

RESEAU INTERNATIONAL  
DES ORGANISMES DE BASSIN

INTERNATIONAL NETWORK  
OF BASIN ORGANIZATIONS

RED INTERNACIONAL  
DE ORGANISMOS DE CUENCA

1<sup>ST</sup> QUARTER OF 1996 N° 3

# The network newsletter

## MEXICO THE FIRST GENERAL ASSEMBLY

**T**he first General Assembly will be held in Mexico from March 27 to 29, 1996.

Since the constitutive meeting that took place in Aix-les-Bains (France) in May 1994 at the invitation of the French river basin organizations, INBO's Liaison Bureau held three meetings in Romania (October 1994), Poland (March 1995) and Mexico (September 1995) respectively.

This Bureau is composed of Messrs BENEVIDES (Brazil), CHIROUZE (France), LASCU (Romania), KOUADIO (Ivory Coast), NOAIN (Spain), MESTRE-RODRIGUEZ (Mexico), OSTOJSKI (Poland) and ROEDJITO (Indonesia).

The Bureau has adopted the texts of the Network "Declaration of Membership" and "Charter of Organization and Operation". Those will be presented to the Member-Organizations for approval during the next Morelia General Assembly which should gather representatives from **31 countries** interested in integrated water resources management at the level of large river basins.

The Bureau has launched the first collective projects that interest the Member-Organizations:

### INBO'S NEWSLETTER

Written by the Network members themselves, is a link and means for exchanging information on their experiences.

Two issues were published in 1995. 5,000 copies of the second issue were disseminated in the three official languages of INBO (French, Spanish and English).

### THE INTERNATIONAL TECHNICAL SEMINAR

"INFORMATION NECESSARY FOR DECISION-MAKING"

It will be held on March 28, 1996, during the Morelia General Assembly.

This seminar should enable the finding of solutions to be used for developing monitoring and analyses networks, optimizing the necessary data collection, while setting up real "basin observatories" to summarize the information useful for planning, determining water charges and following up priority action plans.

Retrieval of data in a form easily understood by and accessible to Authorities and to members of River Basin Committees, is also an issue of great interest.

The Secretariat has requested the network's members to write papers for this seminar in order to constitute a particularly useful **reference document**.

### AN INTERNATIONAL WORKSHOP

ON MASTERPLAN PREPARATION

It will be held in June in CONSTANZA (Romania) on the initiative of the Romanian Authorities. It will aim at examining the organization of water institutions in the various countries concerned by INBO: it will be a **comparative analysis of the institutions** that could be useful to develop principles adapted to each local situation for a better water resources management.

The Liaison Bureau also confirmed the International Office for Water in its mandate for assuming the Technical Permanent Secretariat, with the support of the six French Water Agencies, during the first 4-year period up to the 1998 General Assembly.

## "AQUADOC-INTER" PROJECT

AQUADOC-INTER" project aims at exchanging institutional documentation with standardized references among the basin organizations.

The objective is to set up international exchange possibilities within a network with a standardized reference system and access procedure. It thus aims at having a users' friendly access to the needed information, whichever its source, that will be "automatically" supplied when the request is made.

The first step of this project, which will be supported by professionals in documentary data processing, is to nominate "National Focal Documentation Centres" (NFDC).

In each country, the National Focal Documentation Centre will play the role of "facilitating" exchanges between the "users" (the country's ministries or basin organizations) and the information collected within INBO, and will indeed be the "box office" used as a transmission link

between the national users, the national specialized bases and the network.

**Centres that would like to participate in this project should fill up the form on page 16 and return it to :**

**Permanent Technical Secretariat  
International Office for Water**

**Fax : (33-1) 40 08 01 45**

# AFRICA

## IVORY COAST

### DRINKING WATER SUPPLY POLICY

In compliance with the resolutions of Agenda 21, adopted during the RIO DE JANEIRO Conference held in June 1992, Ivory Coast has just elaborated a National Environmental Action Plan (NEAP) covering the next fifteen years (1996-2010)

The aim of this plan is to find a permanent solution to the Ivorian environmental problems among which, is the lack of integrated water resources management.

Until the reorganization of the water sector, which is considered to be a priority for 1996, the policy in force since 1973, concerning drinking water supply for urban and rural populations, revolves around the following **four principles**:

**1<sup>st</sup> principle** : The equalization of expenditure and income which is a fundamental condition for implementing the National Hydraulics Programme.

For example, the average cost price of a cubic metre (m<sup>3</sup>) of

water sold in Abidjan, is twice cheaper than in other parts of the country, whereas the quantity of water produced for the Capital is twice higher than for the rest of the country.

**2<sup>nd</sup> principle** : Uniformity of the selling price of water over the whole national territory.

**3<sup>rd</sup> principle** : A sole operating company which is the Water Supply Company of Ivory Coast (SODECI).

**4<sup>th</sup> principle** : A single organization in charge of the financial management of the National Hydraulic Programme : the National Water Fund (NWF) whose mission is to watch over the financial balance of the Programme and to monitor the regularity of operations.

*Amani Kouadio*  
Ministry of Public Works  
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# TECCONILE

## NILE RIVER BASIN ACTION PLAN

An agreement was signed by Ministers from the six countries of Egypt, Rwanda, Sudan, Tanzania, Uganda and Zaire. It deals with the creation of a Technical Cooperation Committee for the Promotion of Development and Environmental Protection of the Nile (TECCONILE).

An Action Plan for the Nile River basin was prepared in 1994. It consists of:

● **Integrated water resources planning and management**: assessment and analysis of water resources availability and demands, national water development and management plans, assessment of the impact of potential climatic changes, updating the water balance of Lake Victoria and management of wetlands.

● **Capacity building and human resources development**: to improve water resources management methods and procedures, strengthen related agencies and national and regional institutions

for water quality and environmental protection, **establish a basin-wide data base** and to assess the needs and prepare a training programme.

● **A regional cooperation** to develop a framework for legal and institutional arrangements acceptable to all basin countries. This component will also include a process for the identification, selection, implementation and operation of regional water resources development projects.

● **Environmental protection and improvement** to control land degradation, siltation, pollution and eutrophication in equatorial lakes and the White Nile and develop environmental protection policies for major lake sub-regions. A diagnostic study of the Nile Basin will be sponsored by UNEP within this programme.

*M. M. El Amin*  
TECCONILE  
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# ASIA

## INDONESIA

### PERFORMANCE OF INFRASTRUCTURES IN BRANTAS RIVER BASIN



The average annual rainfall over the BRANTAS basin is around 2,000 mm, more than 80% occurs in the rainy season.

At present, the consumed volume of water is estimated in a range between 15 - 20% of the total available water.

The main river infrastructures in the basin are dams (Sengguruh, Karangates, Lahor,

Wlingi, Selorejo and Bening) which regulate interseasonal flow, also reservoirs (Mrican, Menturus and Jatimlerek) and sluices (New Engkokg, Lodoyo, Mlirip, Gunungsari, Jagir and Wonokromo).

The river infrastructures are essential resources for public utilities to support human lives and

economic development in the basin. Since the water of Brantas river is being used for various purposes, in order to sustain maximum benefit from public infrastructures, **it is necessary to put into operation a system** which ensures the optimum management of water resources.

An essential coordination for water management in Brantas river basin is an institutional body called **Provincial Water Resources Committee** (Panitia Tata Pengaturan Air Jawa Timur). Established by Regulation No. 67/1993 of the Ministry of Public Works and the Governor's Decree No. 59/1994, it is led by the Vice Governor of East Java.

The Committee members are:

**a - users** : Irrigation, Industries, National State Electricity Co. (PLN) and Water Supply Enterprise (PDAM),

**b - a developer** : Jasa Tirta Public Corporation/PJT,

**c - the Government** : Provincial Sector Services, Brantas River Basin Development Project, Volcanic Disaster Prevention of Mt. Kelud and Mt. Semeru, Land Rehabilitation and Soil Conservation,

**d - University experts**: this committee guides PJT to control both water abstraction and pollution abatement, allocates water in the dry season, and controls water in the rainy season.

Coordination is defined twice a year: before June 1 for the dry period and before December 1 for the rainy period.

*Ir. Roedjito*  
Perum Jasa Tirta  
Fax : (62-341) 51978

# FRENCH-CANADIAN TRAINING SEMINAR

## ON RIVER BASIN MANAGEMENT



This seminar, jointly organized by the Water Sector Technical Cooperation Fund (WSTCF) for the "Canadian International Cooperation Agency" (CIDA) and by the International Office for Water, on behalf of the French Embassy in Indonesia, with the participation of the Indonesian Ministry of Public Works, took place in Sanur from November 20 to December 1, 1995.

It gathered **25 participants** from the Ministry, most of them from the Directorate General of Water Resources Development (DGWRD - Jakarta) the others from some provinces (Malacca, Bali, Nusa Tenggara, Celebes, Irian Jaya, Central Java).

The programme of this training dealt with the detailed description of the French system of river basin management (River Basin Committees, Water Agencies) and with some examples of cooperation between Canada and Indonesia in the field of decentralized water resources management.

A total of **10 lecturers** intervened, 4 Canadians, 1 Indonesian and 5 Frenchmen from the Ministry for the Environment, the Rhine-Meuse Water Agency, the Canal of Provence Company, and from the International Office for Water.

The training course emphasized the benefit of applying the "**polluter-user-pays**" principle.

Lectures and discussions brought out possible lines of action to adapt this system to Indonesia, a country where two "pilot projects" are already launched in Citarum (Perum Otorita Jatiluhur) and Brantas (Perum Jasa Tirta) river basins.

**J. F. Talec**  
International Office for Water  
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# INDIA

## PILOTE PROJECT FOR SABARMATI RIVER

Following a French-Indian seminar on "Global River Basin Management" held in New Delhi from December 12 to 15, 1994, a programme was prepared with the International Office for Water to apply integrated river basin management in India and proposed by the Indian Authorities to be included into the 1995 French bilateral cooperation agreement.

Four main topics were retained:

- 1. institutional organization at pilot river basin level,**
- 2. training of water professionals,**
- 3. monitoring networks and data banks,**
- 4. industrial pollution.**

1995 was a transitory period with the double objective of preparing a financial agreement and launching the first actions on priority topics:

- **Institutional aspects** : a first analysis of the situation and the setting up of a **French-Indian steering Commission**. The priority objective was to select the pilot river basin and to establish a programme of assistance and follow up for the setting up of an institutional structure in the country,

- **Data banks** : analysis of the current situation at central level and identification of the objectives to be reached with the creation of a **river basin observatory** (water-related information systems) for the pilot basin.

