



**INBO'S WORKSHOP
"WATER IN RIVERS"**

RESEAU INTERNATIONAL
DES ORGANISMES DE BASSIN

INTERNATIONAL NETWORK
OF BASIN ORGANIZATIONS

RED INTERNACIONAL
DE ORGANISMOS DE CUENCA

4th QUARTER OF 1999 N° 8

The network newsletter

THE WORLD WATER FORUM: LET'S PARTICIPATE IN INBO WORKSHOP *The Hague - 20 March 2000*

With year 2025 in perspective, the project, entitled "World Water Vision", a vast prospective survey concerning the evolution of water management problems world-wide, has been initiated by the World Water Council, in liaison with the World Water Commission and the Global Water Partnership (GWP).

Upon the request of **Mr. Ismaël SERAGELDIN**, Vice-President of the World Bank and President of the World Water Commission, the **International Network of Basin Organisations (INBO)** has been invited to contribute to this ambitious project on the two topics which fall within its particular competence:

- **Integrated water resources management at river basin level,**
- **Management of rivers shared by several countries.**

In order to widen the debate, a forum has been opened for discussion on the Internet site of the Permanent Technical Secretariat:

- www.iowater.org/inbo

The member organisations can consult all the texts under discussion, as well as a wide selection of international documentation and the study on shared rivers, undertaken by the Water Academy.

In close liaison with the World Water Vision Technical Unit and the GWP Secretariat, and further to the orientations defined during the meetings of the Liaison Bureau in Madrid (Spain) in April 99 and in Mendoza (Argentina) in August 99, INBO has prepared a paper to contribute to the "Vision for 2025" and a programme related to the framework for action to favour "The Strengthening of Basin Organisations over the World".

The final INBO paper and the action plan will thus be presented during the World Water Forum in the workshop on "Water in Rivers", which will be held in The Hague (the Netherlands) on 20 March 2000.

Be many to contribute to this major collective project of the 21st century.

*Vision Management Unit
c/o UNESCO
Fax: 33 1 4558 5811
wjcosgrove@compuserve.com
World Water Council
Fax: 33 4 91 99 41 01
wwc@worldwatercouncil.org*



Meeting of the INBO Liaison Bureau in Madrid from 28 to 30 April 1999. Welcome by Doña Isabel TOCINO, Minister for the Environment

Urgent

Please register to participate in INBO's Workshop on "The Strengthening of Basin Organisations over the World".

The World Water Forum
The Hague - 20 March 2000

10h30 - 12h00

Registration:

www.iowater.org/inbo

Fax: 33 1 40 08 01 45

E-mail: stp-riob@oieau.fr

Web:
www.worldwaterforum.org

3RD GENERAL ASSEMBLY

SALVADOR DE BAHIA - BRAZIL - 1 - 4 DECEMBER 1998



The 1998 General Assembly of the International Network of Basin Organisations took place in Salvador de Bahia (Brazil) from 1 to 4 December at the invitation of the Brazilian Authorities.

The works were honoured by the presence of Dr. Cesar Borges, Governor of Bahia State, and Dr. Fernando Antonio Rodriguez, Secretary for Federal Water Resources, who officially opened the debates, as well as Dr. Roberto Moussalem and Mrs. Stela Goldenstein, Secretaries for Water Resources in the Bahia and Sao Paulo States respectively, Mr. Jacek Kurnatowski, Director for Water in Poland and Mr. Sekou Toure, High Commissioner for Water in Ivory Coast who chaired the technical workshops.

The Assembly gathered 351 delegates who represented 158 Organisations from 27 countries.

To date, 125 Organisations from 49 countries have already expressed an interest in becoming either full "Members" or "Observers" to the Permanent Technical Secretariat. Several other organisations, that meet the criteria, have also shown an interest.

The delegates reaffirmed their support to INBO's Charter principles and reminded that membership to INBO is based on four principles:

- ➔ an overall, integrated and consistent management of water resources on the relevant scale of large river basins and aquifers,
- ➔ the participation of the local Authorities concerned, the different categories of users and associations for environmental protection in decision-making within

basin committees, besides the appropriate Governmental Administrations,

- ➔ the definition of medium and long-term objectives to be achieved through masterplans and priority action plans,
- ➔ the mobilisation of appropriate financial resources, based on the "user-polluter-pays" principle.

Upon the proposal of the Brazilian Member-Organisations and in accordance with the Charter, the General Assembly unanimously nominated **Mr. Raymundo GARRIDO**, since nominated Secretary of State for Federal Water Resources in the new Brazilian Government, as the new INBO Chairman until the next General Assembly in the Spring of 2000.

It also confirmed the following members of the Liaison Bureau:

Africa: A. Mekki (Algeria), A. Kouadio (Ivory Coast),

America: M. Ballester (Costa Rica), E. Reyna Chacon (Guatemala), C. Abihaggle (Argentina), C. Aguilar (Ecuador), D. Bravo

(Colombia), R. Chongo (Cuba), D. Favero Brochi (Brazil), R. Garcia Mayen (Mexico), J.M. Latulippe (Quebec),

Asia: R. Usman (Indonesia),

Western Europe: J.M. Santafé and J.A. Llanos Blasco (Spain), J.P. Chirouze and A. Duchein (France)

Central and Eastern Europe: A.M. Pelin (Romania), T. Walczykiewicz and A. Badowski (Poland), Mr. Punchocar (Czech Republic).

In addition: Messrs J.M. Aragones Beltran (Spain), G. Chavez Zarate and E. Mestre (Mexico) are ex-officio members of the Bureau as former Chairmen, as well as Mr. J.F. Donzier (IOWater) who represents the Permanent Technical Secretariat in the Liaison Bureau and whose mandate was renewed for a new statutory period.

The Assembly was pleased with the unquestionable success of the "Network Newsletter" publication and of the Internet site: www.iowater.org/inbo which currently provides information on the Member-Organisations:

- information sheet concerning the "Member-Organisations",
- agenda of events and seminars,
- identification of educational materials and available information,
- inventory of competent consulting firms and service providers,
- inventory of new Member-Organisations capable of mobilising experts at international level for missions of general interest to INBO as well as a list of these experts.

From now on, "discussion forums" will take place on the WEB, especially on the topics already dealt with by INBO during the Salvador meeting:

- "financing of Basin Organisations",
- "masterplans for water development and management",
- "participation of users in the sustainable management of water resources", by developing, in particular, an appropriate "social engineering" approach,
- as well as on other important topics such as "the information necessary for decision making".

INBO's active participation in the World Water Forum and in the Ministerial Conference in The Hague (The Netherlands) planned for March 2000 is also considered.

In particular, the General Assembly wished that a Working Group on the management of shared waters be created within INBO, which would, in liaison with the existing International Commissions or Authorities, propose draft recommendations to be presented during the Ministerial Conference in The Hague in 2000.

Following the Management Committee which took place in Salvador on 1 December 1998, the delegates reviewed the progress of the "AQUADOC-INTER" project, for the dissemination of institutional documentation between the Member Organisations and attended a demonstration of the model of this service. Operation on the Internet could start at the beginning of 2000.

They were, however, very pleased with the organisation, in Brazil by the MMA/DGRH, with the support of IOWater, the French Water Agencies and Cooperation, of **four seminars on basin management** which gathered more than 180 participants from Brazil and other Latin American countries, held respectively in Rio de Janeiro, Mato Grosso, Minas Gerais and Salvador.

The next INBO General Assemblies will take place in Cracow (Poland) from 30 September to 4 October 2000 and in Quebec and Colombia in 2001 and 2003.

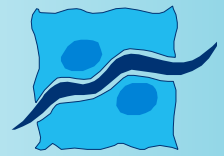
Moreover, the General Assembly was pleased with the crea-



Mr. Ambroise GUELLEC (France) chaired the round table on "users' participation". Mrs. Ch. RUNEL (INBO-PTS) presented "a strategy on the information of water users".



LANBO



2ND GENERAL ASSEMBLY MENDOZA - ARGENTINA - 3 - 5 AUGUST 1999

tion, within INBO, thanks to the support of the Basin Organisations and Governmental Authorities of Brazil and Colombia, of the first Regional Network of Latin American Basin Organisations (LANBO), of which Mr. D. Bravo Borda was elected first Chairman, following the Constitutive Assembly in Brasilia (Brazil), on 9 and 10 July 1997 and the first General Assembly in Bogota (Colombia) from 4 to 6 August 1998.

It was also pleased with the meeting of the Member Organisations from Central America and the Caribbean that was held in Guatemala from 29 to 31 July 1998 under the Chairmanship of Mrs. E. Reyna Chacon and with the support of the Authorities and Organisations of that country.

The next meeting for Central America will take place in Nicaragua during the spring of year 2000.



The second General Assembly of the Latin American Network of Basin Organisations (RELOC/LANBO) took place in Mendoza, Argentina, from 3 to 5 August 1999.

LANBO gathers the Latin American Members of the International Network of Basin Organisations (INBO).

The Assembly, jointly organised by the General Department of Irrigation of Mendoza and the National Secretariat for Natural Resources, Sustainable Development and Tourism of Rioja Province, dealt with the following points:

- LANBO operation;
- Best practices for water resources management;
- Information and monitoring systems.

It gathered 157 participants, representatives from eleven countries of Latin America and the Caribbean, involved in basin policy implementation. Each of them, as far as they were concerned, presented a progress report on the on-going reforms and case studies on pilot basins.

INBO's Permanent Technical Secretary, Mr. Jean-François DONZIER, presented a paper on the financing of basin organisations over the world.

All these papers can be viewed on INBO's web site: <http://www.iowater.org/inbo>.

The Assembly also studied INBO's draft paper for the "World Water Vision" to be examined during The Hague Ministerial Conference on 21 March 2000.

Its draft text was presented to the Assembly of the Global Water Partnership in Stockholm on 10 August last, by Messrs. M. MESTRE, D. BRAVO et L. ROBAUX, representing INBO.

Mr. Carlos Enrique ABIHAGGLE, General Superintendent for Irrigation in Mendoza, was elected Chairman of LANBO for a year.

*General Department of Irrigation
Fax: 54.261.429.5455
irrigación@mendoza.gov.ar*



PARTICIPATE IN THE FORUM ON THE MANAGEMENT OF SHARED RIVERS

The forum for discussion on the integrated management of shared river basins which has been created on the web site

<http://www.iowater.org/inbo>

is starting to receive interesting papers from correspondents, using the study carried out by the Water Academy.

Discussions can be furthered:

- either on-line, by entering your comments directly in the appropriate space of the forum,
- or deferred, by sending your texts in a file attached to an E-mail addressed to the webmaster, or even by diskette addressed to INBO's Permanent Technical Secretariat.

THE MENDOZA CODE

In order to contribute to the improvement of man's action when faced with a scarce resource, an increasing demand and human damage and to strengthen the river basin concept of water management in Latin America, the delegates of the Network of Basin Organisations of Latin America and the Caribbean, gathered for their Second Ordinary Assembly in the town of Mendoza (Argentina), approved the following declaration:

First principle:
Access to water

We acknowledge that access to water is an inalienable and imprescriptible right for man and living beings in general, for their survival under conditions of sufficient quantity and acceptable quality.

Second principle:
Users' participation

In addition, we consider that the users should invariably assume some obligations with regard to water withdrawal and discharge for which they have to pay, in order to respect economic, social and environmental interests.

Third principle:
Information

We fully acknowledge the right to access water-related information, as a privilege of all the inhabitants and institutions of the sector, allowing them to be aware of the state of water resources observed by water institutions at governmental level and geographically, in order to assist with the decision-making process of governments and private individuals, as a contribution to the scientific and technological development of water and for creating a new water culture.

Fourth principle:
Water saving

We consider that water is an economic and social asset and as such, its price should be compatible with its cost. Its role, which is that of an instrument for regulating the management of water availability and demand, is fundamental for the financial balance of the water sector and for contributing to the improvement of water resource management, in terms of sustainability, at river basin level, in particular.

Fifth principle:
Pollution

We assert that the concepts of water quality management cannot, under any circumstances, replace water availability and demand management, water saving and indeed, water cultures. A society defines its own standards in order to conform with water quality, before, during and after its utilisation, and also its expectations and commitments regarding natural resources.

Sixth principle:
Water management

LANBO acknowledges that water management depends on various relations between: governmental organisations and water, users and water, the society and water, water and the other natural resources. We acknowledge that water management must be integrated, sustainable, effective, productive, equitable and at river basin level.

