

# **WATER IN THE CONTEXT OF INTERNATIONAL TECHNICAL COOPERATION**



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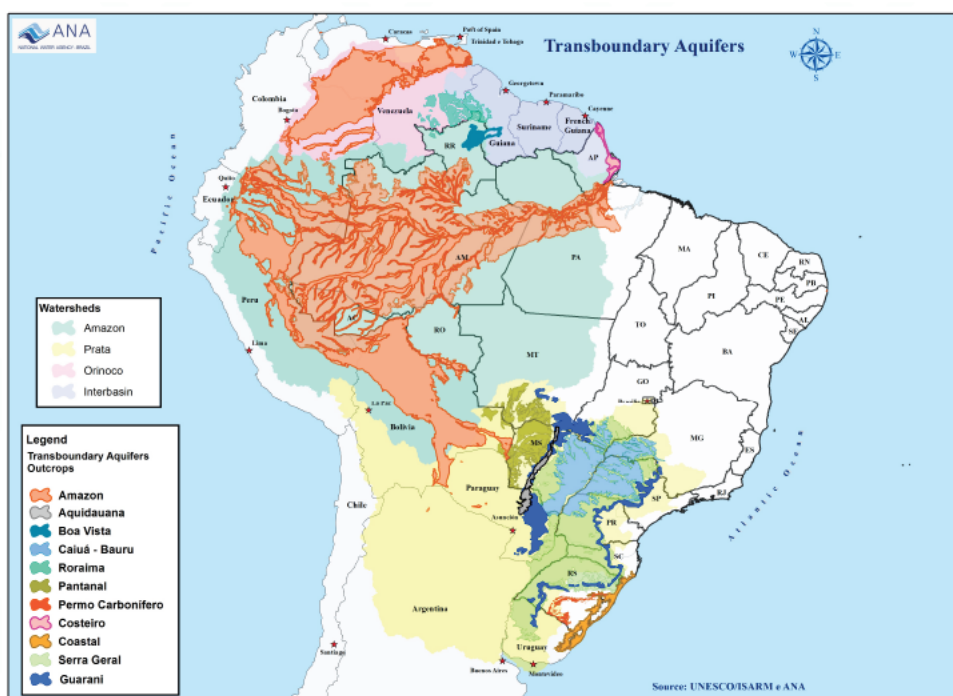
# Water in the Context of International Technical Cooperation

The creation of the National Water Agency (ANA) was approved by the Brazilian National Congress in June 2000. Since that time, ANA has been incorporated as a special agency with administrative and financial autonomy. It's linked to the Ministry of the Environment, and is charged with implementing the National Water Resources Policy and the National System for Water Resources Management (SINGREH).

As it relates to international cooperation, the first mission of the Brazilian Cooperation Agency (ABC) with ANA's participation was held in May of 2001 in Bolivia. The purpose was a discussion on a technical cooperation project in the Upper Paraguay Basin. Since then, the National Water Agency has conducted technical discussions on different levels, participated in prospecting missions and established projects with different countries, primarily in South America, Central America, the Caribbean and Portuguese-speaking African countries.

These actions allowed ANA to significantly contribute to the Brazilian government's endeavours in international cooperation, largely in the typology of technical cooperation and under the coordination of ABC. The combination of the binomial "international technical cooperation" and "water resource management" retained considerable importance in the official Brazilian technical cooperation agenda. The emphasis on technical cooperation activities with South American countries is justified when considering that most of Brazil's borders are defined by rivers. On top of that, technical cooperation is understood as a two-way path; one that allows the promotion of interactions in distinct realities and that can be replicated in other places and historic moments. In view of this, the cooperation actions related to water resources in the Amazon basin and La Plata basin have been relevant.

In concordance with the priorities of Brazil's foreign policy agenda, it is important to stress



the relevance of South-South cooperation - technical cooperation among developing countries -, one of the current pillars of cooperation, that is focused on the expansion of Brazil's foreign relations with developing countries.

## ANA's participation in South-South Technical Cooperation

Construed as the cross-sectoral exchange of knowledge and experiences among developing countries, the South-South cooperation in water resources management has, in the Brazilian case, a singular importance for sharing important basins and aquifers (such as Amazon, La Plata and the Guarani Aquifer System) and for being one of the most relevant topics for the international cooperation Agenda.