- **Training** : identification of priority needs for professional training in the water sector.

**The Sabarmati River basin in Gujarat State has been selected to carry out this experiment** within a 3-year cooperation project.

The World Bank is prepared to coordinate its planned activities in Gujarat State with this project, as the latter seems to be innovative and within its new water policy that was defined two years ago.

The United Nations Development Programme (UNDP) also intends to participate in this programme.

**Dr. Khaliqzaman**  
Central Water Commission  
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# ADB : ASIAN DEVELOPMENT BANK

## REGIONAL CONSULTATION WORKSHOP

The Bank has prepared a draft paper "**Policy for Water Resources Development and Management in the Asian and Pacific region** - Issues and Opportunities".

This paper, addressed to the governments of member-countries, multi and bilateral agencies, NGOs and private sector for

comments, will serve as a basis for discussions during the **Regional Consultation Workshop** which will take place in Manila on May 10-14, 1996.

**Kazi F. Jalal**  
Office of Environment and Social Development  
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# KAZAKHSTAN

## THE IRTYSCH RIVER BASIN

A French delegation, led by the Water Club (MEED), went to Kazakhstan from December 4 to 14, 1995. It was composed of the Ministry for the Environment, SAFEGE, ANTEA, VERSEAU, IOW and Adour Garonne Water Agency.

The purpose of this mission was to identify possible cooperation projects and mainly focused on river basin management. **The conditions for launching a pilot project on the Irtysch basin** (river having its source in China, crossing Eastern Kazakhstan and flowing into the Ob in Russia) mainly dealt with institutional aspects and coordinated

pilot investment projects (monitoring stations, modernization of treatment plants, ...).

**Vladimir Kiritchevsky**  
Ministry of Ecology and Natural Resources  
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# LATIN AMERICA

## BRASIL

### ACTION PROGRAMME FOR SÃO FRANCISCO RIVER BASIN

A working group has been established to define a priority action programme for São Francisco River Basin which would integrate transport, water transfer between basins, investment in dams and reforestation. This investment, of a social character, will provide a better standard of living for the population. A commission composed of representatives from the Ministries of Mines and Energy, Transport, Environment, Agriculture, Planning and Development, will be set up.

### MINISTERIAL VISIT TO THE PARAIBA DO SUL PROJECT

The Executive Secretary of the Ministry of Mines and Energy, Mr. José Garrido, accompanied by DNAEE's Manager, Mr. José de Brito and by the General Coordinator for Water Resources, Mr. Vinicius Benevides, visited the Paraíba do Sul project which is implemented within a French-Brazilian cooperation programme.

The Executive Secretary considers this project to be positive from the Brazilian point of view and the French one as well. He believes that models developed in this manner are very useful as they take various aspects into account while following a modern approach.

### DNAEE NEWSLETTER PRESENTS INBO

The December issue of **AQUALUZ**, the newsletter of the National Service for Water and Electrical Energy of the Ministry of Mines and Energy, presented **INBO**'s objectives, meetings and agreements. It also presented the "AQUADOC-INTER" project that will facilitate exchanges of institutional information between organizations of each country.

**Vinicius Benevides**  
**DNAEE**  
**Fax : (55-61) 226 5735/224 4190**

### A RIVER BASIN AGENCY FOR PIRACICABA, CAPIVARI, AND JUNDIAI

The first River Basin Agency shall be created in the State of São Paulo for the basins Piracicaba-Capivari and Jundiai. This is a joint effort that has regroupped in the **River Basin Committee**, the Consortium of cities of the Piracicaba - Capivari region, users, local institutions, and the State government. São Paulo State already has a law that plans the establishment of an Agency as well as charges for the use of river water. The creation of River Basin Agencies throughout the whole State of São Paulo is planned. This new law adapted the French Agency system to Brazilian reality, keeping some of its basically decentralized characteristics:

- **the River Basin Agency** charges for the use of river water, and is responsible for financial management and has its own budget,

- **the River Basin Committee** approves the resource investment plan, which is administered by the River Basin Agency.

The Consortium of the Piracicaba and Capivari basins regroups 32 cities located in the region. The Consortium has been active since 1989, implementing projects for river rehabilitation and protection and establishing a management system. C.U.D. and

### CREATION OF THE NATIONAL SECRETARIAT FOR WATER RESOURCES

The National Secretariat for Water Resources (SWR), supervised by the Ministry for the Environment, Water Resources and Legal Amazonia, has been created to manage water resources at federal level. It was born due to the importance of this resource potential, the adequate and efficient exploitation of which may allow its rational use for the well-being of the community, and diminish damage caused by bad use.

Water resources management at federal level has adopted the modern approach of flexibility which is not compatible with administrative concentration and centralization. The creation of SWR thus enables to regroup

the Seine Normandy Water Agency have assisted this consortium since 1992, by means of an Agreement of Decentralized Cooperation with French municipalities.

### BRAZILIAN CONSORTIUM NETWORK

In Vitória, capital of the State of Espírito Santo, during the Second National Meeting of River Basin Consortia and inter-city associations, **13 Brazilian consortia joined to form a national network**. The objectives of this network are to represent its members, prepare agreements between them, support the creation and operation of new consortia, organize meetings and seminars, and support the implementation of water charges and of decentralized management systems.

The network's statute will be proposed by an Organization Committee, and the office of the Piracicaba - Capivari Consortium in São Paulo will be its temporary head-office. Two events will take place in 1996: a delegation will travel to France to get to know the management systems (April), and an international seminar will take place in São Bernardo do Campo, city in the Metropolitan Region of São Paulo (June).

**João Moysés Abujadi**  
**Consortium Piracicaba-Capivari**  
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competences that were "spread" over various organizations.

SWR deals with water resources management on a national scale and, in spite of its youth, receives numerous demands and examines the most varied problems. SWR role is above all to allow for solutions to be applied, but it cannot act without the cooperation of committees, federal units, public and private organizations in the States, and finally without the community itself. Water cannot be soundly managed without everyone's cooperation, without the necessary legal structures and tools, without the public being aware of the seriousness of the problem.

**Paulo Alfonso Romano**  
**Ministry for the Environment,**  
**Water Resources and Legal Amazonia**  
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## COSTA RICA

### THE "GRANDE DE TÁRCOLES" RIVER BASIN

The "Grande de Tarcoles" River Basin covers an area of 2,189 km<sup>2</sup> (4.6% of the national territory) and accounts for 1,600,000 inhabitants (50% of the country's population and 80% of the country's industries, businesses and other services). This Basin is the most polluted of Costa Rica.

The major problems affecting the Basin are the discharges of untreated domestic, agricultural and industrial wastewater and of solid wastes into riverbeds, the extraction of sediment due to mining activities, the accelerated demographic increase and the uncontrolled urban expansion, also the inadequate land use.

**The solution to this problematic situation lies within the competence of inter-institutional coordination, the participation of local communities and the elaboration of multi-purpose projects.** The impetus to save the Basin has come from the local authorities and this initiative led to the **creation of a Basin Committee** involving the Government, municipalities, companies, non governmental organizations and community representatives, united by a common goal : how to restore and manage the Basin in order to improve the standard of living of its inhabitants.

One of the accomplishments of this Committee has been the elaboration of a project for **"Integrated management of natural resources in the 'Grande de Tarcoles' River Basin"**.

This project will be implemented over a 12-year period, divided into three four-year periods. It will cost 372 million dollars and comprises five components :

- 1 - **Land use planning**, designed to classify present and potential land use, according to productivity.
- 2 - **Recovery of degraded land** and research in order to find systems for natural resources management and conservation.
- 3 - **Control of domestic and industrial pollution**.
- 4 - **Monitoring of drinking water**.
- 5 - **Reinforcement of inter-institutional coordination links** in order to establish project planning, follow-up and evaluation mechanisms and allow for training and participation of institutions and communities. The Committee's next objective is to set up a real **Basin Agency**.

**Húbert Méndez Acosta**  
**Río Grande de Tárcoles Basin Committee**

# MEXICO

## IMPACT ASSESSMENT OF WASTEWATER TREATMENT PLANTS ON CHAPALA LAKE

The **Lerma river** flows along 750 km on the central Mexican highlands before flowing into **Chapala Lake**. Excess of water overflows into the **Grande de Santiago river** which flows into the Pacific Ocean, but the last time it reached a sufficient level to overflow was in 1977.

The mean annual runoff in the Lerma River basin is about 4,740 Hm<sup>3</sup> but only 1,900 Hm<sup>3</sup> reach the lake, and this only happens during the four months of rainy season. Evaporation is high, 76 % of the water is lost every year. The remainder is used for supplying potable water to Guadalajara Metropolitan area and for the agriculture that develops.

In such a context, the quality of the lake water reflects the events occurring upstream over an area of 48,215 km<sup>2</sup>. As most of the water evaporates, pollutants accumulate day after day and their concentration increases.

In the Lerma River basin, **44 urban type wastewater treatment plants have been built, thanks to the action of the River Basin Committee which started functioning in 1990**. This sanitation programme, prepared by the Committee, covers the 100 main urban centres of the basin. In compliance with the new propositions that working groups will present during the next Committee meeting, the sanitation programme could be extended to 50 additional urban centres in order to have all people wanting a water supply and sanitation system covered by 2001.

**The Mexican Institute for Water Technology (IMTA)** carried out a survey with the objective of assessing the impact on the lake waters of the sanitation works built in the basin.

The study concluded that BOD was reduced, this being directly related to the sanitation programme. However, all the treatment plants built for urban wastewater are traditional and, therefore, nutrient removal is practically null. Agricultural discharges loaded with fertilizers should also be considered as they increase the nutrient concentration and cause overfeeding favourable to **eutrophication**.

The effort made for river basin sanitation should continue but it should be completed by a regulation on fertilizer utilization and perhaps a change in fertilizer components.

## WORKING GROUP FOR THE INTEGRATED SANITATION OF THE TURBIO RIVER SUB-BASIN, TRIBUTARY OF THE LERMA RIVER

Following the death of aquatic birds in the Silva dam-reservoir - located in the North-East of the State of Guanajuato - at the end of 1994, a dialogue started on February 9, 1995 between the three hierarchical governmental levels, operating organizations of Leon, San Francisco and Purisima, industrialists and NGOs concerned with environment.