INTERNATIONAL EVENTS

FRENCH-BRAZILIAN SEMINAR

BRASILIA - 12 AUGUST 1999

This French Brazilian seminar on "water policy and energy alternatives", gathered 85 representatives from official organisations, NGOs, universities and Brazilian research centres. Its aim was to enter into a reflection on sustainable development and environmental protection.

It was held under the aegis of the Brazilian Ministry for the Environment and the Federal Secretariat for Water Resources, with a view to the future implementation of the Law of January 1997 which established the new legal framework for water resources management in Brazil.

Industrial and domestic waste water discharges but also hydro-

power stations deteriorate the quality and operation of hydrological systems. In addition, the reduced use of fossilised fuel will abate the discharge of pollutants and thus preserve natural resources.

The setting-up of decentralised and democratic water management will make it possible to preserve the resource, even if it means that important changes will come about in habits.

Mr. Jean-François DONZIER, INBO's Permanent Technical Secretary, presented a paper on "the management of conflicting water uses".

Dra Linda G. Reis
Tel/Fax: 0055 61-346-6993
linda@euroamericana.com.br

AQUADOC-INTER

TOWARDS A WORLD-WIDE INFORMATION NETWORK

AQUADOC was born because the International Network of Basin Organisations needed to set up a system for exchanging information between managers of large river basins.

It consists in proposing a unique access, via the Internet, to selected information made available by focal points in the partner countries.

Eleven focal points have already been identified on three continents:

- Brazil, Colombia, Mexico, Peru,
- the Czech Republic, France, Hungary, Romania, Poland,
- Morocco, Senegal.

EMWIS (Euro-Mediterranean Information System on

know-how in the Water Sector) has the same objective of enabling the Mediterranean countries to have access to information (see page 28).

Each focal point selects the information which is available in its country and related to river basin management, regulations and institutions, research activities, training and data management.

INBO-PTS offers methodological assistance and required tools, especially the ARISEM Company's multilingual search engine and is developing, with the support of the French Ministry for Foreign Affairs, a comprehensive computerised system for the focal points which wish to rapidly and economically enter the network.

GLOBAL WATER PARTNERSHIP

"FROM VISION TO ACTION"

The Global Water Partnership (GWP) was formally established in 1996 in order to assist in translating the principles of the Dublin Conference from theory into practice. GWP is an international network open to all parties involved in water resources management, e.g. governments of developing as well as developed countries, UN agencies, multilateral banks, professional associations, research organisations, the private sector and NGOs.

The World Water Council launched the World Water Vision for the 21st Century project. It will be presented at the 2nd World Water Forum in The Hague in March 2000.

The Vision will describe a desirable future scenario and encourage in devising and implementing solutions to the problems.

In parallel to this, the Global Water Partnership (GWP) is developing mechanisms to translate this vision into action: the Framework for Action will also be presented at The Hague.

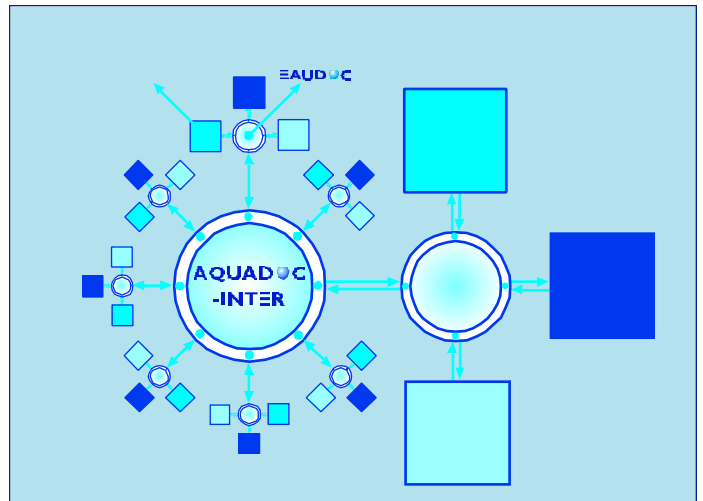
The preparation of the Framework for Action involves analysing

the strategic choices emerging from the Vision and carrying out a consultation process with key stakeholders at global, regional and national levels.

The core building blocks for the Framework for Action have been regional frameworks developed by governments and key water sector practitioners with guidance and support provided by the GWP's Regional Technical Advisory Committees (TAC). The regional frameworks have been developed through consultations and combining workshops and regional meetings, to establish a shared view of appropriate strategies, mechanisms for implementation, and priorities for immediate action and investment. Development of a consensus with other key groups such as the United Nations, External Support Agencies, representatives of civil society, and relevant parts of the private sector have also been essential.

GWP Secretariat:
Fax: 46 8 698 56 27
E-mail: gwp@sida.se.

www.gwpforum.org/Vision.htm



INTERNATIONAL DOCUMENTARY ENGINEERING

MOROCCO

ONEP (the National Office for Drinking Water Supply) in Rabat, is setting up, with financing from the IBRD, a documentation centre for processing information.

The following activities have been carried out since 1998:

- audit of the operation of ONEP's documentation centres,
- selection of documentary technologies suited to ONEP and to its ambition of sharing information and widely disseminating its knowledge and know-how,
- the training of documentation teams,
- technical support with the data base creation and management,
- assistance with the design of dissemination tools (periodicals, web site, ...).

SENEGAL

The French Cooperation Mission supports the Ministry of Water of the Senegal Republic in order that the Secretariat for Water Resources Management and Protection (SGPRE) becomes the national documentary focal point. IO-Water has thus assisted in:

- equipping SGPRE with TEXTO systems for documentation management,
- providing a system for exchanging information with the Prime Minister's departments,
- disseminating the SGPRE documentation base onto its web site.

A specialised training of the personnel of the Ministry of Water and Prime Minister's departments was completed in December 1998.

Jean-Antoine FABY - STP-RIOB
Fax: +33 5 55 11 47 48
ja.faby@oieau.fr

Urgent

Please register to participate in INBO's Workshop on "The Strengthening of Basin Organisations over the World".

The World Water Forum - The Hague - 20 March 2000
10h30 - 12h00

Registration:
www.iowater.org/inbo
Fax: 33 1 40 08 01 45 - E-mail: stp-riob@oieau.fr

UNEP

GLOBAL INTERNATIONAL WATER ASSESSMENT

The project for Global International Water Assessment (GIWA) amounting to 13.2 million US Dollars, is a UNEP initiative financed by the Global Environment Facility (GEF). This project will concern issues such as shared and transboundary waters and its aim is to develop scenarios on the future state of global water resources and analyse political options in order to assist managers and decision-makers.

Prof. Wramner
UNEP
Fax: +254-2-623545

INTEGRATED COASTAL AREAS AND RIVER BASIN MANAGEMENT "ICARM"

The United Nations Environment Programme (UNEP) has initiated two programmes, "Regional Seas" and "Environmentally Sound Management of Inland Waters (EMINWA)". Both programmes have recognised the need for an integrated approach to the management of both river basins and coastal areas, on the basis not only of their hydrological and geo-chemical relationship but also of the need for a more effective socio-economic development of the two management units, which were conventionally managed separately. For example, construction of dams in a river not only may alter hydrologic schemes upstream and downstream of the river, but also may affect hydrological conditions of estuary areas and the coastal sedimentation process. Furthermore, 16 of the world's 23 mega cities with over 2.5 million inhabitants are in the coastal belt.

UNEP is planning to apply these guidelines to a pilot river basin-coastal area (or island).

Takehiro Nakamura
Technical Cooperation Unit -
UNEP
Fax: +254-2-623545
Takehiro.Nakamura@unep.org



UNIDO

A TOOLBOX FOR INDUSTRIAL RISK ASSESSMENT

The basins of international rivers are areas where there can often be conflicting pressures between the development of economic and social activity and the maintenance of environmental quality.

For multilateral organisations, the concept of "integrated environmental management" is the basis of regional transboundary programmes. International waters receive a multitude of waste inputs originating from industrial and municipal land-based sources as well as other pollutants introduced through shipping activities, agricultural practices and atmospheric inputs of airborne pollution, with consequent risks for ecosystems and human health.

Considerable modifications are already occurring in the ecology of many river basins as a result of both natural and man-made changes.

The sea level rise will lead to flooding and salt intrusion into the water tables.

Continuing problems of water supply and sanitation, associated with pollution, are likely to increase considerably water-related diseases.

How do we forecast and reduce risks?

Research is needed to find the most cost-effective solutions:

- Innovative monitoring and surveillance techniques (e.g., earth observation systems).
- Research into understanding processes of biogeochemistry

and pollutant behaviour (e.g., physical, chemical and biological).

- Models to determine appropriate long term reference areas.
- Expert systems to link existing models with our experience and knowledge of the environment.
- Indicators to show effectiveness in moving towards sustainable development.
- Links between environmental, social and economic measures.

UNIDO brings together the necessary skills and expertise for dealing with the complexity of these problems through the implementation of effective "Integrated Environmental Management" (IEM). This assesses the changing states of ecosystems using science-based information, linked to socio-economic benefits for countries sharing or bordering international waterways.

Integrated interdisciplinary methods are used in order to address the consequences of ecosystem change and the ensuing implications for sustainable use and development of food resources like agriculture and fisheries, as well as the needs of industry.

Prof. Michael N. Moore
& **Dr. Zoltan Csizer (Director)**
UNIDO, SES/PEM
Fax: +43 1 26026 6819
mmoore@unido.org

THE WORLD BANK INSTITUTE

The World Bank Institute and the Japanese International Cooperation Agency (JICA), organised from 21 to 28 June 1999, in partnership with the Government of the Philippines, a seminar for reflection on Institutional Options for River Basin Management. The purpose of the seminar was to provide the 50 participants, Heads of Water Departments from 10 Asian countries, with an opportunity to acquire and share knowledge and information which will be useful for developing an appropriate policy and institutional fra-

mework to improve water resources planning, development and management in their respective countries.

David J. Groenfeldt - EDIEN
Fax: +1 202 676 0978
Djgroenfeldt@worldbank.org

IWMI

RESEARCH TO PROMOTE EFFECTIVE BASIN INSTITUTIONS

The International Water Management Institute (IWMI), with headquarters in Sri Lanka, is working with partners around the world to develop more effective frameworks for managing water-scarce river basins. This is linked to the analysis of basin institutions, irrigation schemes in order to understand what is the relationship between the effectiveness of institutions and the water performance.

The countries and basins concerned are: the Olifant in South Africa, the Lerma-Chapala in Mexico, the Oum Er Rbia in Morocco, the Küçük Menderes in Turkey, the Dedura Oya in Sri Lanka, the Lembang, Sumur, Cisangkuy and Ombilin Rivers and Lake Singkarak, in Indonesia, the Fuzi in the People's Republic of China, the Upper Pampanga in the Philippines, and a basin still to be finalised in Nepal.

IWMI carries out research by using a common, conceptual framework for a comparative analysis of the basins.

Doug Merrey,
Deputy Director General, IWMI
d.merrey@cgiar.org

GEMS-WATER

TRANSFER OF EUROPEAN DATA

Water quality data files from 15 European countries have been transferred from the European Environment Agency (EEA) to the GEMS/Water Collaborating Centre. This information from 154 stations established on rivers of Western Europe covers the period 1990-94. GEMS/Water also received statistical information on water quality parameters from 1980 onwards. The data are now being analysed and will be merged into the UNEP and WHO GEMS/Water Collaborating Centre databases. In exchange, the data accumulated by GEMS/Water on the countries of Central and Eastern Europe will be transferred to the EEA's database.

GEMS/Water Collaborating Centre
E-mail: GEMS@cciw.ca
Web:
<http://www.cciw.ca/gems/>

MANAGEMENT OF SHARED WATERCOURSES IN SOUTHERN AFRICA

The Southern African Development Community (SADC) is a regional organisation comprising fourteen (14) member States; namely, Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

Shared watercourses:

The SADC region has 15 river basins which are shared by 2 or more member States. The major transboundary watercourses include the Congo, the Nile, the Zambezi, the Orange and the Okavango

whose drainage areas cover more than 500,000 square kilometres.

Water resources in the region are seen as an important vehicle for economic Cooperation and regional integration. Further to the natural phenomena, freshwater is misallocated and inequitably shared amongst the countries and within member States. Thus, there is a need for a legal and regulatory framework to address these anomalies and deficiencies.