ANA exercises both bilateral and trilateral actions among the categories of the Brazilian South-South Cooperation, notably in this case with a developing country and an international body. Along different phases of the process - negotiation, implementation, execution or finalization - ANA supports South-South cooperation actions with the following countries: Argentina, Bolivia, Colombia, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru, the Dominican Republic, Suriname and Uruguay. Some activities with African countries included communication with Angola, Cabo Verde, Guinea Bissau and Mozambique.

One of the projects supported by ANA in South-South cooperation activities is carried out with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and is known as the "South-South Cooperation to improve the integrated management and the sustainable use of water resources in the context of Latin American countries and the Caribbean and the Community of Portuguese Speaking Countries (CPLP)." The initiative has been underway since 2014 and is running up to 2019. The short-term objectives are to enhance capacities in the field of water resources, promote cooperation activities to improve national systems and stimulate the development of the institutional and legal framework for water resources management in these countries.

ANA's bilateral projects on international technical cooperation takes the specificities of the cooperating country into account with actions in three principle areas: i) exchange of experiences and knowledge on water resources management; ii) training technicians in relevant management issues; and iii) training for equipment usage, especially those geared towards monitoring the quantity and quality of water, as well as for predicting critical hydrological events like droughts and floods. ANA's major international projects can be viewed below:

### Projects Performed:

- **Argentina** - Developing Argentina and Brazil Capabilities in the Area of Water Resources Management
- **Cuba** - Technical Information Exchange in the Area of Planning and Management of Water Resources in Watersheds
- **Mexico** - The Management of Statistical and Geographic Information for Handling Water Resources
- **Dominican Republic** - Support for the Development of the Good Water Cultivation Project (Phases I - II)
- **Uruguay** - Modernization of Cross-Border Hydrometeorological Networks of the Quaraí River Basins and Mirim Lagoon

### Ongoing Projects:

- **Argentina** - Argentina and Brazil Capacity Development in the Area of Water Resources Management - Phase II
- **Bolivia** - Institutional Development for the Integrated Management of Water Resources
- **Colombia** - Training Colombian Technicians in the areas of Hydrological Monitoring, Water Quality and the Automation of Hydrological Networks: Exchanging Experiences and Knowledge on Water Resources Management
- **Ecuador** - Strengthening the Hydrological Network, Implementation of a Situation Room and Technical Training for Integrated Water Resources Management
- **El Salvador** - Institutional Strengthening for Water Resources Management
- **Guatemala** - Support for the Implementation of the Program: Cultivating Good Water
- **Guyana** - Capacity Building for Institutional and Policy Structures for Water Resources Management
- **Honduras** - Integrated Actions for the Management of Water Resources
- **Nicaragua** - Support for the Development of Management and Information Systems for Water Resources.
- **Paraguay** - Capacity-Building for the Management of Water Resources in Paraguay with an Emphasis on the Cross-Boundary Zones of the Apa and Itaipu Basins
- **Peru** - Institutional Strengthening for Integrated Water Resources Management
- **Dominican Republic** - Support for the implementation of the Program Cultivating Good Water in the Dominican Republic (Phase II/II)
- **Suriname** - Institutional Strengthening for the Strategic Management of Water Resources
- **Uruguay** - Support for the implementation of a Situation Room in Uruguay (DINAGUA)
- **Caribbean** - The Planning, Implementation, Operation of Groundwater Monitoring Networks (Barbados); and Water Supply (Dominica)



The current situation of ANA's international agenda includes more than a dozen bilateral projects — two regional projects in the Amazon region; four cooperation initiatives with regional blocs in order to prepare South America, Central America, the Caribbean and the CPLP for the 8th World Water Forum; multilateral projects with the United Nations Development Program (UNDP) and UNESCO in support of the Agency's thematic agenda.

There are also partnerships with international organizations and programs, such as the World Water Council (WWC), the Global Water Partnership (GWP), the Latin American Network of Basin Organizations (RELOB), and United Nations agencies such as UNESCO, The United Nations Environment Program (UNEP) and UNDP. In addition, ANA has partnerships and specific cooperation agreements with the Organization for Economic Cooperation and Development (OECD), The United States Army Corps of Engineers (USACE) and The United States Geological Survey (USGS). All this implies an assignment of Agency technicians for implementing the projects and a financial contribution of R\$ 35 million for the different initiatives that compose this international agenda.