A commission was created for the integrated sanitation of the Turbio river in order to study several projects:

- **Environmental industrial park in Leon** regrouping 109 tanneries to treat their wastewater.
  - **San Francisco and Purisima municipalities** in Guanajuato State are going to jointly build and manage a treatment plant.
  - **Potable water supply and sanitation service of Leon** started building a plant to treat the town wastewater.
  - **48 industries and 6 pig breeding farms**, that directly discharge their wastewater into the Turbio, will establish a treatment programme which should be operating in January 1998.
  - Finally, the Institute for Scientific Studies of Guanajuato, the Iberoamerican University, the Foundation for Environment, the National Water Commission and the Directorate for the Environment of Guanajuato State form a **working group in charge of finding the causes of bird death** and classifying the sediments of Silva dam, of establishing fauna and flora inventories, environmental education, physico-chemical analyses of heavy metals found in water and silt of 11 streams in the Turbio River sub-basin.
- Victor Oseguera Green**  
**Information Centre of Chapala-Lerma Basin**  
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## NAZAS RIVER BASIN

Nazas River Basin is considered, within the framework of the National Project for Modernizing Water Management (PROMMA), as one of the main basins for which **the creation of a River Basin Committee is planned**.

The basin covers an area of 71,906 km<sup>2</sup> and is straddled on the Coahuila and Durango States. Population is estimated at 1.615 million inhabitants, 34 % of which are in rural areas and 66 % in urban areas. This region only comprises two towns of more than 100,000 inhabitants.

95 % of the resources are used for irrigation.

The mean water shortage significantly increases in dry periods. The Nazas river basin encounters problems of aquifer overexploitation, irregular water

allocations for users, and deterioration of groundwater quality caused by the progressive lowering of the water table. A regulation concerning overexploited aquifers is needed to have a potable water reserve. The modernization of irrigation methods and the rehabilitation of hydroagricultural infrastructures are also indispensable.

The creation of a River Basin Committee will enable to prepare and implement programmes and activities to improve water management.

**José Luis Montalvo Espinoza**  
**National Water Commission for the Lagoon Region**  
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# INBO

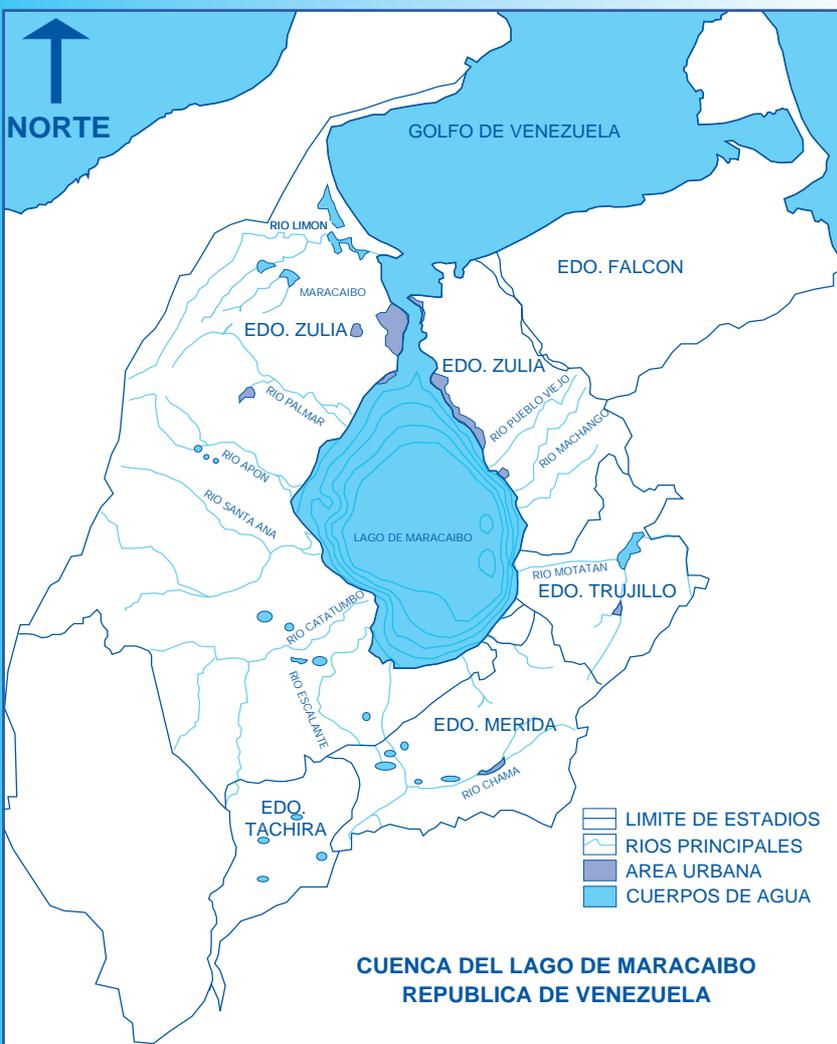
# VENEZUELA

## MARACAIBO LAKE AND ICLAM

Maracaibo Lake basin involves six States of the Republic of Venezuela with an area of 82,035 km<sup>2</sup> (without taking into account the lake itself, the area of which covers 12,400 km<sup>2</sup>) and the Republic of Colombia with an

area of 16,130 km<sup>2</sup>.

This basin waters flow into the Gulf of Venezuela. It includes about 5.5 million inhabitants, almost a quarter of the country's population.



The Institute for the Control and Conservation of Maracaibo Lake Basin (ICLAM) is an autonomous institute, of national scope with a regional location, with legal status and its own budget. ICLAM's competence covers the geographical region comprising Maracaibo lake and its basin. ICLAM is composed of representatives from the State and public organizations.

Its mission consists in managing, in a coordinated way, the Maracaibo lake basin, using programming, planning, studies and the implementation of plans, programmes and projects to protect, rehabilitate, and rationally use our natural heritage; in controlling springs and water bodies, air, soil potentiality and mineral resources and the conservation and protection of biogenetic resources.

## ICLAM'S REORGANIZATION (1995-1996)

To carry out its mission, ICLAM is presently reorganizing while applying the following criterion: land use planning and control of the utilization of the natural heritage are the responsibility of regional basin authorities.

The reorganization of ICLAM, which started in 1995, is carried out along two converging lines:

1. **The setting up of a regulatory framework for a programme that will develop** the resources of the Maracaibo Lake basin in order to establish a sustainable economic basis,
2. **The reform of ICLAM's administrative structure**, as an Institute that plans to fulfil its duties regarding basin management by developing its capabilities, within the decree that created it.

All these activities are completed with the support of national and international consultants and are financed by the Andean Development Company (CAF).

ICLAM is implementing systems for wastewater collection, transport and treatment in the main towns of Zulia State, thanks to a project coordination unit.

In Maracaibo, two wastewater treatment plants are being built that will cover a population of 1,500,000 inhabitants.

On the eastern coast, two wastewater treatment plants are being built for the towns of Cabimas and Ojeda to cover a population of 400,000 inhabitants.

In addition, a project will be jointly implemented by ICLAM and the petrochemical plant of El Tablazo to pump and transport Maracaibo wastewater (1,300 l/s) by way of pipes under the lake to a treatment plant that will produce water for industrial use, the project cost is estimated at about 75 million dollars.

**Lenin Herrera**  
ICLAM  
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## ECLAC THE "RED" NEWSLETTER

The first three issues of the "RED" Newsletter have been published, the second issue being devoted to planning at river basin level.

What is the "Red" ?

It is a Cooperation Network on Integrated Water Resources Management for a Sustainable Development in Latin America and the Caribbean. Created four years ago, the "RED" is a structure with a technical objective set up by institutions in charge of water resources management and managerial organizations which can be public, private or autonomous and from ECLAC member countries. Its aim is to improve the management skills for water resources utilization in its various aspects (institutional, administrative, economic and financial, legal and technological) and projects for services related to this management, by information exchanges and direct cooperation between its members.

ECLAC's Division of Natural Resources and Energy sponsored the creation of "RED" and has collaborated with the institutions that are involved in the network by giving them technical support and logistics.

For more information, please contact :

**Economic Commission for Latin America and the Caribbean (ECLAC)**  
Fax : (56 -2) 208 0252 / 208 1946

## CAPRE

The extraordinary Assembly of CAPRE's Regional Coordination Committee, which was held in Santo Domingo (Dominican Republic) on January 18 and 19, unanimously nominated the new Executive Director: Iliana Arce Umaña, Costa Rican,

who comes from the Potable Water Supply and Sewerage Company of Costa Rica.

**CAPRE** (Potable water supply and sewerage companies of Central America and the Caribbean) is a permanent and independent international organi-

zation with legal status and its own budget, in charge of coordinating the potable water and sanitation sector in Central America and the Caribbean.

This function was ratified in 1993 by SICA (Integration System for Central America).

At present, CAPRE includes the following countries : Guatemala, Salvador, Honduras, Nicaragua, Costa Rica, Panama and the Dominican Republic.

**Iliana Arce Umaña**  
CAPRE - San José - Costa Rica  
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# PEROU

## 3<sup>RD</sup> MEETING OF THE NATIONAL RIVER BASIN MANAGEMENT NETWORK

The National River Basin Management Network organized its 3<sup>rd</sup> meeting in Cajamarca, from October 25 to 29, 1995. The network is in charge of coordination at national level with the support of the General Directorate of Water and Soil from the National Institute for Natural Resources (INRENA).

150 professionals participated in this meeting, coming from the various regions of the country that develop activities related to river basin management and who need to update their knowledge and exchange their experience, as the territory is very complex

and the ecosystems varied.

Discussions dealt with the following topics: institutional and organizational framework of experiences in river basin management, prospects and economic, financial, social and environmental follow-up and evaluation.

The objective is to **assist the Government in establishing the new Water Law**. This requires, among other things, to strengthen the management capability of State organizations and user associations by training on water resource development, and also implies the use of sys-

tems for controlling, monitoring, collecting and analyzing information needed by users to make decisions.

In the first year, this project will start with two river basins that are well representative of the Pacific watershed a) Chili and b) Jequetepeque. Strategies will be prepared to initiate a slow process of institutional reform for developing and adapting present structures.