Protocol ratification:

The Protocol on Shared Watercourses in the SADC region was signed on 28 August 1995 in Johannesburg. It has been operational since September 1998 after receiving a two-thirds majority ratification of the 11 States which were then SADC members.

Measures have been taken to popularise the protocol by publi-

shing a brochure, in three languages, English, French and Portuguese, in less legal terms intended for the general public. Work is on-going for the harmonisation of the Protocol with the United Nations Convention on the Law for the Non-Navigational Uses of International Watercourses.

Sechocha MAKHOALIBE
Water Sector Co-ordination Unit
Fax: +266 310465
E-mail: sadcwscu@lesoff.co.za

MALAWI: A WATER LAW IN ACCORDANCE WITH THE SADC PROTOCOL

Malawi is in the process of reviewing the existing Water Resources Act of 1969 to also cover shared water courses and the es-

tablishment of River Basin Authorities.

These River Basin Authorities would be responsible for ensuring that all development programmes proposed for their areas are environmentally sound and safe, and in conformity with internationally accepted principles of integrated water resources management.

The Bill also proposes the sharing of information and dialogue with other SADC member states.

The whole of Malawi is part of the Zambezi River Basin, southern Africa's largest river basin covering Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, and Zimbabwe.

Zeria Banda
Fax +263 4 720731
E-mail: zeb@iucnrosa.org.zw
Titus Mvalo
Fax +265 741547
E-mail: mvalolaw@malawi.net

NIGER BASIN AUTHORITY

BAMAKO DECLARATION

The International Colloquium on the Safeguard of the Niger River was organised in Bamako from 5 to 7 April 1999 on the initiative of the Government of Mali and the Niger Basin Authority (NBA).

It was attended by:

- representatives from eight countries of the Basin (Cameroon, Ivory Coast, Benin, Guinea, Mali, Niger, Nigeria, and Chad);
- representatives from some regional and international organisations (NBA, CILSS, UN-DESA, UNDP, WMO, WFP);
- representatives of some development partners and donor agencies (ADB, the World Bank, GEF, France, the Netherlands, Germany);
- representatives of users, NGOs, professional associa-

tions and some development offices of Mali which are concerned by the Niger River.

About 150 participants discussed, in specialised working groups, on the specific problems encountered in the Niger River Basin.

The various contributions made it possible to come up with some major observations on the state of the resources of the Niger River and to propose some strategic orientations and solid policies to be adopted progressively in the short, medium and long-terms to ensure sustainable development for all the populations of the basin.

There was a proposal to promote the building of infrastructures to sustain water levels and to restore the ecosystems with particular attention to the Niger inland delta and the Fouta Djallon massif. The

need to systematise environmental assessments for all the major schemes was also stressed.

It was recommended that a participatory approach be promoted involving the relevant actors in the identification, management and follow up - evaluation of projects, particularly, within the framework of decentralisation and participation of the civil society.

At the national level, it was suggested that there should be consistency in the strategies of the different actors and in the principles and policies of Government, particularly, in terms of establishing Basin Agencies in each country.

At the sub-regional level, such a consultation should lead to an update of the mandate and functions of NBA, by defining in particular, its le-

gal framework for action, with the creation of a consultative Assembly made up of the representatives of the major interest groups of each country concerned with the management of water resources and associated eco-systems.

Finally, the participants stressed the need to adopt some information-education-communication measures to promote the involvement of all the actors in order to ensure that the "polluter-pays" principle is really applied.

The participants also insisted on the preparation of some financing mechanisms, ensuring the participation of users in the costs of protection and management of resources.

Niger Basin Authority
Fax: 227 72 42 02
E-mail: abnsec@intnet.net

LAKE CHAD BASIN COMMISSION

Creation:

22 May 1964 in N'Djamena

Member States:

Cameroon, Niger, Nigeria, Chad and the Central African Republic

Missions:

- To prepare general regulations which shall enable the full application of the principles set forth in the convention and to ensure their effective application,
- To collect, evaluate and disseminate information on projects prepared by Member States

and to recommend planning for common projects and joint research programmes,

- To keep close contact between the contracting parties with a view to ensuring the most efficient use of the basin's waters,
- To examine complaints and propose the settlement of disputes,
- To promote regional Cooperation and the co-ordination of regional programmes,

Abubakar B. Jauro
Lake Chad Basin Commission
Fax: 235 52 41 37

THE WORLD BANK

AFRICA'S WATER RESOURCES

A Conference which was held at UNEP Headquarters in Nairobi from 26 to 28 May 1999, and hosted by the Government of Kenya, gathered senior officials and specialists from 24 African countries.

National experiences were reviewed to distil lessons and best practice for the process of water policy and regulatory reform. In addition, strengths, weaknesses, actions needed for a long-term vision were analysed within four thematic areas of water resources management: economy and financing; legislation and regulation, institutions and environmental aspects.

The overriding conclusions of the Conference were:

- the need to intensify the communication process,
- the establishment of an African Water Resources Forum (AWRF) for the exchange of knowledge,
- the constitution of a small, interim Task Force to develop this mechanism for sustaining dialogue and exchange of experience.

Rafik Hirji
World Bank Specialist
E-mail: Rhirji@worldbank.org

NORTH AMERICA USA

PENNSYLVANIA: REGIONAL PLANNING

The Capital Region of South Central Pennsylvania includes the City of Harrisburg and eight neighbouring counties which will soon attain a population of two million inhabitants.

The Water Board was formed to study and evaluate the water supply situation of the Region. The Board is attempting to address the problem of viability of

small systems by searching for regional solutions.

This will make it possible to do more comprehensive planning in order to represent the Region's interests in facing competition for out-of-basin diversions.

Walter A. Lyon
Capital Region Water Board
Fax: 1 171 761 1514
E-mail: wlyon@ptd.net

Latest News

The next General Assembly of the International Network of Basin Organisations (INBO) will be held in Cracow - Zakopane (POLAND) from 30 September to 4 October 2000, at the invitation of the Polish Authorities

Information:

www.iowater.org/inbo
Fax: 33 1 40 08 01 45
E-mail: stp-riob@oieau.fr



ASIA INDIA - GUJARAT

INTEGRATED MANAGEMENT OF THE SABARMATI RIVER BASIN

Since the beginning of the 1990s, France and the Indian Union have been involved in a multiannual programme for institutional Cooperation in the water sector, dealing with, in a first phase, the training of high level federal and state civil servants and which led to the organisation in Delhi, in December 1994, of a French-Indian seminar on Integrated Water Resources Management, which was hailed as a great success.

From the beginning of 1995, the Indian partners, together with experts from the International Office for Water and the Rhone-Mediterranean-Corsica Water Agency, have:

- set up a French-Indian Steering Committee, gathering all the Indian central ministries concerned by water management,
- selected a "pilot basin" to test a new process for integrated water resources management, aiming then to use the findings in other Indian basins:
 - in a first phase, the Indian partners chose six priority basins. It involves the SABARMATI, TAPI, UPPER YAMUNA, GODAVARI, SONE, SUBARNAREKHA rivers,
 - in a second phase, the SABARMATI River basin was selected for a first pilot experiment in the GUJARAT State.

In the SABARMATI River Basin, the shortage of water is critical and the problem of resource sharing is unavoidable.

The project for the building of the Narmada diversion canal, if it is carried out, will relieve the pressure on the resource. But the opportunity effect must be managed, particularly in the agricultural sector, so that the sharing out of this new resource does not result, in the short term, in an even greater imbalance.

The Gujarati Authorities have prepared the launching of the pilot project, with:

- the appointment of a co-ordinator within the GUJARAT water administration, who is also in charge of the World Bank's "Hydrology Project",
- the setting-up of an inter-administrative co-ordination Committee, gathering all the water-related sectoral utilities in GUJARAT and associating the town of AHMEDABAD,
- the drafting of a "position paper", presenting an assessment of the situation in the basin and its prospects in the short and medium terms,
- the drawing up of the "memorandum of understanding" that the Government of GUJARAT signed on 9 February 1998 with the International Office for Water, to clarify the areas where they wish for the Cooperation of French experts, in particular to:
 - prepare a masterplan for river basin development, based on the technical and economic pre-feasibility studies of the investments to be made,
 - set up a basin information system, which will make it possible to know precisely the state of the

available resource, as well as the main discharges, then to measure the progressive impact of decisions implemented in the basin,

- formulate an action plan in the medium term (five years), the priorities of which will be, for the first time in India, validated using a cross-sectoral approach and corresponding to the real financial possibilities of the different groups of users.

The Indian Authorities also expect from this project, the testing in life-size units of an integrated management method, adapted to the Indian context, which will serve as a reference for other river basins, including those covering several States, based on sustainable systems for planning and financing, the current lack of such a system being the main factor preventing the adaptation of the water sector in India.

In fact, the Government of India and the World Bank have formulated an action plan which aims to reorganise the water sector in 24 river basins, covering 436 million hectares.

The experience acquired in the Sabarmati River pilot basin will make it possible to speed up the process elsewhere in India.

The French Ministry of Economy is supporting this project with a grant of 4,000 MFF for the carrying out of preliminary studies amounting to 5,000 MFF.

B.J. PARMAR
Narmada and Water Resources Department
Fax: 91 11 122 04 06



The Sabarmati River bed in Ahmedabad during the dry season

INDONESIA

BRANTAS RIVER BASIN

FARMERS' PARTICIPATION

The irrigation area in the Brantas river basin, East of Java, was recorded as being 309.000 ha in 1996. Most irrigation methods used by farmers in the basin could be categorised inefficient.

Farmers are not obliged to pay water service fees.

To reform this condition, farmers should be actively involved in planning, operating and maintaining irrigation facilities.

Strategies in accordance with the above objective are as follows:

- Technology improvement: food diversification; on-farm management methods; rehabilitation of water distribution canals; monitoring system; and new water resources regulating and control facilities.
- Economic instruments such as abstraction charges and incentive-disincentive systems to have control over water abstraction.
- Normative measures for implementing water use rights and irrigation water permit and control systems.
- Training courses to improve knowledge and management practices of farmers and to strengthen Water Users Associations (WUA).

The irrigation management scheme based on the "command and control" principle approach has not given satisfactorily results.

It is considered necessary to use economic instruments in order to improve effectiveness. This implies the farmers' awareness raising on the water economic value.

These instruments include:

- A water abstraction fee with an incentive-disincentive mechanism. There are two levying systems:
 - One based on the drawn volume is considerably effective but costly as each tertiary irrigation canal requires a metering system. Another possibility is to strengthen the role of Water Users' Associations in distributing the allocated water volume. WUA would collect the service charge according to the consumed volume and repay it to the river basin management agency.
 - the other based on crop types for each hectare/season is simpler and less expensive. Farmers are charged for the consumed water according to the crop and the land. This is not an effective way to promote efficiency unless the price level for each kind of crop is determined properly.
- Incentive based on subsidies. If basic water quotas can be defined (depending on the land, crop factor and season) for each WUA, then the Water Agency could grant an incentive to those reducing their abstraction volume. The saved water could then be used for domestic and industrial supplies. Part of the revenue would be re-allocated to the farmers, in order to maintain and rehabilitate their irrigation facilities.

Ir. Aris Harnanto
Perum Jasa Tirta
Fax: 62 341 551 976
pjt@malang.wasantara.ne.id



River water sampling

BIOLOGICAL MONITORING

Water quality monitoring in the Brantas River Basin uses chemical, physical and biological parameters. Jasa Tirta Public Corporation has used chemical and physical parameters since 1986. Biological monitoring tools like macro-invertebrates, algae and fish, are being used since 1997

to improve the quality assessment method of rivers and streams.

Ir. Prayitno
Perum Jasa Tirta
Fax: 62 341 551 976
pjt@malang.wasantara.ne.id

NEW FINANCIAL PRINCIPLES

Brantas River Basin - managed by Jasa Tirta Public Corporation - has a watershed of 11,800 km² and has four reservoirs -Sutami, Lahor, Selorejo and Widas - to regulate inter-seasonal flow capacity, with a total effective storage of 347,5 Mm³.

Approximately 80% of water is consumed for irrigation.

Water resources infrastructure investment as well as operation and maintenance costs are too high to only rely on government budget. It is necessary for beneficiaries and private sectors to participate in financing.

The "full cost recovery" principle is applied in the basin.

The water service fee is charged according to the level of service received by the beneficiaries.