Another initiative by ANA, in the setting of international cooperation, pertains to regional projects involving several countries in the same initiative and, because of this, their results earn a coordinated dimension among the different institutions that deal with the same technical challenges. Some examples of this are the Amazonas Project: Integrated Action for Water Resources Management, a coordinated activity between ANA, ABC and the Amazon Cooperation Treaty Organization (ACTO); the GEF Amazonas Project, with ACTO; and the Support Project for the Management and Monitoring of Water Resources in CPLP Countries.

The National Water Agency's current international strategy is focused on providing the technical experiences and expertise of its routine actions and activities resulting from partnerships with other Brazilian institutions, whose results are renowned for being successful in the management of water resources. This is the case with the Program: Cultivating Good Water, developed by Itaipu Binacional. It is recognized and awarded by the UN as a program that incorporates and applies the Sustainable Development Goals (SDG) in a river basin through interconnected projects in a participatory governance process. As mentioned by then UN Secretary-General Ban Ki-Moon, he asserted that the "Cultivating Good Water is an initiative that has the potential to transform the lives of millions of people." In 2005, the initiative received more worldwide appreciation with the Earth Charter + 5 Award, given in Amsterdam, Netherlands.

Technical cooperation is one of the pillars of international cooperation and one of its main components is the training of human resources, which contributes to a boost in knowledge and to a strengthening of the capacities installed in the institutional setting of a country or region. ANA has an education program that trains technicians and actors

## Cultivating Good Water Program

Cultivating Good Water Program is a technology/-methodology of management and relationship between various social actors (government, NGOs, companies, community) that promote a comprehensive and integrated management by river basin (in the scale of basin, sub-basins and micro basins). It has a systemic approach, broad participatory process, citizenship, and shared responsibility, involving a huge network of partners, as well as local, economic, social, political, environmental and cultural actors.

The PLAN-DO-CHECK-ACT (PDCA) cycle and the major role of the process' lead institution is more than just applying resources. It is also responsible for articulating, sharing, combining efforts, parcelling responsibilities, playing a catalytic role that identifies and involves partnerships, building strategic alliances and promoting synergies for projects and activities that are committed to the sustainable development of the respective water territories.

There is a strong educational action (formal, non-formal, diffused and educational) and considerable building of a culture for water and sustainability, with emphasis on water's connections with climate, society, energy production, food production and the environment.

### The Program's primary areas of activity

- The conservation, preservation and recovery of natural resources (water, soil and biodiversity);
- Promotion of systems that add to more sustainable production;
- Promotion of more sustainable consumption habits;
- Productive social inclusion for vulnerable segments;
- Promoting peace, solidarity, community vitality, gender equity and the "ethics of care";
- Developing a culture of sustainability.

More information on the Good Water Cultivation Program can be found at: <http://www.cultivandoaguaboa.com.br>

involved in the overall conservation and rational use of water resources and the importance of the participation of citizens in the implementation of the National Water Resources Policy - one of the primary tasks of the National Water Agency.

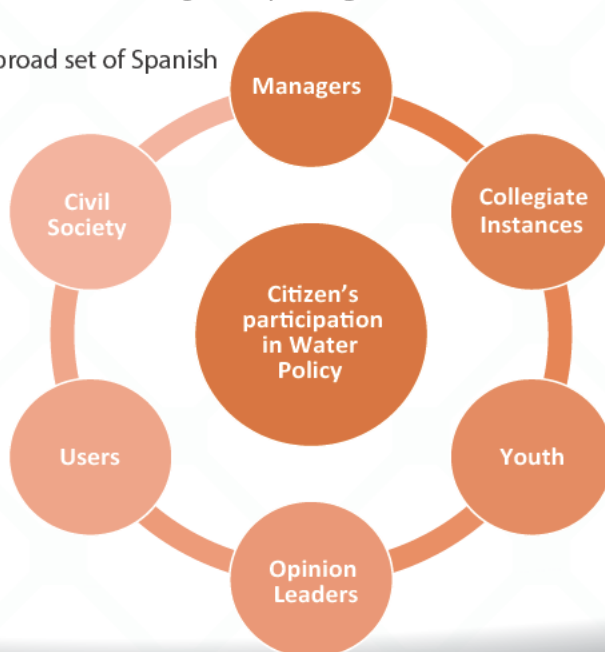
## Training for the Improvement of the Management of Water Resources

With a view towards ANA's current international strategy, training activities appear as one of the pillars, whether in the framework of bilateral and regional projects or in the execution of specific courses conducted by the Support Supervisor to the National Management System on Water Resources. ANA's Training Program was originally developed for the National System of Water Resources Management (SINGREH), which means that it is guided towards the participation of a broad set of actors, among them; water agency officials, representatives in collegiate bodies, users of water resources, opinion makers and overall society, particularly the younger audience.