**Miguel Ventura Napa**  
**INRENA**  
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## MANAGEMENT OF THE CHANCAY-LAMBAYEQUE RIVER BASIN

The impact of human activities on the river basin significantly increased because of the utilization of forests, soil, rivers and lakes without thinking of the future.

Irrigation has only been developed in the downstream part of the basin to the prejudice of middle and upstream regions because of lack of financial resources and professional skills.

Numerous problems are to be solved:

- due to the lack of any audit of irrigation/drainage infrastructure and information, it is difficult to plan the system operation and maintenance,
- monitoring stations are insufficient and in bad condition,
- lack of propositions of appropriate alternative crops that could be substituted to traditional crops requiring a lot of water,
- user associations do not accept pricing at real cost and this is hindering the implementation of the

Programme for maintenance and rehabilitation,

- cultivation and irrigation plans are not efficient tools to calculate, program and allocate the water flow between the various irrigation sub-sectors, because these are not respected,
- 4,000 ha are illegally used. Due to the lack of a real budget, the Technical Company for Conservation, Operation and Maintenance Ltd cannot implement an annual maintenance programme, and the User Committee was therefore entrusted with maintenance works.

But the associations of users from the same district have no professional capability to carry out or control water distribution. Thus it is necessary to prepare intensive training programmes.

In addition, the user committees lack adequate mechanisms to enforce penalties and payment of water.

Finally, due to the lack of statistics, the checking of water dis-

tribution efficacy and the carrying out of periodic assessments of the Agricultural Campaign results are impossible.

To solve existing problems, our institution thinks that it is necessary to:

- a) **completely reorganize water management in the basin**, starting with the downstream area,
- b) **design a basin masterplan which will propose permanent participation and dialogue mechanisms** to take into account the evolution of expectations and needs of basin actors, and draw out inter-institutional agreements.

**Carlos G. Alvitez Alvitez**  
**Autonomous Authority for Chancay - Lambayeque River Basin**  
**Fax : (51-74) 226 179**

## WATER MANAGEMENT DURING TIMES OF SHORTAGE IN CHIRA-PIURA RIVER BASIN

A regulated irrigation is applied in the valleys of the Middle and Lower Piura. All agricultural campaigns encounter the same problems caused by the lack of training.

A strong social pressure exists to obtain water, but the lack of training, of capital and human resources in the irrigation sector hinder the good utilization

of water and cause wastage, thus limiting the resource usefulness for all sectors.

Thus it is necessary to change practices while taking into account that cotton crop is important in Middle and Lower Piura basin, and encourage negotiation and dialogue to objectively rationalize water resources utilization and management.

Therefore, the setting up of a series of measures for water utilization and management has become imperative.

**Oscar V. Garrasco Vasquez**  
**Autonomous Authority of Chira-Piura River Basin**  
**Fax : (51-74) 336 458**

# COLOMBIA

## REGIONAL AUTONOMOUS AUTHORITY FOR CAUCA RIVER BASIN

### MANAGEMENT OF NIMA RIVER BASIN : MODEL OF REHABILITATION

The Nima River basin, a tributary of Cauca River, 18 km long, is important as it supplies Palmira town and its 300,000 inhabitants, generates hydropower, thanks to the building of two power plants, and irrigates 6,900 ha of intensive crop (sugar cane for 93%).

Its ecosystem covers 3,050 ha of barren lands, with 13 lagoons, one of which involves 5.5 million m<sup>3</sup>. Erosion and degradation occur on 40 % of the basin area.

Rehabilitation activities involve the following projects:

- **creation of a Committee for the protection and improvement of the Nima River Basin**, composed of the Valley Government, the Autonomous Authority of Cauca River Basin, Palmira Municipality and public municipal enterprises of Palmira,
- **the association of Rio Nima irrigation users** (87 users) who pay water utilization charges,
- **the rehabilitation of 20 unprotected springs** and of a forest of 23 ha,
- **4,000 ha were acquired** in the upstream part of the river, inhabited by settlements, to set up a protected forest area,
- **building of 2,500 m<sup>3</sup> of walls** to form sub-basins with regulating works for torrents to retain silt thus improving water quality and stopping the severe erosion,
- **forest plantations** on 5,000 ha,
- **setting up an environmental and educational centre** in the areas thus acquired to involve the community in a recreation park that received 1,800 visitors in 1995.

**Jairo Arias Garcia**  
**Regional Autonomous Authority of Cauca River Basin**  
**Cali - COLOMBIA**  
**Fax : (57-23) 304 080 / 393 43**

# NORTH AMERICA

## QUEBEC

### THE CHAUDIERE RIVER BASIN COMMITTEE

The Government of Quebec (Ministry for the Environment and Fauna) have contributed to establish a Research Committee on one of the Province major river basins. The aim is not only to lead a water resources management awareness campaign but also to rally all water managers and users to integrated river basin management.

The mandate of the Basin Committee thus formed is to study all the parameters of integrated river basin management, whether they be of a technical, sociological, economic, legal or political nature and as a result, to recommend to the Ministry a standard model adapted to the whole territory of Quebec, in order to judge its relevance by means of some pilot projects among the 24 river basins of the Province.

#### 1. On what scale is this case study carried out ?

The Chaudiere River is a tributary of the Saint-Lawrence. It drains a total area of 6,682 km<sup>2</sup> and has four main tributaries. It has been divided into three sections : the Upper-Chaudiere, the Middle-Chaudiere and the Lower-Chaudiere.

Due to the relief, there are recurring flood phenomena on this river.

The Upper-Chaudiere is covered mainly by forestlands. The Middle-Chaudiere is composed of both agricultural lands and forestlands whereas the Lower-Chaudiere is mainly agricultural even though it is the most densely populated and has the strongest demographic increase of the basin, particularly at the river mouth. The total population of the Basin is near to 160,000.

#### 2. Which approaches have been retained (regulatory, financial, consultation, others) ?

The Chaudiere River Basin Committee has been entrusted with a vast, open research mandate, therefore all approaches are possible. It should define which type of organization (agency, state enterprise, consultation commission,...) could be created; which decision-making powers it should be endowed with; how would it function and most important, how would it be financed ? It is fundamental that this proposal be founded on existing issues and on the reality of the situation in the Chaudiere River basin. Nevertheless, the proposal should also take into consideration the whole context of Quebec and should be applicable to all inhabited river basins. In order to substantiate the Committee's approach, the conclusions of the survey should pave the way for one or two genuine pilot projects.

#### 3. What diagnosis can be made of the present organization of river management ?

It is far too early to speak of establishing a formal diagnosis, founded on an exploratory survey of integrated river basin management in Quebec. It should be underlined however, that the approach used for this survey is one of consultation and decentralized decision-making towards the "medium-users" and "medium-managers". Furthermore, there appears to be a sudden awareness of the three main groups involved in this resource management, namely the municipal sector, the agricultural sector and the industrial sector because they, together with the Basin's inhabitants, will be called to examine the issues and the solutions proposed for their territory.

**Jean Maurice Latulippe**  
Ministry for the Environment and Fauna - Quebec  
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# EUROPE

## FRANCE

### A FRENCH WATER DATA NETWORK THAT COMBINES THE NATIONAL DATA BANKS

In France, as in other countries, **many operators are involved in water resources management**, they are either national administrations, local authorities, study and research organizations, public or private enterprises...

All of them produce water data to fulfill their own missions, they concern quantity (pluviometry, hydrometry, piezometry, withdrawals and discharges) as well as quality (natural water, distributed water, polluting effluents).

However, water management must be accomplished through an integrated approach, as for instance, in integrated river basin management. **Then additional data coming from the numerous operators should be gathered, ensuring that they are homogeneous and comparable** in order to establish the summary indicators that are requested by the decision-makers and the public.

The main French operators involved in the water field have decided to set up the **French Water Data Network -RNDE-** which now regroups the Ministry for the Environment, the six Water Agencies, the Higher Council of Fisheries, the French Institute for Environment and is operated by the International Office for Water.

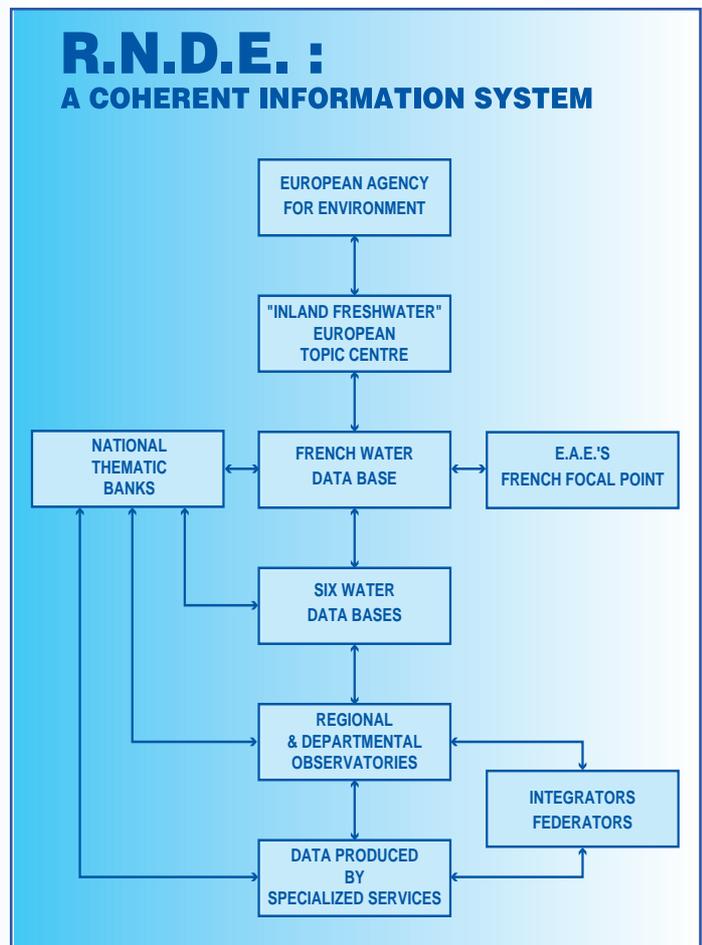
RNDE is an information system which combines data banks:

- **the producers' data banks** contain elementary data,
- **the river basin data banks** meet local needs by collecting data from the producers' banks,
- **the thematic banks** deal with data on rainfall intensity, hydrometry, groundwater and coastal water quality, fish and the hydrobiological medium,
- **the national bank** relies on all the other banks for the provision of the data required at national or community level.