All water resources development and management costs shall be recovered as follows:

- Government bears the cost of unspecified items like flood control, water quality control and river environment
- Beneficiaries have to pay their water service fee. Commercial beneficiaries shall be charged directly, while those who cannot afford a full payment of their due will be subsidised by the Government.
- People and industries that use the public sewerage system including waste water treatment plants shall pay the sewerage service charge,

Industries and manufacturing companies have to pay a pollution fee and they shall be subject to a "penalty" whenever their released waste water is beyond the pollution load stated in their discharge license

This financing scheme has been applied since 1998 in the Brantas River Basin, where these principles are applied by the signing of contracts between Jasa Tirta Public Corporation and the water beneficiaries, the State Electricity Company, municipal water supply companies and industries, in particular.

Raymond Valiant
Perum Jasa Tirta
Fax: 62 341 551 976
pjt@malang.wasantara.ne.id

PHILIPPINES

LAGUNA LAKE AUTHORITY

The Laguna Lake Development Authority (LLDA) was set up in 1966.

LLDA is mandated to lead, promote and accelerate the development and economic growth of the Laguna de Bay basin within the context of national and regional plans and policies.

By virtue of a Presidential Decree in 1975, its powers and functions were further strengthened to include environmental protection and jurisdiction over surface waters in the lake's basin. In 1993, the administrative supervision over LLDA was transferred to the Department of Environment and Natural Resources (DENR).

The Laguna Lake Basin consists of the provinces of Rizal (13 towns) and Laguna (29 towns); the towns and cities of Pasay, Caloocan, San Pablo, Quezon, Manila, Tagaytay, Muntinlupa, Marikina and Pasig among others.

Missions and means

LLDA's objectives are to:

- Adopt a basin management approach in the protection and management of water resources within the region;
- Stop further degradation of the watershed;
- Formulate and implement policies on resources management and pollution control;
- Spearhead the adoption and utilisation of appropriate technologies for effective pollution control;
- Plan and facilitate the utilisation of the lake water resources to increase the supply of water for the Metropolitan Manila Area and the provinces within the basin;
- Rehabilitate polluted and degraded waterways systems draining into the lake.

The LLDA is relying on the following means:

- Economic/market-based policy instruments for industrial pollution abatement and control;
- Participation of the population and various sectors in policy and plan formulation, as in the implementation and monitoring of the programmes;
- Involvement of the private sector in the projects dealing with resource conservation and development, waste water management and treatment technologies.

LLDA
E-mail: lldaogm@skynet.net

VIETNAM

THE RED RIVER BASIN MANAGEMENT

New water resources law

The new Water Resources Law was passed by the National Assembly in May 1998 and came into effect in January 1999.

Among its most important features, the Law provides for the creation of the National Council for Water Resources, and establishes river basins as defining the primary units for water resources management throughout the country. It paves the way for river basin organisations to be set up, to improve co-ordination of water resources planning and management, and to resolve conflicts of interest among key stakeholders. It is now planned to set up at least four river basin organisations over the next few years, for the Red, Dong Nai and Ca rivers, as well as the Vietnamese portion of the Mekong River Basin.

The Red River Basin

The Red River Basin is one of the largest in Viet Nam and is located in the northern and north-eastern part of the country. The Red River itself rises in the mountains of Yunnan Province in the People's Republic of China and flows through Vietnam to the South China Sea where it forms an extensive delta. Its total catchment area is 169,000 km², of which 48% lies in China and less than 1% lies in Lao.

About one third of the Vietnamese population lives in the basin - about 24 million people, 15 percent of whom live in urban areas. The average population density is about 280 persons/km². However, with almost 17 million people living in the delta, it is one of the most densely

populated rural areas in the world - about 1000 persons/km².

The Government has requested the Asian Development Bank to provide support for this project. Originally a substantially technical project was proposed which included a major water balance study. However, during the planning phase the emphasis changed to one which now focuses on improving the institutional framework and, in particular, the establishment of a river basin organisation to manage the water resources of, at least, the Vietnamese portion of the basin.

The project, which commenced in March 1998, is being undertaken by the Department of Land and Water Conservation of New South Wales, Australia, on behalf of the Vietnamese Ministry of Agriculture and Rural Development.

More specifically, the objectives of the Project are to:

- ➔ develop a policy and an effective institutional framework;
- ➔ develop an information system that focuses on changing demands, hydrology and land use,
- ➔ undertake priority studies addressing key functions and the resolution of a set of critical problems.

Just one year after the commencement of the project, Phase 1 reached its conclusion after the Government's approval of a new institutional framework for water resources management in the Red River Basin.

Dr Geoff Wright - Water Resources Consulting Services
Fax: 61 2 9895 7330
gwright@dlwc.nsw.gov.au

MEKONG RIVER COMMISSION

The signing of the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin on 5 April 1995 by Cambodia, Lao, Thailand and Vietnam established immediately the Mekong River Commission (MRC).

Structure

The MRC enjoys the status of an international body, including entering into agreements and obligations. It consists of three permanent bodies:

- The **Council**, in charge of water policing and decision-making, is made up of one member from each participating riparian State at the ministerial or cabinet level,
- The **Joint Committee** which implements policies and decisions, comprises also one member from each country at no less than head of department level,
- The **Secretariat** rendering technical and administrative services, is under the direction of a Chief Executive Officer (CEO) appointed by the Council. The budget of the Com-

mission consists of contributions from its members and the donor community.

The National Mekong Committees are acting as focal points for the Commission in each of the member countries.

Areas of Cooperation

The parties agree to co-operate in all fields of sustainable development, management, utilisation and conservation of the water and related resources of the Mekong River Basin, including irrigation, hydropower, navigation, flood control, fisheries, timber floating, recreation and tourism.

In 1998, the Council approved objectives regarding economic, social and environmental development in the Mekong River Basin.

MRC must be a financially secure, international river basin organisation serving the Mekong countries to achieve these objectives.

The Commission headquarters were relocated from Bangkok to Phnom Penh last September.

Mekong River Commission
Fax: 855 23 720 972
E-mail: mrcs@bigpond.com.kh

Urgent

Please register to participate in INBO's Workshop on "The Strengthening of Basin Organisations over the World".

The World Water Forum - The Hague - 20 March 2000
10h30 - 12h00

Registration:
www.iowater.org/inbo
Fax: 33 1 40 08 01 45 - E-mail: stp-riob@oieau.fr

NEPAL

WATER RESOURCES OF NEPAL FOR THE 21ST CENTURY

As far as hydropower potential is concerned, Nepal is ranked to be the second highest in the world.

A total of 200 billion cubic meters of surface water runs out annually in streams and rivers on the Nepalese territory. Out of this volume, the monsoon runoff contribution is 150 billion cubic meters of water. The remaining 50 billion cubic meters correspond to the October to May flows.

Outside the monsoon period, the rivers are fed by melting snow from the Himalayas: they have their origins in glaciers and snow covered high mountains. Their sources or origins are not easily accessible. Hindus consider most of the rivers, their sources or confluences as holy places. The source of the Gandaki River near Mustang and the confluence of Trishuli and Gandaki are some

examples of holy places. The same is to be said for Gosain Kunda, a small mountain lake.

The annual irrigation water requirement is only about 60% of the total available volume of water outside the monsoon period. Hence, big reservoirs are not priority projects of Nepal. But important reservoirs would be very beneficial for India and Bangladesh.

Hydroelectricity could be exploited to uplift the economy of the country which is dependent on agriculture.

The natural and renewable water resources of Nepal are a regional concern. It is of the utmost importance to seek for a common

consensus from all parties to achieve a long-term national policy based on realities and international norms.

Water resources development should be included as a top priori-

ty in the national development policy which could be prioritised as follows: Hydropower, Irrigation, Drinking water, Flood control

Jagat K. Bhusal - DHM
E-mail: dhm@wlink.com.np



CENTRAL ASIA



Ice melting in the Irtys in Pavlodar

PRIORITY PROGRAMMES IN CENTRAL ASIA

Within the framework of the creation of a joint economic zone between Kazakhstan, Kirghizstan, Tajikistan and Uzbekistan, the Council of Prime Ministers approved in March 1998, a new priority action programme, the implementation of which is co-ordinated by the Interstate Council (ISC). It concerns the balanced use of water resources.

Training of specialists

Nowadays, due to existing agreements on joint water resources management between structures such as the Interstate Council (ISC), the Interstate Coordination Water Commission (ICWC) and the Scientific-Information Centre (SIC ICWC), the BWOs Associations concerned by the Syr Darya and Amu Darya river basins, can become involved with the management of these rivers and thus obtain the following advantages:

- access to and exchange of information through the IPTRID network;
- training courses with teaching staff having attended training abroad (the Netherlands, Israel, Canada, USA);
- close contacts with agencies carrying out international projects and possibility of permanent participation in ongoing projects;
- participation in ICWC's decision-making process on joint regional water resources management;
- international training courses financially supported by the World Bank, the European Union, USAID, CIDA, MA-SHAV and FAO.

The Aral Sea

One of the solid measures of the Aral Sea Programme, adopted by the Heads of State of Central Asia, is the stabilisation of the Northern Aral Sea (Small Aral).

Among its main provisions, a dam and a spillway will be built in the Berg strait, a recreation pool will be created in Sarishiganak bay near Aralsk city and supplied from Syr Darya river or Kamislibas lake through a canal which will also be used for Aralsk water supply.

The Small Aral Sea, once stabilised, owing to the depth increase and salinity reduction, will allow for the restoration of fish-breeding, the reduction of dust particles in the air, the improvement of employment for the local population (fisheries, fish canneries, boat repairs, utilities) and the creation of a green belt around Aralsk (orchards and farming plots) to improve the micro-climate and the environment.

Prof. V. Dukhovny
SIC ICWC
E-mail: dfa@sicicwc.uzpak.uz

Uzbekistan: The Water Council

The Water Council deals with water resources development and utilisation and land reclamation. Some of the issues are as follows:

- allocating water of the Amu Darya Basin,
- water tariffs and recommendations for their practical implementation by the various users, particularly farmers,
- agro-forestry problems in the areas adjacent to the Aral Sea and the drying up of the aforesaid,
- energy saving in the pumping stations of Minselvodkhoz.

BETTER WATER QUALITY IN THE IRTYSH

Two projects are underway, one concerning the whole basin of this large river which is shared between China, Kazakhstan and Russia, the other dealing mainly with water quality and concerning only Kazakhstan.

International management of the Irtys

The Irtys basin stretches from the Altai Mountains in the People's Republic of China to Russia where the river flows into the Ob, after crossing eastern Kazakhstan. It covers a large part of Kazakhstan's industrial areas (mining and metallurgic complexes) and because of this the river is polluted, however it is still used for industrial fishing and for supplying drinking water to the towns in the Pavlodar region.

The objective of the study, which is financed by the French Fund for Global Environment (FFEM) and implemented by the French Ministry of Regional Planning and the Environment and its operator IOWater in association with SAFECE and ANTEA, is to allow the different administrations responsible in Kazakhstan and Russia and the International Commission for the management of the Irtys, created in 1992, to better plan their investments, in order to improve water quality and follow up progress which has already been made.

To date, two missions have been carried out in these two countries in order to:

- analyse the institutional situation,
- assess the existing water quality monitoring networks, in relation to pollution in the basin,

- assess the existing data management systems (data quality, enhancement, exchange)
- involve national and regional authorities and determine the local counterparts' role.

In Kazakhstan: protecting the resource

The project, entrusted to the ANTEA/IOWater/SAFECE group and financed by FASEP (French Ministry of Economy) concerns the three towns of Oust-Kamenogorsk, Semipalatinsk and Pavlodar, located in the Kazakhstan part of the Irtys basin.

It is integrated into the programme for the "Improvement of the environment for the sustainable development of the north-eastern region of Kazakhstan", formulated by the government of Kazakhstan with the assistance of the World Bank.

The French project is based on three actions:

- Protection of the resource quality,
- Study of sanitation systems and the environmental impact on the Irtys,
- Institutional organisation.

These studies should make it possible to formulate a pollution control programme and to propose an economic framework enabling the mobilisation of local financial resources and the search for the necessary bi or multilateral financing so that priority investments can be made as soon as possible.

Evgeny TYRTYSHNY
Fax: 7 3182 323 786
E-mail: Mzhan@nursat.kz

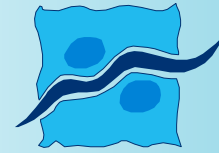


The Irtys in Semipalatinsk

LATIN AMERICA & THE CARIBBEAN

ARGENTINA

THE PLATA BASIN: HYDROLOGIC WARNING AND INFORMATION SYSTEM



IWMI

The International Water Management Institute (IWMI) has published the first two issues of a Latin-American series:

- Analysis of the development of irrigation in the irrigated areas downstream of the Rio Bravo and Rio San Juan, Tamaulipas, Mexico.
- Evaluation of the trends and changes in the development of irrigation: the case of the Samacá irrigated area, Colombia.