Capacity-building initiatives allow technicians to be qualified for water management. They also create favourable environments for discussion, negotiation and the search for solutions in a democratic, participative and decentralized way; essential for the improved in the management of water resources. The components of the national scale resemble, within certain limits, with some demands of international cooperation that we receive for technical training activities, both in person and in Distance Learning (EAD).

In order to broaden activities for Latin American countries, ANA has developed courses in Spanish over the last few years that are accessible through the internet, along with educational videos with English and Spanish subtitles. In addition, considering the geopolitical priorities of the country's official cooperation, ANA has advanced in-site courses and technical visits primarily in several countries in South America, the Caribbean and Portuguese-speaking countries.

Considering this broad set of Spanish and Portuguese speaking countries, ANA's training sector has devised a set of courses in each of these languages, as presented below.



### Courses in Spanish in the EAD category

- Overall hydrology
- Water Quality in Reservoirs,
- Governance of Water in Latin America,
- Basin Planning, Handling and Management
- Territorial Management for Water Resources with Free Open Source Software
- Coding of River Basins through the Otto Pfafstetter Method

### Courses in Portuguese in the EAD category

- Water Agency: What it is, what it does and how it works
- Water and the Forest: Sustainable use in the Caatinga
- Water in progress - youth
- Water in progress - multipliers
- Water in the right measure
- Organizational Alternatives for Water Resources Management
- Evaluation of Irrigation Equipment
- Water Paths
- Charging for the use of water resources
- Coding of river basins through the Otto Pfafstetter method
- Hydro Basin Committee: What it is and what it does
- River Basin Committee: Practices and Procedures
- Communication and Management of Water Resources
- Drainage and Control of the Salinity of Irrigation
- Integrated Management of Water Resources in the Northeast
- Territorial management for water resources with free open source software
- Management, Operation and Maintenance of Irrigated Perimeters
- Water Governance in Latin America
- General Hydrology
- Introduction to Participatory Management
- Water Law
- Management and care in the use of Stillage in Fertirrigation
- Irrigation management: how, when and how much to irrigate
- Measuring Waters: Pluviometry and Fluviometry Ideas
- Water Quality Monitoring in Rivers and Reservoirs
- Granting of Right for the Use of Water Resources
- Payment for environmental services
- Basin Planning, Handling and Management
- Plan for Water Resources and the Framework for Bodies of Water
- Mechanical practices for soil and water conservation
- Water quality in reservoirs
- Reforms for Democratic Transformations in Water Management
- Reuse of agricultural and Forestry water
- Situation Room: what's inside
- System of Information on water resources: knowing to decide

ANA's Annual Training Program can be viewed at [www.ana.gov.br](http://www.ana.gov.br), in the Training for SINGREH link. Educational materials are available at ConheceRH - the educational collection on water.





ANA's international cooperation actions in the field of water resource management have also contributed with the fulfilment of the Brazilian government's commitments in international forums and to the strengthening of technical cooperation relations with bilateral, multilateral and international entities. Some decades ago, notably following major global environmental conferences, water issues have reached a level of global priority. Among the various aspects of water resources management, current actions have linked issues such as water governance in the inter-national backdrop, extreme events (droughts and floods), water security, sustainable development goals (Millennium Development Goals and Sustainable Development Goals) and impacts on water resources caused by climate change. All of these issues relate to important issues on ANA's environmental and international agenda.

The map illustrates the geopolitical coverage of some cooperative projects by ANA within the framework of Brazilian cooperation.

