés**, Coordinating Office for Indigenous Affairs **Sharon Austin**, Coordinating Office of Science, Technology and Education **Germán Gómez**, Coordinating Office for the Environment **Antonio Matamoros**, Coordinating Office for Health **Antonio Restrepo**. Photos-ACTO's archives. ACTO

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