IWMI - Fax: 94 1 866 854
E-mail: IWMI@cgiar.org

ECLAC

FIRST PARLIAMENTARY SESSION ON WATER POLICIES

This event took place in Buenos Aires, Argentina, on 18 and 19 November 1998 and was organised by the Argentinean Government, the Federal Investment Council and the Economic Commission for Latin America and the Caribbean (ECLAC).

Debates were held on the following topics:

- Comparative analysis of policies and legislation on water in Latin America
- Economic instruments for water management
- Private participation in the public water sector
- Reflections on the importance of multi-disciplinarity and the integration of the multi-sectoral dimension in the development of water laws

The third workshop for the managers of basin organisations from Latin America and the Caribbean was organised on this occasion.

The following topics were dealt with: the setting-up and operation of basin organisations, the drawing-up of master plans and community participation in basin management.

There was a consensus on the urgent need to strengthen, establish and render the systems for water management at river basin level effective.

Andrei S. Jouravlev
Natural Resources and
Infrastructures Division
E-mail: ajouravlev@eclac.org

The National Institute for Water and the Environment ("INA"), a decentralised agency of the Secretariat of Natural Resources and Sustainable Development, is responsible for the development and operation of the Hydrologic Warning and Information System for the Plata Basin.

The Plata Basin covers 3.2 million km². It comprises a large part of Brazil, Uruguay, and Argentina, the whole Paraguayan territory and part of Bolivia. It includes the Parana and its main tributaries, the Paraguay and the Uruguay rivers. These rivers flow into the Atlantic Ocean through the Rio de la Plata, with an average annual flow rate of 24,000 m³/s.

The basin population reaches more than 100 million inhabitants and contributes to 70% of the gross domestic product of the 5 countries. More than 40 hydropower generation dams have been built in the upper basin in Brazil, and a system for fluvial navigation is being developed on

the Parana-Paraguay, as well as a certain number of ports along their banks.

This system was set up to deal with the devastating floods that occurred during the years of 1982-1983 and is actively interacting with agencies producing information and working in close contact with the users.

The "INA" centre performs the following activities: meteorological, hydrometric and field data reception, database development and update, hydrologic and hydrodynamic modelling, satellite imagery processing and a permanent forecasting and flood warning service.

Under normal conditions, the Centre supplies:

- Daily reports containing hydrometeorological information.
- Two weekly reports on the basin's hydrometeorological conditions and forecasts.

- Basin data processing for users requirements.
- Under emergency conditions, it disseminates early warning reports on risk conditions in the Basin, daily reports with forecasts of maximum river levels indicating the degree of risk and special reports according to users requirements.

After the devastating floods of 1992, the World Bank granted a loan to launch a Rehabilitation Programme for Flood Damage Mitigation ("PREI") which was executed by the Central Sub-unit for Emergency Control ("SUCCE") of the Secretariat for Financial Assistance to the Provinces of the Ministry of the Interior.

"SUCCE" is currently implementing the "flood protection programme (FPP)" which completes the work carried out within the "PREI" framework.

Dr. Dora GONIADZKI - INA
Fax: +54-11-4480-9174
E-mail: Dgonia@ina.gov.ar

THE UCO VALLEY: "PRODIA"

The Argentinean Government and the Inter-American Development Bank have signed an agreement for the implementation of a **Programme for Institutional Environmental Development ("PRODIA")** by the Secretariat of Natural Resources and Sustainable Development.

The Mendoza province has been one of the provinces where "PRODIA" has been implemented.

After a survey and dialogue with the local authorities, the upper Rio Tunuyán basin, more simply called the Uco Valley basin, was selected.

A basin committee was proposed which would be made up of a representative from the Ministry of Economy, the Ministry of Social Development and Health, the General Directorate of Education, the Sub-Delegation for the upper Rio Tunuyán basin of the General Directorate of Irrigation, the central area of the Provincial Directorate of Viability, the Delegation for Uco Valley of the Directorate of Renewable Natural Resources, of each Chamber of Commerce, Agriculture and Industry of the three departments of the basin and from the Federa-

tion of user associations.

It is essential that the private sector be involved, a participation which should increase in the future.

The missions of this structure will be to achieve a consensus, to co-ordinate and promote actions for sustainable development in the basin.

Daniel Massi, Santiago Ruiz
Freites and Pablo Javier Olaiz
E-mail: riogrande@mendoza.gov.ar

INTEGRATED DEVELOPMENT OF THE RIO GRANDE OF MENDOZA

Transfer from the Rio Grande to the Rio Atuel

The Ministry for the Environment and Public Works of Mendoza Province "MayOP" has defined a multipurpose project, namely the "Integrated Management of the Rio Grande, transfer from the Rio Grande to the Rio Atuel".

The project is planning in particular:

- The creation of about 70,000 ha in the Malargüe, San Rafael and General Alvear Departments,

- Improvement in the drinking water supply of small and medium urban centres and some industries.
- The creation of new tourist centres, in Malargüe Department: hot springs, fishing and aquatic sports and leisure.
- The economic and tourism development of the Pehuenche bio-oceanic passage (White Bay in the Atlantic, for Argentina, and Concepcion in the Pacific, for Chile) by uniting the south of the province with the Chilean region of Maule. It concerns a population of 1.200.000 over an area of 120 km².

- The construction of nine hydropower stations and the renewal of the current stations of the Nihuiles System for a yearly average production of 2600 gigawatts/hour.

The project guarantees the environmental protection of the Llanquanelo Lagoon which is a RAMSAR site.

Daniel Massi, Felipe Genovese,
Luis Enrique Guisasaola
Fax: 54 261 4492666
E-mail: riogrande@mendoza.gov.ar

ECUADOR

THE MACHANGARA BASIN: AN EXAMPLE OF PARTICIPATORY MANAGEMENT OF WATER

The Machangara River basin is located 400 km south of Quito. The total area of the basin is 325,7 km². It includes the industrial park of the City of Cuenca (the country's third largest town).

Its water is used for drinking water supply, hydro-electric generation, irrigation, livestock breeding and fish farming and this generates problems between users.

Shortage in specific seasons of the year is critical, meaning serious rationing of the resource.

The Council of the Machangara Hydrographic Basin was formed on 28 July 1998, by the signing of an "Inter-institutional Cooperation Agreement for the integrated management of the Santiago River basin with its application on the Machangara Microbasin". This agreement concerns the main stakeholders of the basin, such as the Central and Southern Electricity Company ("EERCS"), the Telecommunications, Drinking Water Supply and Sewerage Company ("ETAPA"), the Economical Restructuring Centre of the provinces of Azuay, Cañar and

Morona Santiago ("CREA"), as well as the regional development organisation, the National Council for Water Resources and the University of Cuenca.

The aim of this Council is to achieve the involvement of the citizens through an effective co-ordination between participating institutions and the users of the basin, the implementation of strategic plans for auto-management and auto-financing, the formulation of an adequate juridical framework and the application of policies and tariffs that would allow for harmonious and sustainable development of the Machangara River basin.

This Basin Council is indeed the first one formed in Ecuador so it is serving as a model for other similar initiatives that are actually being developed and is even mentioned in the discussions concerning the new Water Law.

Pablo Lloret Z.
President of the Machangara Basin Council
Fax: 593 7 890 900
etapauma@etapa.com.ec



COLOMBIA

DRINKING WATER SUPPLY AND SANITATION: A NEW INFORMATION SYSTEM

The aim of the **Information System in the Drinking Water Supply and Sanitation Sector in Colombia ("SIAS")** is to assist actions regarding planning, control and monitoring, regulation and financing at national level and to supply decision-making mechanisms concerning investments, modernisation, technical assistance and the establishment of regional and local institutions.

The "SIAS" project is co-ordinated by the Ministry for Economic Development with the participation of the Drinking Water and Sanitation Regulatory Commission ("CRA"), the Superintendence of Public Utilities ("SSP"), the National Planning Department ("DNP"), the Financial Agency for Regional Planning ("FINDETER"), the National Statistics Department ("DANE"), the Ministry of Health (Minsalud) and the Institute of Hydrology, Meteorology and Environmental Studies ("IDEAM").

The "SIAS" is made up of three components:

- The collection of information from water suppliers and municipalities

in order to set up the National Assessment of the Drinking Water and Sanitation Sector,

- The setting-up of an information network on the Internet involving the sector's organisations at national level,
- The organisation of the system at regional and departmental levels.

After two years spent setting up this project, important results have been obtained, in particular:

- The collection and processing of information from the national inventory,
- The development of the national computerisation strategy,
- The design of data bases,
- The creation of the Internet server www.sias.gov.co
- The assessment, within the 5 Regional Councils for Economic and Social Policy ("CORPES"), of 32 water utilities and 33 regional autonomous corporations.

Camilo Parra-Ramírez
E-mail: cparra@sias.gov.co

DECONTAMINATION COSTS, THE POLLUTER PAYS...

The Oriente Antioqueño region covers an area of 8,100 km² and produces 33% of the country's hydroelectric energy. The Rio Negro-Nare Regional Autonomous Corporation, "CORNARE", created in 1983, is in charge of environmental management.

The main water pollution problems in the 8 most important basins in this region can be summarised as follows:

- Pollution of the rivers caused by lack of waste water treatment plants serving a population of nearly 600,000 inhabitants.
- Around 500 industries discharge polluting substances, without any treatment.

While pollution was only reduced by 10% during 15 years of administrative control, in a few months, since its establishment in the Oriente Antioqueño in 1997, the new economic mechanism for the payment of fines, taxes and charges has made it possible to reduce the BOD5 by 20% and suspended solids (SS) by 34%.

These taxes have become an important social control which is a determining factor in the reduction of environmental pollution levels in the region.

Leonardo Muñoz Cardona
General Manager - CORNARE
E-mail: mar01@epm.net.co

CHILE

PROGRAMME FOR WATER RESOURCES MANAGEMENT

The Department for Hydraulic Works of the Chilean Ministry of Public Works is preparing a programme for water resources management which will adopt an integrated approach, taking into account the needs of all sectors of users and looking for decentralised management mechanisms, based on the river basin as management unit.

This programme is oriented towards a better co-ordination of the basin's institutions, with the participation of regional administrations and of the private sector in decision-making and in the financing of infrastructures, thus improving the effectiveness of action planning and taking account of the economic, social and environmental impacts of private and public investments.

Its main objective will be to define and apply an efficient and decentralised National Strategy for water resources management, in which the State must promote the development of private activities and strengthen its regulating role to arbitrate with transparency and objectivity the conflicts that might occur as regards water uses.

The programme will first be initiated in the Elqui, Mataquito and Imperial basins.

Rodrigo Gómez A.
Department of Hydraulic Works
E-mail: rgomez@mop.cl

FRENCH ANTILLES

THE BASIN COMMITTEE OF MARTINIQUE

A major stakeholder in water policy

A French Department, the Martinique covers an area of 1,180 km². A volcanic island, it is characterised by a very contrasting relief and the climate is hot and rainy in the North, hot and dry in the South.

There is a population of 390,000 inhabitants with an economy based on intensive agriculture (bananas, sugar cane, pineapples), agro-food products and tourism.

The Basin Committee has been in force in Martinique since September 1996, in application of the 1992 Water Law. In December of the same year, it launched the process for formulating

a Master Plan for Water Management and Development ("SDA-GE").

The problems encountered are varied and extremely important:

- poor assessment of the water resource as compared to the needs,
- poor forecast in terms of guarantee, and networks are obsolete,
- non-protection of intake areas.

The solutions will be found thanks to a better control of the water demand (improved network output, control of individual withdrawals, water saving...) but also by mobilising new resources, groundwater in particular.

A significant investment is foreseen for drinking water supply in future years, especially with regard to water intakes, by setting up protection areas and by modernising the distribution networks.

The Department is way behind when it comes to domestic wastewater treatment.

The agro-food industry discharges a considerable amount of organic matter and the chemical industries, often, have to export their polluting residues; pollution from carriers is also very significant with regard to suspended solids.