The creation of RNDE has enabled the publication, at a national level, of summary documents:

- four quality maps of water-courses,
- records of the 10-year evolution in surface water quality for 100 monitoring stations,
- hydrometric summaries for 150 stations over a 10-year period,
- assessment of sanitation in large cities.

**Dominique Preux**  
In charge of RNDE  
Fax : (33) 55 77 72 24





## CHARTER OF ORGANIZATION AND OPERATION

**A** sound and balanced management of water resources is a prerequisite to ensure quality of life on our planet and a sustainable socio-economic development.

The issues thus raised are numerous and complicated.

The solutions brought must allow for :

- contending with natural catastrophes and the risks of erosion, floods or drought, taking into account physical and water management,
- reliably meeting the urban and rural populations requirements in terms of good quality potable water, in order to improve hygiene and health and to prevent important outbreaks of disease,
- purifying farmlands and developing appropriate irrigation systems to produce enough agricultural food,
- harmoniously developing industry, energy production, recreational activities and, in some areas, tourism and waterways navigation,
- preventing and controlling pollution of all kinds and origins, in order to preserve the aquatic ecosystems and more especially, to protect fauna and optimize fish breeding for human consumption, while meeting the requirements of various utilizations and more generally, preserving the biodiversity of the aquatic environment

All these issues can no longer be approached by sector or localization, nor approached separately. On the contrary, the solutions must associate the national and local authorities with the users, in an integrated approach, respecting the natural environment, organized on the scale of hydrographic units and aiming at the sustainable utilization of water resources.

It is recommended that the agreements and strategies, the programmes, financing and monitoring be designed at the river basin level and that cooperation agreements be formalized between riparian countries regarding large shared rivers, lakes and seas.

## NETWORK OBJECTIVES

The International Network of Basin Organizations has the following objectives :

- to develop permanent relations with the organizations interested in a global river basin management, and facilitate exchanges of experiences and expertises among them,
- to promote the principles and means of sound water management in cooperation programmes to reach a sustainable development,
- to facilitate the implementation of tools for institutional and financial management, for

programming, for the organization of data banks, of models adapted to the needs,

- to promote information and training programmes for local elected officials, for users' representatives and for the different actors involved in water management as well as for the executives and staff of the member basin organizations,
- to encourage education of the population, the young in particular,
- to evaluate ongoing actions and disseminate their results.

## NETWORK MEMBERS

The Network is open to :

- the **organizations managing** large national or federal, or even transfrontier **river basins** and the cooperation structures they have developed among them.

The term "Basin Organizations" implies public organizations with legal existence, or pending creation according to the legislation in force in their country, having statutes and their own budget,

- the **governmental administration in charge of water management** in the countries applying or being interested in applying integrated water management :

- . organized through large hydrographic units (River Basins)

- . associating administrations and local authorities, as well as users from the various sectors,
- . having specific budgetary resources at its disposal, obtained by applying the "user-polluter-pays" principle.

The term "large hydrographic units" means large river and lake basins without their various tributaries,

- **bi and multilateral cooperation agencies** supporting institution-building activities related to large catchment areas and aquifers.

The members are being so considered as soon as they have applied to belong to the Network by signing the **DECLARATION OF MEMBERSHIP**.

## PERMANENT OBSERVERS

The other public organizations that are interested in the Network, can apply to participate in its activities as permanent observers, provided that their application is forwarded by the Liaison Bureau

and accepted by the General Assembly.

They can attend the General Assembly meeting without any right to vote.

## ORGANIZATION OF THE NETWORK

The Network is a flexible structure relying on the members' willingness to work together.

It has no legal statute, nor a status of international organization, it is simply governed by this **CHARTER OF ORGANIZATION AND OPERATION**.

### NETWORK PRESIDENT

He is the Chairman of the General Assembly.

He is nominated by the member(s) hosting the meeting.

He represents the Network up to the following meeting of the General Assembly.

He ascertains that the Bureau's recommendations and General Assembly's conclusions are applied up to the next Bureau meeting and organizes the work of the Secretariat.

### LIAISON BUREAU

It is composed of the serving President of the Network, of the two preceding Presidents and of :

- 1 member for Africa
- 2 members for Latin America
- 1 member for Asia
- 2 members for Central and Eastern Europe
- 2 members for Western Europe

Its composition may be revised at each General Assembly according to the memberships to come from each geographic region.

The members of each above-mentioned geographic region pro-

pose to the General Assembly, when a consensus is reached among them, the country/ies that will represent them at the Liaison Bureau. The members of each of the countries chosen will nominate the personality that will attend the Bureau meeting.

Two to three Bureau meetings will be held for each 12 month-period between two General Assemblies.

It is chaired by the representative nominated by the member(s) hosting the meeting.

It prepares the meeting of the next General Assembly.

It carries out the conclusions of the previous General Assembly.

It coordinates the shared projects.

It examines the applications of new permanent observers as well as these of new members of the Network and proposes their membership to the next General Assembly.

It adopts the recommendations by consensus between the attending members.

The personalities participating in the Bureau may nominate a substitute when prevented from attending a meeting.

The member(s) hosting the next Bureau meeting will set the date after receiving confirmation that at least two-third of the members will be able to attend.

... (CHARTER CONT.)

## GENERAL ASSEMBLY

It convenes all the members of the Network.

The General Assembly is presided over by the President of the Network.

It holds an ordinary meeting every year and can convene extraordinary meetings.

The Ordinary General Assemblies are held every year in a different geographic region whenever possible.

### THE GENERAL ASSEMBLY :

- approves the content of the **Declaration of membership** and of the **Charter of organization and operation** as well as the changes that may be added,
- officializes the **acceptation of new members** proposed by the Liaison Bureau, as well as the applications to become permanent observers,
- proposes orientations to the **Network activities**,
- approves the **shared projects** proposed by the Liaison Bureau, and sets up, when necessary, **operational units** for their implementation,
- ensures that the **Network** is promoted to the concerned **National Authorities and bi and multilateral Cooperation Agencies**,
- defines the composition of the **Liaison Bureau**.

The conclusions of the General Assembly are adopted by **consensus** between the attending Members. When a consen-

sus cannot be reached, the President may, as a last resort, request a vote to obtain a two-third majority among the attending members.

Qualified personalities or interested organizations may be invited by the host-member(s) to attend the General Assembly meeting without participating in the debates, in the same way as the permanent observers.

## SECRETARIAT

The secretariat of the Network will be carried out by :

- a **Chairmanship's Secretariat**, organized by the host-organization(s), which takes charge of logistics for the meetings of the Liaison Bureau and General Assembly,

- a **Permanent Technical Secretariat**, chosen by the Liaison Bureau among the applications received, and proposed to the General Assembly that will nominate it for four years.

It is responsible for preparing the documents for the Liaison Bureau and General Assembly meetings, writing the reports under the authority of the President, periodically publishing the **Network Newsletter**, leading the Network and following up the shared projects in close relation with the relevant **operational units**.

The Head of the Permanent Technical Secretariat participates in the meetings of the General Assembly and Liaison Bureau.

The Manager of the organization that was in charge of the Permanent Technical Secretariat during the preceding period, is also invited to these meetings during the four following years in order to ensure a continuity in ongoing actions, and to provide his support to the serving Secretariat.

## NETWORK ADDRESS

It is the address of the Permanent Technical Secretariat.

## REGIONAL NETWORKS

Regional Networks may be established upon the initiative of Member Organizations belonging to the same geographic region, provided their request is forwarded by the Liaison Bureau and accepted by the General Assembly.

The Network President and the representative of the Permanent Technical Secretariat are invited to the meetings and events organized within each regional network.

## FUNDING PRINCIPLES

The Network activities are financed as follows :

### MEETINGS OF THE LIAISON BUREAU AND OF THE GENERAL ASSEMBLY :

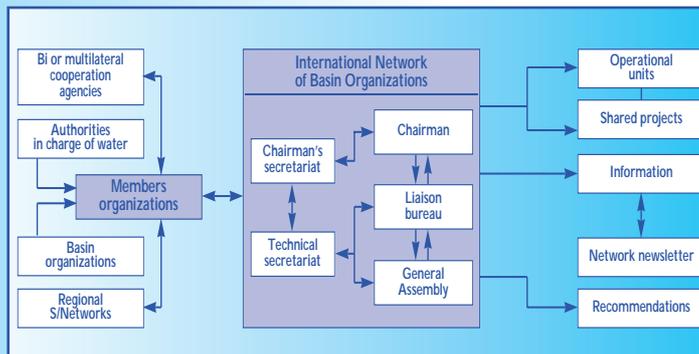
- international travel cost borne by the participating members,
- costs of sojourn, logistics, field visits, translation and Chairmanship Secretariat are borne by the host-member(s), within the limit of an official representative per member-organization of the Network.

### SHARED PROJECTS :

Implementation means to be negotiated by the Liaison Bureau with bi-and multilateral funding agencies, the interested governments and organizations with the help of an operational unit, when necessary, and of the Permanent Technical Secretariat.

### ANNUAL SUBSCRIPTION :

The principle and the amount of an annual subscription paid by the member-organizations will be proposed to the second General Assembly.



# DECLARATION OF MEMBERSHIP

Referring to the recommendations of the United Nations Conference on Environment and Development, Rio de Janeiro, June 1992 and the International Conference on Water and Environment, Dublin, January 1992, as well as the Constitutive Meeting in Aix-les-Bains, May 1994 and the General Assembly, held in Mexico, March 1996, the members of the International Network of Basin Organizations declare that they already apply or intend to apply, the following common modalities :

- organization, on the scale of large hydrographic basins, of an integrated water resources management aimed at preventing natural and dangerous hazards, and catastrophes and also at rationally and equitably meeting the various uses, to reach a sustain-

able economic development and to protect and restore the aquatic environment,

- implementation of financing systems -based on the «user-polluter-pays» principle and the «solidarity» concept- for multianual development, equipment and protection programmes,

- setting up partnership means to associate national Authorities and possibly competent international institutions together with local authorities, water users and concerned non-governmental organizations to the planning and management of river basin organizations ; and also developing the information capacities of these partners' representatives to enable them to fully assume the responsibilities and missions assigned to them within the framework of the basin policy.