ANA also has a bilateral agenda with developed countries, which includes negotiation, partnership and projects with Germany, Australia, China, South Korea, Spain, the United States, Finland, France, Japan, Italy, and Portugal, among others. In relation to these, the following ones stand out: i) The United States - by the novelty of the partnerships with the USACE and USGS that include hiring specific consultancies to meet thematic demands of interest for the Agency; ii) France - through the long-term cooperation partnership, which incorporates the exchange of experiences and technologies for monitoring water resources,

particularly for the joint development of hydrological satellite monitoring applications; and iii) Portugal - because the two countries were appointed by the Environment Ministers of the Community of Portuguese Speaking Countries (CPLP) to be the coordinators of cooperative activities on the subject of water resources among Portuguese-speaking nations. One of the more successful experiences of ANA's international cooperation relates to the use of satellites for hydrological monitoring.

Another relevant activity in ANA's technical cooperation concerns the Situation Room; a critical centre for managing situations that subsidizes the decision making process of the regulatory agency with regards to the operation of reservoirs. By monitoring the hydrological conditions of the main water systems in the country, the occurrence of critical events can be identified, allowing mitigating measures to be adopted with the objective of minimizing the effects of droughts and floods. The implementation of government situation rooms is under way and, in some international projects, situation rooms are being planned and implemented in neighbouring countries, such as Uruguay.

## The Situation Room

The project for deploying States' Situation Rooms came about as part of the planning for a hydrological alert system in response to flooding in the states of Alagoas and Pernambuco, which resulted in an enormous loss of human lives and material assets, uprooting and displacing tens of thousands of families in June of 2010.

The National Plan for Risk Management and Response to Natural Disasters was launched in August of 2012, in which state situation rooms that had been deployed were inserted as part of the Monitoring and Alert Axis, which strengthened the project and accelerated its implementation process in all the States within Brazil. From that time until 2016, rooms were set up and made operational in all the states including the Federal District.

The Situation Rooms function as crisis management centres and are coordinated by the water resources management agencies, where representatives of the local meteorological institute and Civil Defense may also be present. The work performed seeks to identify occurrences and to support decision making for the early adoption of measures to mitigate the effects of droughts and floods.

ANA has supported the implementation of Situation Rooms in neighbouring countries through the use of international cooperation agreements as a tool to monitor and keep people informed on the occurrence of critical hydrological events, as well as to support disaster prevention actions.

In 2017, when the 30th anniversary of the Brazilian Cooperation Agency is celebrated and coincides with the preparations for the 8th World Water Forum of 2018 in Brasilia, there is a great opportunity to strengthen technical cooperation with both developed and developing countries in the context of the South-South cooperation strategy. The 8th Forum, held for the first time in the Southern Hemisphere, looks to contribute to strengthening cooperation among developing countries, furthering the activities carried out through the South-South Technical Cooperation.

The 8th World Water Forum will lead to the participation of developing countries, thereby encouraging the formation of alliances and international cooperation activities among them. Considering that technical cooperation has a great deal of prominence in the international cooperation opportunities in water resources, Brazil's official agenda for technical cooperation may significantly increase as a result of one of the most important events on the international agenda for the sector.

The theme of water is, and will certainly continue to be, relevant in the international agenda for several reasons, such as: i) being an indispensable resource for life; ii) a necessity to produce food; iii) for its innumerable uses, such as energy production, industrial, sanitation, commercial, recreational and others; and iv) because of its importance in ecosystem resilience and the development of climate adaptation measures. Challenges pertaining to water resources management are enormous, and cooperation is an indispensable tool for reducing institutional asymmetries, strengthening national institutions charged with this important task, and promoting peace between countries.

## Satellite Hydrological Monitoring

With the intention of strengthening the National Hydro-meteorological Network, ANA has been working on developing the application of a new technology called Spatial Hydrology in partnership with the French Institut de Re-cherche pour le Développement (IRD).

This technique allows data to be acquired in near real time and the expansion of the hydrological monitoring in regions that are difficult to access within the country. Instead of physical hydro-meteorological stations, virtual stations are created from data collected by equipment embedded in satellites, which allows parameters of water quality (concentration of suspended sediments, turbidity and chlorine) and river levels to be obtained.

The application of this technology is promising for several reasons, among which the following deserve to be highlighted: i) rapid action to minimize the effects of critical events, such as droughts and floods; ii) conserving resources (no ground equipment needs to be installed or maintained); iii) the possibility of filling gaps in the historical series of conventional stations (recovery of the time series from the beginning of the satellites); iv) the monitoring of rivers in remote or troubled areas.

Data obtained by satellites are available at the HidroSat portal (<http://hidrosat.ana.gov.br/>), where users can view and download information on rivers and reservoirs of Brazilian river basins.



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