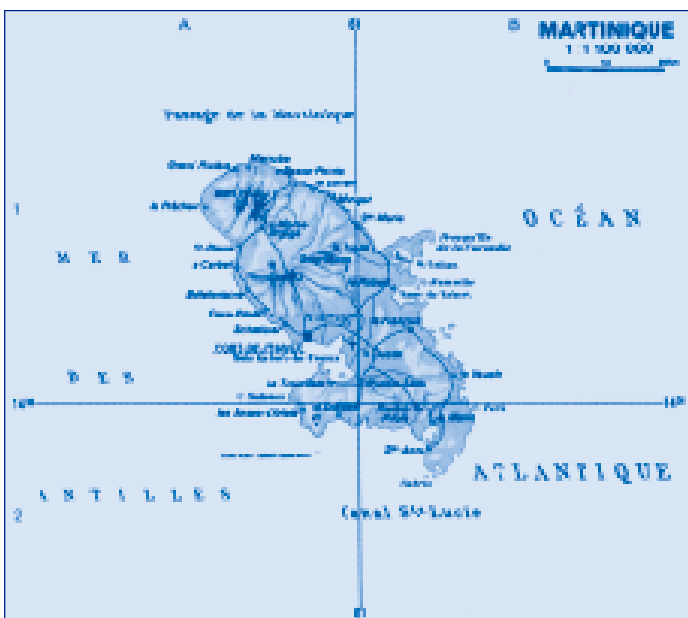
On the subject of agricultural pollution, the main concern is pertaining to pesticides, the effect of which on the natural envi-

ronment is currently not well known.

The means for flood control could be more efficient, especially when it comes to applying urban planning regulations and planning maintenance work and river management.

It is clear that the institutional component accompanying the setting-up of the "SDAGE" requires important means, not only as far as the management mechanism is concerned but also with regard to adapting the legislation to the specificity of the Island.

Madeleine de Grandmaison
The Martinique Basin Committee
Fax: 596 71 25 00
martinique.environnement.gouv.fr
@wanadoo.fr



A "SDAGE" FOR GUADELOUPE

The Basin Committee, made up of representatives from the Region, the Department, municipalities, users, socio-professional circles, the State and competent people, is a consultative body for dialogue with all the water stakeholders of Guadeloupe. It is entrusted with the formulation of the **Master Plan for Water Development and Management, the "SDAGE"**.

The "SDAGE" defines the basic orientations for each basin in order to achieve a sound management of water resources.

It formulates and harmonises water quantity and quality objectives, as well as the infrastructures to be built to achieve these objectives.

Seven topics were retained for the "SDAGE's" initial orientations:

- Preserve the resource: restore the quality of water and aquatic ecosystems.

- Provide good quality water: protect water intakes and control non-point pollution sources
- Provide water in sufficient quantity: develop and guarantee water supply.
- Use water in a sound and sustainable manner: promote economy management.
- Control water run off: foresee and prevent instead of curing.
- Develop water-related information and communication: make the users responsible.
- Facilitate actions of common interest: create a basin information system.

Secretariat of the Basin Committee
DIREN Guadeloupe
Fax: 590 99 35 65
E-mail: diren971@outremer.com

THE "SDAGE" OF MARTINIQUE

The Basin Committee and the Intercommunity Syndicate of the Centre and South of Martinique ("SICSM") has launched, in liaison with the DIREN and Loire-Brittany Water Agency, a reflection on the "SDAGE" formulation phases.

The approach was the following:

A diagnostic document

This document, drafted with the help of the International Office for Water (IOWater), includes a set of sheets summarising the general situation of the Martinique.

It is an attractive and educational summarised document featuring 12 topical sheets:

Sheets 1 to 3: water-related regulations / water stakeholders in Martinique / tools for water management and financial aid

Sheets 4 to 11: Martinique's characteristics / natural hazards / management of the resource / uses / urban areas and sanitation / agricultural and industrial pollution / water quality / the protection of aquatic ecosystems

Sheets 12: diagnostics

Five additional sets of sheets were drawn up to put forward the specific problems arising in the 5 hydrogeographic units identified by the "SDAGE".

A seminar of the Basin Committee

It was organised in Fort-de-France from 30 November to 2 December 1998, in the Regional hall, and gathered more than 100 people per day: representatives of the different stakeholders in the island's water sector.

The seminar proceeded as follows:

- plenary sessions (reminders of the regulatory principles and existing tools in the water sector, the state of water management in Martinique),
- workshops on the following topics: better sharing of responsibilities, contracts for better water management, environment and pollution, resources and uses, water price,
- an exhibition which illustrated the water uses in Martinique and the role of the different stakeholders.

Decentralised information sessions

Five decentralised sessions, one for each hydrographic unit of the island, were planned in 1999 to associate all the local stakeholders in the "SDAGE" formulation.

MEXICO

HYDRAULIC PLANNING

The Secretariat for the Environment, Natural Resources and Fisheries has implemented an important reform, together with the National Water Commission (CNA), aiming to achieve users' participation and water management at the river basin level.

The first phase of the process consisted in publishing in the Official Journal of May 1998, the list of the municipalities included in each one of the 13 new hydrological-administrative regions and in creating a Regional Directorate of the National Water Commission in each one of them.

The carrying-out of Regional Hydraulic Assessments made it possible:

- To collect, process and validate data related to water and water uses.
- To carry out an initial water resources assessment with a view to regional planning, according to users' expectations and existing water resources.
- To evaluate the current situation regarding the management, conservation and availability of resources and users' expectations.
- To formulate strategic directives for water development before 2020, based on different scenarios.

The next stage of the process will involve developing regional hydraulic programmes, which will include specific actions to be carried out in each region. They will be developed from strategic directives.

José Antonio Rodríguez Tirado
National Water Commission
Fax: 52 5 662 0943
E-mail: gph@supernet.com.mx

Urgent

Please register to participate in INBO's Workshop on "The Strengthening of Basin Organisations over the World".

The World Water Forum
The Hague
20 March 2000
10h30 - 12h00

Registration:
www.iowater.org/inbo
Fax: 33 1 40 08 01 45
E-mail: stp-riob@oieau.fr

CREATION AND DEVELOPMENT OF BASIN COUNCILS AND COMMISSIONS

Mexico is carrying out an in-depth reform of the water sector which plans, among other things, the creation and development of Basin Councils and Commissions in the country's main basins and sub-basins

The Basin Councils' mission is to contribute to better water management, to the development of hydraulic infrastructures and the conservation of the basin's natural resources, with the civil society's participation which is essential.

The Basin Councils are chaired by the General Director of the National Water Commission, who represents the federal authority and has a casting vote. The Council of Governors of the States included in each basin and users representing various water uses also play a role. The same goes for representatives of other organisations such as universities, NGOs, colleges and professional associations.

In the future, it is hoped that these basin organisations will contribute to the prevention and resolution of conflicts, which arise among users because of the increasing demand on the resource due to population growth and to the development and diversification of the economy.

The Basin Councils are chaired by the General Director of the National Water Commission, who represents the federal authority and has a casting vote. The Council of Governors of the States included in each basin and users representing various water uses also play a role. The same goes for representatives of other organisations such as universities, NGOs, colleges and professional associations.

In Mexico, the establishment of these basin organisations started at the end of 1997, although a first Basin Council had already been set up in the Lerma River-Chapala Lake Basin in 1993. 7 Basin Councils and 4 Commissions were established before June 1999. Mexico is planning to set up 26 Basin Councils and 7 Commissions before the end of the year 2000.

Guillermo Chavez Zarate
Co-ordinator of Basin Councils
National Water Commission
gblccc99@df1.telmex.net.mx
gczccc99@dfg1.telmex.net.mx



CNA administrative regions		Councils and Commissions	
I	Peninsula of Lower California	1 2 2a*	South Lower California Basin Council Lower California Basin Council Rio Colorado Basin Council
II	Northwest	3 4 5	Upper Northwest Basin Council Rio Yaqui-Mátape Basin Council Rio Mayo Basin Council
III	North Pacific	6 7 8	Rio Fuerte and Sinaloa Basin Council Rio Mocerito al Quelite Basin Council Rio Humaya, Presidio and Acaponeta Basin Council
IV	Balsas	9	Rio Balsas Basin Council
V	South Pacific	10 11	Guerrero Coast Basin Council Oaxaca Coast Basin Council
VI	Bravo	12 12a* 12b*	Rio Bravo Basin Council Rio San Juan Basin Commission Rio Conchos Basin Commission
VII	Central and Northern Basins	13 14	Nazas-Aguanaval Basin Council Altiplano Basin Council
VIII	Lerma - Santiago -Pacific	15 15a* 16 17 17a*	Lerma-Chapala Basin Council Lake Chapala Basin Commission Rio Santiago Basin Council Central Pacific Coast Basin Council Rio Ayuquila-Armería Basin Commission
IX	North Gulf	18 19 19 a*	Rio San Fernando-Soto la Marina Basin Council Rio Pánuco Basin Council Rio San Juan Basin Commission
X	Central Gulf	20 21 22 22a*	North and Central Veracruz Basin Council Rio Papaloapan Basin Council Rio Coatzacoalcos Basin Council Downstream Rio Coatzacoalcos Basin Commission
XI	South Border	23 24	Chiapas Coast Basin Council Grijalva-Usumacinta Basin Council
XII	Yucatan Peninsula	25	Yucatan Peninsula Basin Council
XIII	Mexico Valley	26	Mexico Valley Basin Council

BRAZIL

IMPLEMENTATION OF THE FEDERAL WATER LAW

THE BRAZILIAN NETWORK OF BASIN ORGANISATIONS

The Brazilian Network of Basin Organisations, a non profit making organisation made up of municipalities and river basin committees and agencies, was officially registered in June 1999, with the publication of its statutes and the organisation of a seminar on water resources management in Belo Horizonte, under the chairmanship of Mr. Raymundo Garrido, Secretary for Water Resources and President of INBO.

Humberto de Campos,
President

Francisco C.C. Lahóz,
Co-ordinator

Consortio Piracicaba-Capivari

E-mail: consorcio@acia.com.br

"CNRH"

The National Council for Water Resources ("CNRH") held its first annual meeting on 9 June 1999 and approved the creation of two technical commissions, one to follow up the National Plan for Water Resources and the other to take charge of the legal and institutional aspects.

Brazil, after the passing of its National Water Law in 1997, is undergoing the finalisation of its federal legislation with the establishment of a tax on water use and the creation of basic management institutions: **Basin Committees and Water Agencies**. The Federal Government, using a model adopted in the oil, electric power and telecommunications sectors, is going to set up a **National Water Agency ("ANA")** which will be the central organisation of the whole system, with the "CNRH" being its supporting secretariat.

The Brazilian legislation foresees that, once the water agencies are effective, the inter-municipal councils will be able to progressively initiate management mechanisms, in particular the levy of taxes on water use, after their approval by the River Basin Committee.

Humberto de Campos,
President
E-mail: consorcio@acia.com.br

Joao Jeronimo Monticelli
Member of CNRH
Fax: 55 19 461 77 58

TRAINING COURSES

Upon the request of the "MMA" (Ministry for the Environment), several training courses were carried out in Brazil on the integrated management of water resources in river basins, with a view to swiftly implementing the new federal law n° 9433 of 8 January 1997.

● In Mato Grosso

The "Fundação Estadual do Meio Ambiente" ("FEMA") in Mato Grosso, led by Mr. Frederico Guilherme, jointly organised a training course from 14 to 18 September 1998, with the International Office for Water. This event, co-financed by "FEMA" and the French Ministry for Foreign Affairs, gathered more than 40 participants, among them several representatives from the neighbouring States of Mato Grosso do Sul and Santa Catarina, as well as from Mexico (Comisión Nacional del Agua and IMTA), from Chile (Distrito de Santiago) from Costa Rica (Comisión del Río Tempisque), and from Uruguay (Ministerio de Transporte y Obras Públicas) within INBO.

The presence, in the audience, of Messrs. A. Bernard (IO-Water) and J.F. Talec (Loire-Brittany Water Agency), of specialists from the Ministries, "FEMA" and also from the civil society and Basin Committees, alongside Dr. Eduardo Lanna and Dra. Dalvacir Evaristo ("SRH"), made it possible to hold a very lively session in which dialogue and exchange of experiences were varied and enriching.

Moreover, the training course was preceded by the inauguration ceremony of the "Conselho Estadual de Recursos Hídricos" by Mr. Dante Martins de Oliveira, Governor of the Mato Grosso State.