## PARTICIPATION TO INBO

The members of the International Network of Basin Organizations declare that they approve the arrangements stated in the **Charter of organization and operation** of the Network in accordance with the terms adopted by the General Assembly of March 1996, in Mexico. They agree -within the limits of their possibilities- to pursue the objectives of the Network and to

participate in its joint projects and in addition, to keep the Network regularly informed on their activities in order to develop a wider cooperation between its members.

Furthermore, through this participation, each Network member agrees to promote the advantages of integrated river basin management compared to an individual approach, thus contributing to the development of this system over the World.

Name of the Member-Organization:

Name and Function of the Entitled Signatory:

Made at ..... on .....

Permanent Technical Secretariat  
International Office for Water  
21, rue de Madrid - 75008 PARIS - FRANCE  
Tél. : 33 (1) 44 90 88 60 - Fax : 33 (1) 40 08 01 45  
E-Mail : oieau-dg@worldnet.net

# FRANCE (CONT.)

## "WATER" AN EDUCATIONAL SOFTWARE FOR THE FINANCIAL SIMULATION OF A RIVER BASIN ORGANIZATION

France has a high performing institutional system for water resources management. The integrated river basin management, called "**Water Agency System**" has stood the test of time for 30 years.

**It relies on a financial solidarity between the water users of a river basin, based on the "user-polluter-pays" principle.**

The preparation of training-wise software, to simulate the financial operation of a Water Agency in a river basin would help provide answers to the following questions:

1. **How to really set a financial solidarity into motion ?**
2. **Within which limits ?**  
What charges will be supported by the various users ?
3. **For what results ?**  
What investment for which impact on the environment ?

The International Office for Water has developed **WATER** "Watershed Agency Tabulation of Economic Resources", in relation

with the French Institute for Environment (IFEN), with a double objective: **realism in simulation and educational clarity.**

Using a logical approach, which consists in describing the river basin concerned (users, discharges, withdrawals) and defining an action programme (Agency objectives, amount of the water charges, mode of financial assistance), the trainee can observe, in real time, the impact of the decisions (made by an a fictitious River Basin Committee) from an environmental, economic and financial point of view, and this over a 15-year period.

**"WATER" is now used for the practical training of agents from countries that are setting up their own river basin organizations.**

**Alain Bernard**  
International Office for Water  
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## RHONE-MEDITERRANEAN-CORSICA

### THE RHONE PLAN: TO RECOVER THE "MAJESTIC RIVER"

The Rhone, which flows over 850 km from Mt. Saint-Gothard in Switzerland to the Mediterranean Sea near Marseilles, is a multi-purpose river, this being the reason why it has lost part of its natural "vitality".

It has the largest mean flowrate of all French watercourses (1,800 m<sup>3</sup>/s at its mouth), thus, it is highly solicited for hydropower (5% of the French production) and for inland navigation, both responsible for important developments.

The Rhone is also deteriorated over one part of its course by the domestic, industrial and agricultural pollutants that are discharged. In spite of this, its

banks still receive thousands of swimmers, fishermen and sportsmen.

### The will to act

Under the aegis of the Rhone-Mediterranean-Corsica Basin Committee, elected officials, users, administrations and riverside residents' associations have a common goal to preserve the Rhone, also to privilege some of its natural media.

Thus, they elaborated a research programme, the conclusions of which are being used to prepare an action programme to save the river: the **Rhone Plan**.

## ADOUR-GARONNE

### ASSISTANCE FOR STRATEGIC DECISION-MAKING IN THE CHARENTE RIVER BASIN

Decisions pertaining to river basin management, backed by a wide concertation between decision-makers and local users, cannot be made unless all the interested parties have all the means at their disposal for a participative management, particularly in case of a crisis.

**Each Summer, the Charente Basin (10,000 km<sup>2</sup>), located in the South-West of France, is confronted with severe low-flow.** Moreover, economic activities inevitably depend on the water resource to such an extent that withdrawals are equivalent to the natural flow of watercourses in numerous sectors.



Therefore, in this particular case, an optimum management of water resources is absolutely necessary.

With the help of the Adour-Garonne Water Agency, a **computerized tool** has been developed and implemented to provide institutional decision-makers, managers and users with the means for developing a concerted strategy by using identical data. **It is a users' friendly tool for a better water management and for partially foreseeing the problems.** It can be defined by three characteristics and has four functions:

• **Characteristics:** assistance to decision-making in **real-time** due to the possibilities of a station-to-station dialogue between decision-makers.

#### • Functions :

1. **Fact-finding** to become aware of and to visualize in real-time, the state of the basin's water resources (flowrates, aquifer level, filling of dam-reservoirs, withdrawals, meteorological situation),
2. **Short-term forecasting** which foresees flowrate variation up to 15 days,
3. **Medium-term forecasting** which assists in foreseeing the risk and the extent of water shortage,
4. **Simulation** for establishing near future scenarios.

Interested in the possibilities of this tool, other river basin management organizations intend to use it shortly.

**Jean Pierre Poly**  
Adour-Garonne Water Agency  
Fax : (33) 61 36 37 28

### A treasure to be rediscovered

Three ambitious targets have been fixed in order to help the Rhone recover its balance:

- 1 - Recover an alive and flowing river by rehabilitating the by-passed sections and the "lones" (intermittent sections) and by facilitating the return of certain migratory fish, as for example the eel, as far as Lyons and the shad, up to the junction with the Ardeche River.
- 2 - Attain a high ecological quality, to enable the most noble uses such as drinking water supply and safe bathing, by reducing the discharge of all kinds of pollutants and in particular, ammonia and toxics.

3 - Limit the risks of accidental pollution, through prevention and by installing safety devices in pollution-prone establishments, also by preventing stormwater pollution.

Several billion French francs will be devoted to this **Rhone Plan**, by partners including local communities, industrialists, the agricultural sector, administrations and the Rhone-Mediterranean-Corsica Water Agency. Aiming at year 2000, everyone hopes to redeem to the Rhone River the quality and appeal it should never have lost.

**Jean-Paul Chirouze**  
Rhone-Mediterranean-Corsica Water Agency  
Fax : (33) 72 39 76 59

# SPAIN

## THE GUADIANA RIVER BASIN CONFEDERATION

### INVOLVEMENT OF USERS IN PUBLIC WATER ADMINISTRATION

The permanently dry land over a major part of the Iberian peninsula is due to the unequal distribution of water resources in time and space. These two factors (scarcity and insecurity) cause two unavoidable necessities: how to prevent diseases caused by a lack or excess of water and how to guarantee the availability of the resource where and when there is a demand. In view of this, the two dominating water management priorities have been:

- to build flow-regulating and water distribution systems,
- to set conditions for the different uses and conciliate relations between users.

From the XIII<sup>th</sup> century to date, standards have been established by means of successive laws founded on some guidelines which have been maintained over the years:

- Water is not a private property,

- The utilization of the resource must be jointly managed and the interested parties must be totally involved in the operation,

- The State is responsible for the overall development of water resources and for their utilization.

Obviously, these principles have been founded and developed over the centuries in relation to the social and political ideas in force at specific times; but the growing complexity of management due to increasing demands and water quality deterioration has made it clear that shared management has become more appropriate.

With the arrival of democracy in Spain, these principles were applied, within the geographical framework proper to each river basin (maintaining a well-established and reliable scheme) to an organization (composed of public authorities and users) whose task is to manage water resources and their use. These "re-

newed" Basin Organizations in theory, for in fact, they have been legally existing for 70 years, are called **River Basin Confederations**.

These Confederations, since the Water Law was passed in 1985, are composed of the following bodies:

- **executive**, Board of Directors and President,
- **for participative management** : Assemblies of users, commissions for dam-reservoir regulation, operation and public works committees,
- **for planning** : the Basin Committee.

These bodies provide legal guarantees for the presence of more than one third of the users on the Board of Directors and on the Basin Committee, in totality in the Assembly and in majority on operation committees.

It should be pointed out that each confederation's **Basin**

**Committee** includes direct users (water suppliers, farmers, industrialists and hydropower producers) with a representation proportional to water consumption, but also other indirect users (professional organizations of the agricultural sector and environmental organizations).

Procedures for electing the representatives of the various groups of water users is characterized by a "cascading" nomination, from the Operation Committee, User Assembly to the Basin Committee, thus involving them in all phases of water planning in order to meet the demand and to balance and harmonize national development.

**Antonio José Alcaraz Calvo**  
**Guadiana River Basin Confederation**  
**Fax : (34-924) 24 18 52**

# POLAND

## RZGW KATOWICE

### WATER MANAGEMENT IN UPPER SILESIA

#### Water resources

The Upper Silesia and Bielsko-Biala Regions cover an area totalling more than 10,000 km<sup>2</sup> with a current population of almost five million.

The extensive mining and industrial activities have degraded more than 15% of the area. Urban centres are dominated by heavy industries and coal mines, with 40,000 plants, factories and commercial enterprises, 10 % of which are important pollution sources. This region constitutes a major source of raw material for Polish economy, the centre of heavy industry and of electric power.

The Oder river basin covers an area of 3,450 km<sup>2</sup> and that of the Vistula 7,130 km<sup>2</sup> with a small part of the Danube river basin covering 24 km<sup>2</sup>.

The average annual runoff attains 96.5 m<sup>3</sup>/s (77.6 m<sup>3</sup>/s for the Vistula and 18.9 m<sup>3</sup>/s for the Oder drainage basin). According to a research carried out, 65% of the total length of the rivers, is contaminated, leaving only 20% carrying water for domestic and industrial uses.

Groundwater resources in the area reach up to 761.4 mm<sup>3</sup>/year

(renewable resources) and 640.1 mm<sup>3</sup>/year (available resources). The aquifer water balance is perturbed as a result of mining activities and the increasing infiltration of rain and river water into the ground.

Consequently, groundwater quality is poor, especially in the urban and industrial centres.

#### Drinking Water Supply and Sewerage Systems

Drinking water for Katowice and Bielsko-Biala provinces is supplied by a system first implemented in the 1970-80 period and drawing out water from the Mala Vistula, Sola, Skawa, Czarna Przemaza and Brynica rivers and also from reservoirs, the main one being Goczalkowice with a capacity of 164 m<sup>3</sup>. This system meets approximately 70% of the water requirements for domestic use, the rest comes from groundwater. All activities linked with drinking water supply and wastewater discharges (investments, construction, operation and maintenance) were managed by a State-owned enterprise which, in 1991 was divided into several companies.