● In Minas Gerais

The International Office for Water was requested by the Minas Gerais Federation of State Industries to conduct a course addressed to company managers and others in charge in the civil society to prepare them for playing a role in the system of participatory water resources management, defined by the federal law 9433/97 and the corresponding State law.

This course, organised by "FIEMG, IBRAM, SENAI, IGAM and ADOCE", with the support of the World Bank, gathered 80 participants on 19 and 20 November 1998. Its objectives were:

→ to raise the participants' awareness about the new law and emphasize its strategic significance for environmental management, repla-

cing the traditional "order-control" system (legislation and policing power) with economic mechanisms and incentives for self-management.

→ to prepare company managers so that they may play, among other things, an active role in River Basin Committees and participate in the technical debates which will take place within the Water Agencies being set up.

● In Bahia

IOWater led another training course on integrated water resources management in Salvador de Bahia, the week prior to the General Assembly of the International Network of Basin Organisations (INBO) held in this same town. This course gathered 30 participants from the State of Bahia, but also from many other States such as Rio, São Paulo, Alagoas, Paraíba, Maranhã, Mato Grosso do Sul, Minas Gerais, Piauí.

On the initiative of the Water Resources Secretariat of the Brazilian Ministry for the Environment, another course was held during the last quarter of 1999 in Vitória (Espírito Santo). Three new courses are planned in 2000 in Recife, Porto Alegre and Brasília, with the support of the French Embassy.

Raymundo GARRIDO
Ministry for the Environment
Fax: 55 61 223 53 66
E-mail: rjgarrido@mma.gov.br

MATO GROSSO DO SUL

THE PANTANAL BASIN: "CIDEMA"

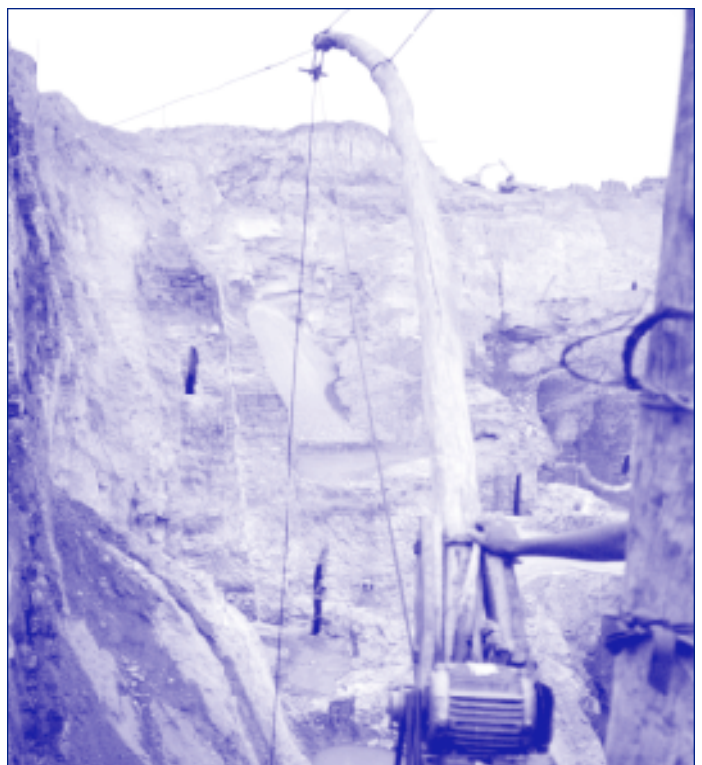
The Pantanal region, the largest wetland of the planet, has a new basin organisation, directly related to the two main basins which form this ecosystem, those of the Miranda and Apa rivers.

In 1998, 12 municipalities created the **Intermunicipal Consortium for the Integrated Development of the Upper Paraguay's tributaries ("CIDEMA")**. The Miranda and Apa river basins cover 47,000 km² and 17,000 km² respectively with 20% of their surface area in Paraguay and include high potential ecotourist towns such as Bonito and Jardim.

"CIDEMA" is going to implement three projects between 1999 and 2000. They will be co-ordinated by the Secretariat for Water Resources and financed by GEF, OAS and UNEP. They deal with:

- the assessment of the water resources in the Apa river basin;
- the urban environmental management of the regions bordering the Miranda and Apa rivers;
- the strengthening of institutions for integrated management of the environment in these two river basins.

Natulo de Barros Filho
"CIDEMA"
Fax: 55 67 741 8714
E-mail: cidema@zaz.com.br



Gold mine in Mato Grosso

MINAS GERAIS RIO MOSQUITO BASIN COMMITTEE

The Basin Committee of the Rio Mosquito, located in an area suffering from the most absolute shortage of water and with one of the highest rates of Schistosoma Mansoni, intends to involve the whole community and motivate the state and federal political leaders, in order to start the execution of the "PROAGUA" Programme.

"PROAGUA" – red water (Rio Mosquito Basin) – is a Federal Government programme, implemented by the Ministry for the Environment and Water Resources. It consists of the water supply to 14 communities and the follow-up and monitoring of Schistosoma Mansoni, in addition to the building of a sewage system for the urban population. More than 25,000 people will benefit from this project which covers an area of 3,000 km².

Marilene Farias de Sousa
President of CBH-MOSQUITO
emdmtmcl@connect.com.br

SAO PAULO

THE PIRACICABA- CAPIVARI "CONSORCIO"

Application of the "user-pays" principle

São Paulo could be the first Brazilian State to approve a law based on the "user-pays" principle. This draft law is still under discussion.

The Piracicaba-Capivari Consortium and "ASSEMAE" (National Association of Municipal Sanitation Utilities), with the agreement of the Ministry for the Environment and with the support of the National Environmental Fund ("FNMA") and of the Secretariat of Water Resources ("SRH/MMA"), have organised 20 seminars in 11 Brazilian States on the Decentralised and Shared Management of Water Resources.

The aim of these twenty seminars was to raise the awareness of the community, technicians and managers of municipal water supply and sanitation utilities on the formulation of and participation in regional and national policies regarding water resources.

1,500 participants attended these seminars which provided the Secretariat of Water Resources (SRH/MMA) with information on the understanding and mobilisation of the society as regards the Federal Law on Water Resources.

Humberto de Campos,
Francisco C.C. Lahóz,
Consortio Piracicaba-Capivari
E-mail: consorcio@acia.com.br



PARANA INSTITUTIONAL REFORM

The Parana State is launching a project which aims to modernise its institutional organisation regarding water resources management.

In association with SO-GREAH and COBRAPE (the Brazilian partner), the International Office for Water has been entrusted with the implementation of the training component as well as institutional assessment within the framework of this ambitious programme financed by the World Bank, to an amount of 1.8 million Reais (6.500 MFF). It consists of:

- **Technical assistance with the implementation of the State Law for Water Resources Management**, by seeking a consensus amongst the partners involved: elected officials, users... This work will include the definition of arrangements for representing the different interests at stake in the deliberative proceedings and a proposal for the establishment of suitable mechanisms, above all in financial terms (polluter-pays principle, user-pays systems);
- **Legal assistance with the drawing up of decrees for the application of the Law**, in accordance with the institutional context defined along the same lines;
- The definition of operational procedures for the "Integrated System for the Protection and Management of Water sources in the Curitiba Metropolitan Area" and the "State System for Water Resources Management".

Francisco LOBATO
State Planning Secretariat
Fax: 55 41 352 36
E-mail: fj.lobato@uoi.com.br

PARAIBA AND PERNAMBUCO THE WATER SUPPLY OF TOWNS

The project for the diversion of water from the São Francisco river towards the semi-arid regions of Paraíba and Pernambuco States, is aimed at increasing the water supply for human consumption of the towns of Campina Grande, Caruaru, Recife and other communities located on the banks of the Paraíba, Ipojuca and Capibaribe rivers and their regions that suffer from water scarcity.

The dam systems which exist are liable to collapse.

In the particular case of Campina Grande, the reservoir which supplies the town has not reached its maximum capacity during the last ten years and reserves are decreasing. This reservoir, in addition to its location in one of the driest regions of the Northeast, is located downstream of several reservoirs which jeopardise its chances of filling up.

This water transfer is justified by:

- the technical possibility of optimising the operation of the existing reservoirs by diverting a relatively small volume of water from the São Francisco river to increase and guarantee the water supply of the population,
- a large population, distributed in small and medium-sized urban centres and in rural areas along the rivers,
- the availability of a relatively developed economic and social infrastructure.

A viable alternative is the abstraction of about 10 m³/s of water from the Itaparica reservoir on the São Francisco river, on the border between the Paraíba and Pernambuco States, transferring 3 m³/s to the Paraíba river and 7 m³/s to the Ipojuca river.

Fernando Rodrigues Catao
Campina Grande Municipality
E-mail: fcatao@cnet.com.br

ESPIRITO SANTO THE RIO ITAÚNAS BASIN COMMITTEE

On 19 September 1998, the Provisional Committee of the Rio Itaunas Basin organised a first work meeting of its 56 members, in order to elect its representatives in the executive body.

On the same day, the 96 representatives of the Municipal and Regional Commissions of "PROMANANCIAL" (Integrated Programme for the Protection and Rehabilitation of Springs and their Watersheds) which concerns the 12 river basins of the State of Espírito Santo, came into office.

In the Rio Itaunas basin, the pilot project which includes the Municipalities of Ponto Belo, Mucurici, Montanha, Boa Esperança, Pinheiros, Pedro Canário, Conceição da Barra and São Mateus, the following results have already been achieved:

- Environmental assessment of the basin;
- Definition of priorities for mitigating water wastage, actions with a social purpose, the protection and rehabilitation of soils and the vegetal cover;
- Institutional organisation of the programme with the setting-up of 8 municipal commissions and creation of a provisional committee;
- Organisation of a training course on environmental management.

Heloisa Dias
"PROMANANCIAL" Executive
Secretary
E-mail: consorcio@acia.com.br

TOWARDS SUSTAINABLE DEVELOPMENT ON THE MEXICAN-AMERICAN BORDER

The Commission for Transboundary Ecological Cooperation ("COCEF"), created within the framework of agreements complementary to the Free Trade Treaty, is a binational organisation constituted by the Governments of Mexico and the United States to identify, assess and approve environmental projects, using a wide community participation, to pro-

mote transboundary development and strengthen Cooperation between both countries.

The North American Development Bank (NADB), whose headquarters are in San Antonio, can only finance projects approved by "COCEF".

"COCEF" has enabled the development of the border region to

advance with 24 projects, eleven on the Mexican side and thirteen on the American side, for the benefit of 7 million inhabitants and for an amount of 640 million dollars.

Urban Information and Follow up Councils must be created with a large participation of the sectors which are the most representative of the location where the projects are to be im-

plemented. They will be responsible for disseminating the necessary information, using public meetings, the media and educational campaigns.

Gonzalo Bravo
Community Participation Coordinator
"COCEF"
E-mail: gbravo@cocef.org

CENTRAL AMERICA

INTEGRATED MANAGEMENT OF SHARED RIVER BASINS

The "PACADIRH" (Action Plan for the Integrated Management of Water Resources in the Central American Isthmus) is currently in its final stage within the framework of the "CCAD" (Central American Commission for Development and the Environment) and the "SICA" (Central American Integration System), in partnership with "CAPRE" and "CRRH" (Regional Committee for Water Resources).

Among the "PACADIRH's" "priority projects and following the meeting of basin organisations from Central America and the Caribbean which took place in Guatemala in July 1998, under the chairmanship of Mrs. Reyna Chacon, co-ordinator of the Lake Amatitlan project, partners in the 7 countries concerned (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) have worked out a multiannual programme for the implementation of the principles of river basin management in the whole region.

Prioritary topics:

- ➔ **Improvement in the knowledge of water resources**, various uses and withdrawals, discharges and pollution sources, water quality and related aquatic ecosystems (Data standardisation - integrated geographic information systems, computerised exchange formats - establishment of national basin information systems).
- ➔ **Formulation of the appropriate institutional frameworks** (legislative reforms, definition of responsibilities, creation of basin organisations, participation of users in Basin Committees, training of executives from the Civil Service and representatives of users and Local Authorities...)
- ➔ **Planning and Action Plans**, integrating the concept of

participatory management, the formulation of investment plans aiming to achieve sustainable development and therefore integrating environmental issues, establishment of instruments necessary for administrative and technical follow-up.

- ➔ **Adaptation of financial systems** (implementation of the "user-polluter-pays" principle, feasibility studies and establishment of water charge systems to finance collective investments in the basin...)

These topics will be developed as part of a move towards regional integration.