At present, responsibilities are shared as follows:

- **In the province of Katowice:** the Upper Silesia Water Supply Company (for global production and supply) and 18 regional water supply and sewerage companies (for municipalities, industries and wastewater collection and treatment),

- **In the province of Bielsko-Biala:** the AQUA Company Ltd (production and distribution of water for the town of Bielsko-Biala and the surrounding villages, and also wastewater collection and treatment) and 14 municipal drinking water and sewerage companies.

#### The most important water management issues

Water management is a very complex process that needs to be integrated as decisions to be made must take into account all the natural aspects of the water resources system (surface and groundwater), water quality (physical, chemical and biological), accessibility, inter-basin transfer, all sectors of the national economy conditioned by water supply (drinking water production and

distribution, agriculture, energy, inland navigation, fishing, recreation) environmental protection, social, legal and institutional aspects on a national scale, priorities, from national to local level.

Bearing this in mind, the water management system founded on natural units (river basins), and supported by a highly qualified and experienced staff, and supervisory committees whose members are elected by the Government, local authorities and users, appears to be the most efficient.

**Franciszek Tomiczek**  
**RZGW Katowice**  
**Fax: (48-32) 599 642**

# RZGW WARSAW

## Activities

The main activities of Warsaw Agency consist in:

- defining the terms of reference and strategies for the utilization of water from the Middle Vistula river basin and above all, identifying present requirements and potential environmental hazards (SDAGE and SAGE),

- specifying the conditions for water utilization and establishing a diagnosis of the present state and problems related to water management, the hydroeconomic balance (qualitative and quantitative aspects of water resources in various basins),

- collecting data on water resources management and storing them in the regional databank,

- offering advice either on projects and construction sites which could affect the river basin management or on the requests received by the National Fund for Water Management and Environmental Protection, for financing the construction or modernization of installations, and establishing a priority list.

In order to accomplish these tasks, the Warsaw Agency has been divided into 23 units which cover the basin or part of the basin of the main tributaries and local aquifers.

Data are regularly updated: information is collected on users, pollution sources, wastewater treatment plants and surface or groundwater intakes.

The **databank** thus created is important, especially for the Departments for Environmental Protection of Voivodships, as it is the future computerized record of authorizations for water utilization, thus enabling their control. The databank contains the inventory of all the projects being developed over the basin territory. It also

collects information on charges levied for water utilization and wastewater discharge by the Regional Authorities on behalf of the Environmental Protection Fund.

## The Basin Committee

On February 16, 1993, the Warsaw Agency created the **Provisional Management Committee for the Middle Vistula River basin**. This Committee is composed of 66 members, representing in equal parts, the local authorities, the Regional Administrations and the users.

The work of the Committee is supervised by a Board of 6 members and its organization is based on the French model.

The members of the Committee work in four thematic groups:

- planning (quantitative and qualitative water resources, floods and drought),

- financing (credits, water charges, subsidies, duties for water supply and sewerage),

- data for the hydroeconomic balance, terms for water utilization,

- ecological education, tourism and public relations.

When the future Water Law (now being examined by the Diète) comes into force, the Agencies will become totally independent thanks to financial means provided by water charges. The Committee will then provide guidelines, while the Agency will have an executive role. The decisions made by the Committee, the "Water Parliament" will be compulsory for the Water Agency's activities.

The Warsaw Agency also deals with flood protection.

## A twinning agreement with the French "Adour-Garonne" Water Agency

The Warsaw Agency is in close contact with the Adour-Garonne Water Agency in France. It all began in 1992 when some Polish participants were in France for a course organized by the International Office for Water.

Upon their return to Poland, they were able to take advantage of the French specialists' experience. When establishing the Organizational Regulations of the Provisional Water Resources Management Committee for the Middle Vistula River basin, the management of the Warsaw Agency used those defining the Basin Committee and the Board of

Directors of the Adour-Garonne Water Agency.

A delegation of members of the Board of Directors of the Adour-Garonne Water Agency, visited Warsaw Agency on May 11-16, 1993. The French delegation became acquainted with Warsaw Agency's activities and had the opportunity of visiting some important installations, such as Warsaw water intakes "Gruba Kaska", the Wieliszew water supply network and the "Czajka" wastewater treatment plant.

On this occasion, a **"twinning agreement"** was signed by both Agencies and "Water Parliaments" - Basin Committees.

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# RZGW KRAKOW

## WATER LOSSES IN DRINKING WATER SUPPLY NETWORKS

In view of the specific problems of water utilization in the Upper Vistula River Basin, and the complexity of related issues, **one of the priority action concerns analyses of water leaks and losses in water supply networks and the setting up of a monitoring system**. In 1992, a system was developed by the Institute of Physical Planning and Municipal Management (IPPM) of Krakow. RZGWs of Krakow and Katowice signed an agreement with more than ten of the largest water supply companies of the Upper Vistula River Basin.

The system operation relies on a mobile laboratory acquired by the Regional Diagnosis Unit (RDU) of the Institute, and mobile diagnosis equipment leased by

RZGW Krakow to water supply and sewerage utilities and financed from a World Bank credit.

The problem of water loss raises increasing concern among the companies and there is also a growing demand for test analyses but this process is nevertheless much slower than expected. One of the reasons being that water charges form only a small proportion of the overall production cost of drinking water, another is that utilities are somewhat hesitant to reveal their water losses. It has become increasingly difficult for companies to convince local authorities to increase water charges for consumers without presenting detailed water consumption studies. Water losses over the RZGW's area of activity reach 18% on average but

in some water supply systems the losses are up to 70%.

In 1993, RZGW Krakow, in an effort to attract the attention of a maximum number of consumers to the issue of water saving, offered its technical services and experience to the 114 water supply companies covering the large towns within its operating area and to selected rural municipalities. This offer was combined with a survey. RZGW Krakow received answers to the filled-up questionnaire and, on the basis of the data thus collected, established the "water map" of towns in the Vistula-Malopolska River Basin. As a result of this initiative and thanks to the cooperation of the International Office for Water, **a booklet entitled "Water Management in Towns of the Vistula-Malopolska River Basin"** was elaborated and addressed to the Regional Inspectors for Environmental

Protection and also to mayors of all the towns involved.

As concerns the 1995-1997 period, the agreement was signed by water supply companies covering the following municipalities: Bedzin, Bielsko-Biala, Bytom, Jaslo, Kielce, Krakow, Nowy Targ, Przemysl, Rzeszow, Tarnobrzeg, Tarnowskie Gory, Zabrze, Dabrowa Gornicza, Sosnowiec and Szczawnica. At present, RZGW Krakow is working out a cooperation agreement with regard to water utilities supplying rural communities located in areas that require particular protection.

These suppliers can lease the specialized diagnosis equipment and benefit from the services of RDU, as well as having the possibility of participating in training seminars.

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## RZGW WROCLAW SCIENTIFIC AND TECHNICAL CONFERENCE

RZGW of Wroclaw in cooperation with the local Scientific and Technical Centre and governmental organizations, held a conference on wastewater treatment in the Oder basin, in Wroclaw on 1-2 June 1995. The organization of this conference in Wroclaw was justified by the announcement made to Parliament on January 18 by the Minister for Environmental Protection, Natural Resources and Forestry, about the impending signing of an agreement by Poland, Germany, the Czech Republic and the European Union with regard to **the creation of an International Commission for the Protection of the Oder against pollution.**

This conference is the first of a series of annual meetings on the topic of water protection and wastewater treatment in the Oder River basin. These will be organized in collaboration with regional water authorities, scientific circles, governmental services and professional NGOs. The organizers aim at transforming these into international conferences by associating representatives from the members countries of the above-mentioned International Commission for the Protection of the Oder.

Among the main recommendations, the following should be retained:

- the need to improve the regulations on the quality of wastewater discharged into the natural medium,
- the advantage of a certificate delivered by governmental agents after examination and assessment of a treatment plant operation and maintenance,
- the opportunity of creating a team of specialists within the Institute for Environmental Protection, in order to test the reliability of equipment used in treatment plants.
- the modification of operating authorizations during low-flow periods in order to enhance wastewater treatment by means of chemical processes in addition to biological ones and to encourage treated wastewater reuse for agriculture.

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# ROMANIA

## Integrated training programme in the water sector

The project originated from a request by the Ministry for Water, Forestry and Environmental Protection and the Romanian Water Authority "Apele Romane" to unite their efforts to develop a national centre for training in the field of water management.

The idea was discussed with French experts, with representatives of the Danube Programme Coordination Unit, the local UNDP office in Bucharest and with the various interested parties of the Romanian water sector.

**The National Action Group for Education in the Water Sector (GANESA) was formed on 13 October 1995.** Most of the main actors of the water sector are represented : ministries, national organizations, training and research institutes and non-governmental organizations.

The rationale for creating GANESA was the optimum utilization of resources and expertises which were dispersed over various organizations and locations throughout Romania. Its main tasks are:

- establishment of the Operational Training Strategy based on the National Strategy with regard to water management,
- establishment of the Water Sector Description (activities, institutions, specific tasks),
- assessment of training facilities for capacity-building in the water sector,
- assessment of training requirements in all spheres of the water sector.

Apele Romane is both coordinator and focal point of the project and the secretariat of GANESA is assured in collaboration with Urbana Engineering SA.

Apele Romane provides funding agencies with continuous information concerning the development and advancement of the project.

**The project's international dimension is important:** the Romanian training programme is a pilot sub-project for integrated training in the water sector within the framework of the Danube Programme. Several activities for assessing the situation have been supported financially by the Institutional Development Project of the Danube Programme:

- visit of Romanian water officials to France and The Netherlands to be informed on various training centres,
- joint mission of a team of French and Dutch experts to make a preliminary assessment of training resources, facilities, etc.

and define the options for their integrated utilization, and also individual follow-up missions by each expert in September and October,

- a ten-day training workshop in December, a pilot action jointly organized with the World Bank, for the staff of six potable water treatment plants and six wastewater treatment plants (six municipalities) and water quality inspectors from six branches of Apele Romane. The trainers were Romanian and international experts.

During the GANESA coordination meeting held on December 18, 1995, the two key topics on the agenda were : pilot activity analysis and project approach identification.

It was agreed that the pilot activity was highly successful and that this sub-sector should be explored more in depth.

It was also decided to extend this kind of integrated training activity to other water sub-sectors.

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## Water management planning

The National Strategy for water resources and forestry management, and environmental protection was adopted on December 28, 1995. This Strategy will be applied up to 2020 in accordance with the Masterplan by twelve regional branches of the Romanian Water Authority "Apele Romane", at the level of each river basin.

The first Masterplans for Water Management and Development were launched in Romania in 1954.

The Masterplans for river basin development (MRBD) were elaborated by the consulting firm Aquaproject S.A. upon the initiative of the Ministry for Water, Forestry and Environmental Protection. Apele Romane is involved in all the MRBD preparatory phases and is responsible for their application and supervision.

The Master Plan for Water Resources and River Basins Management and Development of Romania should reach the following objectives before 2020:

- re-assessment of ground and surface water resources in the river basins,
- assessment of water resources quality and identification of pollution sources, considering the major changes that occurred in industrial and agricultural production,

- identification of zones, municipalities, and agricultural lands that require protective measures against flooding,

- assessment of the hydropower potential of watercourses that could be an asset in the future,

- identification of some potential waterways that could be developed for inland navigation in various river basins,

- offer for public works, installations and developments within the field of water management in view of an integrated and sustainable water management.

## French-Romanian Cooperation for flood forecasting and warning

An initial funding by the French Ministry for Foreign Affairs out of its 1995 budget, enabled the project with APELE ROMANE to get under way in 1995 and a French preparatory mission (Water Directorate and IOW) to take place in Romania from November 19 to 23. It defined the problems encountered by APELE ROMANE's subsidiary branch in BACAU, chosen as a pilot area.

The main concern is the forecasting of sudden floods in mountainous areas in particular. This requires:

- **a critical analysis of the monitoring system** in order to position stations according to their situation and transmission reliability,

- **the setting up of hydrological stations with automatic transmission** of data to a central unit enabling a real time visualization of the phenomena,

- **the preparation of a flood forecasting model** for a small mountainous river basin,

- **a study to determine the benefit of using radar** for meteorological forecasts and radar-flowrate test models,

- **the map up-dating and computerization of flood-prone areas,**

- **seminars** intended for elected officials to make them aware of the flood phenomenon and to inform them of their important role with regard to prevention, warning and safety measures.

The various measures proposed will be tested on the TROTUS River, the catchment area of which covers 4,500 km<sup>2</sup>.

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# UKRAINE RUSSIA

## IMPROVEMENT OF THE WATER QUALITY MONITORING SYSTEM IN THE SOUTHERN BUG RIVER BASIN

As a result of changes in Ukraine's economic system, the efficiency of the water quality monitoring system is being improved. The approach is by means of catchment areas and, of course, new forms of investment concerning water resources protection.

France, which can be compared with Ukraine, as far as territory and population are concerned, has already 30 years of experience in river basin systems, operated and managed by Water Agencies. Drawing from this experience, **work is actually under way in Ukraine, for the creation of a system for monitoring water quality in the Southern Bug River basin.** The project is being financed not only with State investments but also with local sources.

The Bug River basin is entirely situated in Ukraine and includes the districts of Khmelnytskyi, Vinnitsa, Cherkassy, Kirovograd, Nikolayev and also, parts of the districts of Odessa and Kiev. It covers an area of 63,700 km<sup>2</sup> (approx. 10% of the Ukraine territory). The length of the river is 857 km. The population within the basin reaches 5 million people. The area is highly industrialized (shipbuilding, food processing, light industries, hydropower stations, agriculture).

The new organization for the Bug River basin will be composed of two entities: **the Basin Committee and the Water Agency** for monitoring water quality:

- **The Basin Committee** will define a strategy and policy for water utilization in the basin, perform arbitration in case of conflicts, adopt basin standards, coordinate decisions pertaining to water utilization between Administrations of districts and regions,

- **The Water Agency** will perform executive functions. It will implement water protection plans and measures and will finance actions approved by the Committee. The Agency will obtain its funds by collecting water charges for municipal, industrial and agricultural uses and for discharge of effluents, as well as from State and local budgets and private donations.

At present, efforts are aimed at harmonizing the Water Agencies' regulations with those of administrations and organizing the structure of the Agency and its financial mechanisms.

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## PILOT PROJECT FOR WATER RESOURCES MANAGEMENT IN THE TOM RIVER BASIN

The TOM River basin is located in the southern part of Western Siberia and belongs to the Ob River basin which flows into the Kara Sea in the Arctic Ocean.

The Tom river is 827 km long and its catchment area covers 62 000 km<sup>2</sup>.

The largest part of the basin (90%) belongs to Kemerovo and Tomsk regions with a population of about 3 million.

The TOM river basin is a very important region with regard to environmental protection due to the amount of natural deposits, the intensive exploitation of these resources, the development of chemical, power, iron and steel and mechanical industries, and the increasing water demand for population and industry.

Nowadays, only 70% of surface water is used to meet drinking water requirements and an increase in the demand has led to the polluting of both surface and groundwater.

Consequently, there is a severe health problem in that area, linked to the consumption of drinking water of poor quality.

### Organization of new structures for water resources management

ROSKOMVOD (Federal Water Committee) and the Administrations of Kemerovo and Tomsk regions, signed in 1993, a cooperation agreement with the French Ministry for the Environment to set up the **Agency of the pilot TOM River Basin.**

At the end of 1994, the Executive Management for the Development of the TOM river was created, using the French model, to become later a River Basin Agency.

In November 1994, the TOM River Basin Committee gathered representatives of both regions, of Roskomvod and also some French experts. During the first meeting, the composition of the Basin Committee and of the executive body was ratified, together with the priority actions for water protection in the TOM River Basin.

Two groups of experts from Roskomvod and Kemerovo and Tomsk regions participated in a training course in France to become acquainted with the French experience. They highly appreciated the organization, lectures, studies and work undertaken by the Water Agencies and the International Office for Water.

### Drawing up the TOM River basin programme

The Executive Management of the TOM river has prepared a federal draft programme which should lead to the improvement of the ecological and hydraulic situation in the basin. This programme provides for the following:

- renovation and construction of wastewater treatment plants,
- supply of better quality water,
- development of protection areas and cleansing of riverbeds,
- preparation of institutional and environmental techniques for controlling water utilization and protecting water resources.

Furthermore, within the framework of the European Union's "TACIS" programme, a technical support has been set up for important towns of the basin.

Regional investors and industrialists will have an important role to play in the implementation of the priority programme, but in order to reduce delays in its completion, it appears absolutely necessary for us to attract foreign investors.

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# MEDITERRANEAN REGION

## MOROCCO

### PROJECT OF A WATER LAW

The essential texts concerning water go back to the first decades of the XXth century. They were prepared according to the requirements and the circumstances in such a way that the present Moroccan regulations related to water are made up of a group of scattered texts, updated in stages and at different dates. These water rules are no longer adapted to the modern organization of the country.

This is why **remodeling the regulations and their conversion into a unique law, the Water Law, is necessary.** It must constitute the legal basis for the country's water policy and attain the following objectives:

- **coherent and flexible planning** for water resource utilization, not only at river basin level but also at national level,

- optimum development and sound management of all water resources taking into account the order of priority given by the **national water masterplan,**

- water resources management within a geographical unit, **the river basin,** introducing a major change which will facilitate the design and implementation of a decentralized water management,

- **global protection, also quantitative and qualitative preservation of public water resources,**

- **adequate water management** that will facilitate the control of utilization and operation, by associating public authorities and users to decision-making in the water field.

To reach these objectives and reinforce the existing institutional framework related to water

management, the Water Law under preparation, provides for the creation of **River Basin Agencies,** legal and self-financed public corporations. Their mission will be to assess, plan and manage water resources at river basin level. These agencies will offer loans, subsidies and financial aid to any person investing in activities dealing with water resources development or preservation. Their means would come from the recovery of **water charges** from water users, from loans, subsidies and donations.

*Extract from the "Water Law", published in the Kingdom of Morocco's official report of September 20, 1995*

## MEDITERRANEAN (CONT.)

# TURKEY

## FRENCH AND TURKISH SEMINAR

The first French-Turkish seminar on river basin management took place in Ankara on September 4-6, 1995, on the initiative of both French and Turkish Ministries for the Environment.

This seminar was successful, it gathered about a hundred participants representing 28 Turkish organizations concerned.

It was the opportunity for an exchange of experiences on the policies established in both countries regarding water resources management and dealing with institutional, administrative, technical and financial aspects, in relation to the organization at river basin level, municipal services and coastal protection in particular.

The main lines of action for a multiannual French-Turkish cooperation programme for inland water resources management were brought out. These actions would be implemented:

- **at central level**, provided that support is granted, for preparing a law draft to be presented by the Turkish Ministry for the Environment, and for setting up a **Turkish Data Bank on water resources**,

- **at an experimental river basin level**, where a pilot project for the adapted organization of an integrated water resources management would be launched. This river basin will be chosen by the Turkish authorities, probably in the Mediterranean area to be an example and driving force for other interested Mediterranean countries.

A top-level Turkish delegation should come to France during the first semester of 1996 to meet executives of Water Agencies, IOW, municipalities, industries and associations of irrigation users.

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# JORDAN-YARMOUK

An article on the "Building a Legal Regime for the Jordan-Yarmouk River System - Lessons from Other International Rivers" by Nurit Kliot was published in the Spring 1995 issue of "Transboundary Resources Report". This article aims at presenting possible regimes, as re-

flected by treaties and agreements in other international rivers, particularly those where there were overt conflicts.

**Transboundary Resources Report**  
*CIRT - University of New Mexico- USA*

# ALGERIA

## PROJECT FOR THE "MITIDJA WATER PROTECTION AGAINST POLLUTION"

This project, managed by ANRH (Algerian Ministry of Public Works) and funded by the French Ministry for Foreign Affairs, aims at implementing a **programme for monitoring and protecting the waters of the Mitidja plain which supply Algiers**.

The first agreement plans the following actions : organization of monitoring networks, monitoring the wadis water quality, definition of a protocol for monitoring water quality in the dam-reservoir supplying Algiers from an eutrophication point of view, optimization of the network monitoring aquifer quality, and preparation of guidelines for the Mitidja management quality objectives.

The International Office for Water has the responsibility of coordinating, for the French party, this action programme jointly implemented by SAGEP, the Universities of Toulouse and Limoges and by GEOLAB, all of which combine their complementary expertises to meet the requirements of the Algerian Authorities in the most appropriate manner.

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