Action plan:

The French regional Cooperation delegation supports the implementation of this ambitious project.

Complementary actions are needed:

- specific training courses on administrative know-how relative to the four priority topics;
- specialised international expertise, from INBO and IO-Water experts in particular, as well as from the French Administration and the six Water Agencies, for in-depth missions requiring specialised assistance;
- life-size field experiments in the hydrographic basins of the two transboundary rivers (Rio San Juan and Rio Lempa). Therefore it will be possible to deal with the issue of transboundary rivers, a fundamental one in this region since 57% of water resources are shared.

Maureen BALLESTERO
cuentemp@sol.racsa.co.cr

Manuel BASTERECHEA
"PACADIRH"
asebaste@pronet.net.gt

HONDURAS

SUSTAINABLE DEVELOPMENT OF RIVER BASINS

Honduras is the most mountainous country in Central America, the one with the highest drainage density in the region:

- Towards the Atlantic, there are 8 river basins (Chamelecon, Ulua, Aguan, Sico, Plátano, Patuca and the drainage systems of the Nombre de Dios Cordillera and the Caratasca Lagoon),
- Towards the Pacific, there are two basins (Choluteca and Nacaome).

The country also has international or transboundary river basins: those of the Motagua with Guatemala, Lempas and Goascoran with El Salvador and Segovia with Nicaragua.

The rivers have a high erosive power and flow from an altitude of 2,000 m over a short distance on very steep slopes. Sediments are carried along even during phenomena of low or average magnitude. For this reason, the consumed water is of poor quality with a lot of suspended solids. Only 30% of the population consume water fit for human consumption.

It is estimated that only 2% of annual river flow is used for domestic, agricultural and hydroelectric consumption, the rest runs into the sea without being used. It is thought that 700,000 ha of land could be irrigated while currently only 10% actually are.

The building of small multipurpose dams would cover the deficit in drinking water, irrigation water and electric power and would also regulate river flows during the flooding period.

62 sites where hydropower dams could be built, have been identified with a potential of 5,500 Megawatts. Current production is 500 Megawatts, produced by 3 hydropower stations.

As the government lacks multidisciplinary development agencies and does not plan this type of activity, the private sector has to be involved and must have a relevant legal framework.

Samuel Rivera Reyes
National School
for Forestry-related Sciences
"ESNACIFOR"
Fax: 504 773 1650
esnauayr@sdnhon.org.hn

PANAMA

RURAL WATER SUPPLY SYSTEMS

In Panama, during the 1997-98 period, the negative effects of the El Niño phenomenon were encountered with the highest intensity in the Azuero, Coclé and Veraguas peninsula. This region which is traditionally drier than the neighbouring areas, forms some sort of arc orientated towards the Pacific coastal area.

A degradation of the rainfall regime was observed which contributes to the decrease in the average flow of the main rivers and to the reduction of water depths in wells.

There is a lack of drinking water for the supply of the population and it has been estimated that the total population directly affected, in a critical manner, reached 280,000 persons. This represents about 25% of the rural population of the country.

In order to compensate for this phenomenon effect, a plan has been formulated to protect rural aqueducts and to search for alternative sources. Training and prevention programmes have been carried out.

PERU

ASSESSMENT OF THE WATER DEMAND ON THE SCALE OF A RIVER BASIN

In Peru, The General Directorate for Water and Soil of the National Institute for Natural Resources proposes policies, plans and standards for the sustainable use of water resources and soils; controls and supervises their implementation and also monitors and promotes their sound use.

Each geographical region has an administrative structure which is defined by the technical administrations of irrigated schemes, user associations and

committees of irrigation users, these being the dynamic components which make viable the policies formulated and the co-ordination of planning.

The valleys of the Pacific, Atlantic and Lake Titicaca basins are all characterised by water resource scarcity, restricting the development of intensive agriculture. It is therefore necessary to formulate specific policies for the development and control of water resource use.

Within such a framework, a census of the users and an inventory of irrigation and drainage infrastructures which correspond to basic management activities, were undertaken. The latter lists the users per valley, irrigated area, regime of licence, consumed water volume, type of culture, etc.

"ALURE 97": TO OPTIMISE WATER USE

The European Commission is developing a programme entitled "ALURE" (Latin American Utilization of Energy Resources) for the funding of specific projects aiming to improve the effective production, distribution and supply of electricity while respecting environmental protection and sustainable development.

In 1997, on the initiative of SINDICATO ENERGÉTICO S.A. (SINERSA), a private company

producing hydroelectricity and owner of the Curumay Hydroelectric Plant, a temporary group of companies was set up to carry out a study aiming to optimise the sharing of available resources between different types of users. This group works for the Autonomous Authority of the Chira Piura River Basin, using modern methods for predicting water supplies. This is a pilot experience in Peru which will be disseminated to be applied to other

river basins, especially the systematic use of modern techniques for hydrological prediction and for the simulation of the Poechos dam management, as well as for optimising water supply among the different types of users.

Ignacio Benavent – IRAGER
E-mail: ibenaven@udep.edu.pe

HYDROLOGICAL INFORMATION SYSTEM

The Hydrological Information System ("SIH") is a programme for the storage, management, analysis and modelling of information, developed by the General Directorate for Water Resources and Soils ("DGAS") of the National Institute for Natural Resources ("INRENA").

The setting-up of "SIH"

"SIH" is based on a hydrological and hydrometeorological data base which includes in particular flow rates dating back to 1960. Information was submitted to a consistency analysis and corrections, to correction tests and hydrological statistic modelling.

Manuel Tapia Muñoz
General Manager for Water and Soils – DGAS
postmast@inrndgas.gob.pe

EUROPE

THE TOPIC CENTRE FOR INLAND WATERS



In 1995, the European Environment Agency (EEA) created a Topic Centre for Inland Waters (ETC/IW) to which it entrusted the implementation of methodology and studies in order to produce reliable information on the aquatic environment in Europe. The ETC/IW is a consortium of eight organisations, including IOWater as the French partner and the British WRC as the commissioner.

EUROWATERNET

This is the European monitoring network that the Member States must set up to meet European requirements. After defining Eurowaternet, the ETC/IW assists the countries with the setting-up of this network. A seminar, organised in Budapest in October 1998, gave the opportunity for showing some undertakings. IOWater has developed a use of EUROWATERNET in France to monitor pollution with nitrogen and phosphorus in watercourses.

INVENTORY OF POLLUTING DISCHARGES

Within ETC/IW, IOWater leads, with French Institute for the Environment's assistance, the project that aims to develop a European common method for monitoring point and non-point polluting discharges from towns, industry and agriculture. The first progress report has just been published by EEA.

EIONET AND WATERBASE

EIONET is the electronic network which links all EEA's correspondents.

WATERBASE is the database which gathers, through EIONET, all EUROWATERNET data at the Union's level.

The construction of WATERBASE is a priority of ETC/IW's 1999 work programme.

EUROPEAN PROJECTS

EWRB: EUROPEAN WATER REGULATION BANK

IOWater leads this project, financed by the European Union, which regroups German ("Textec"), Italian ("Proaqua"), Spanish ("Cedex") and French ("Systal") partners. EWRB consists in collecting all water-related legal and regulatory texts from five countries of the European Union (Italy, Spain, France, Germany and the United Kingdom) and in providing the user with unique and multilingual access to information.

This two-year project includes:

- the gathering of electronic texts,
- the processing of concepts on water rights in each language and the search for equivalent terms, thanks to a group of jurists of different nationalities,
- the construction of a server,
- the testing and evaluation of the system by specialised users.

VILIB: VIRTUAL LIBRARY

The objective of this project, financed by the European Union, is to query distant Z39.50-formatted bibliographical databases, using a common protocol. Queries are automatically translated into English, German, Spanish and French.

VILIB and EWRB are co-ordinated by the International Office for Water (IOWater).

The project also includes a template for accessing full-text bases. It uses the "SYSTAL" company's "gmios" engine which processes information using concepts, analyses, all types of electronic formats and very quickly indexes several gigabytes of information.

Dominique Preux
Fax: 33 5 55 11 47 48
E-mail: d.preux@oieau.fr

European Environment Agency
<http://www.eea.dk>

INTERNATIONAL COMMISSIONS

<http://www.iowater.org/inbo>

the Forum opened on INBO site on the Internet which deals with the management of shared rivers, presents, in particular, the official texts relative to the organisation and meetings of the **four International Commissions for the protection of the Scheldt, the Meuse, the Rhine and Leman Lake.**

PROTECTION OF THE SCHELDT AND THE MEUSE

These Commissions are made up of delegations of the Contracting Parties (France, the Netherlands, the Walloon and Flemish Regions and the Brussels-Capital Region). The Commissions have a legal status in order to carry out the missions with which they are entrusted.

They have among others, the following missions:

- to define, gather and evaluate data,
- to co-ordinate monitoring programmes related to water quality,
- to draw up inventories and promote information exchange on pollution sources,
- to prepare reference objectives and an action plan, to be implemented by the Contracting Parties, including, above all, measures for all types of pollution,
- to carry out co-ordinated evaluations at regular intervals of the efficiency of the action plan.
- to serve as a framework for the exchange of information on policies in the water sector,
- to promote Cooperation and information exchange on the best technology available.
- to encourage Cooperation within the framework of scientific research programmes,
- to serve as a framework to discuss actions to be carried out on the transboundary rivers and canals of the Scheldt and Meuse basins.
- To organise actions for Cooperation between different national or regional warning or alarm networks.

International Commission for the Protection of the Scheldt
Fax: 32 5 3777 163

International Commission for the Protection of the Meuse
Fax: 32 4 349 00 83

PROTECTION OF LAKE LEMAN ("CIPEL")

The Commission, made up of delegates appointed by the French and Swiss Governments, has the following missions:

- It organises and has the necessary research carried out to determine the nature, importance and origin of pollution and processes the results of this research;
- It recommends measures to be taken by the contracting Governments to abate current pollution levels and prevent future pollution;
- It can prepare the elements of international regulations concerning the cleanliness of Lake Leman's waters;
- It examines all other issues related to water pollution.

François RAPIN – "CIPEL"
Fax: 41 21 653 14 41
E-mail: frapin@cipel.org

PROTECTION OF THE RHINE (ICPR)

The Commission is made up of delegations from the Contracting Parties (Germany, France, Luxembourg, the Netherlands, Switzerland and the European Community).

The Commission's field of action applies to the Rhine, groundwater, aquatic and land-based ecosystems interacting with the river and the Rhine basin, in as far as the pollution which is caused there by substances has damaging effects on the river or when it has an important role in flood prevention and protection.

The Commission carries out the following tasks:

- a) it prepares international programmes for monitoring and studying the Rhine ecosystem and processes the results;
- b) it formulates proposals and action plans;
- c) it co-ordinates emergency and warning plans;
- d) it evaluates the effectiveness of the actions taken,

International Commission for the Protection of the Rhine (ICPR)
Fax: 49 0261 365 72

INDUSTRIAL POLLUTION MONITORING IN THE MEUSE RIVER BASIN

The future framework directive recommends integrated water resources management at the level of river basins. It will lead to the standardisation of practices, especially as regards transboundary rivers. In order to be prepared, the International Office for Water has proposed and led a comparative study of the methods used for monitoring industrial pollution in the Meuse River basin. This basin concerns 4 countries: France, Germany, Belgium (Walloon region and Flanders) and the Netherlands.

The study was undertaken within the framework of the DGXI's LIFE programme, with the assistance of the Rhine-Meuse Water Agency, RIZA (the Netherlands), the North Rhine Westfalen Lander, VMM (Flanders) and the Ministry of the Walloon Region.

This study includes a precise inventory of the practices used in each country. It proposes significant changes in administrative and technical practices in order to constitute homogeneous inventories of discharges on the scale of the river basin. Its conclusions were submitted and discussed during a seminar held in Liege in June 1998.

The final report summary is available in French, English, German and Dutch and can be obtained from IOWater:

<http://www.iowater.org/life>

Inventories of discharges

These inventories are databases of the quantities of discharged polluting substances. They usually are at region or country level, rarely on the scale of the river basin. Data come from various sources: discharge permits, estimates of polluting loads, measurements.

Their use for the follow-up of pollution control policies is not systematic and should be developed.

The Authorities' role

They monitor polluting discharges but they tend, more and more, to impose self-monitoring practices to the industrialists, under the supervision of independent laboratories.

The study recommends that self-monitoring be developed jointly with the industrialists and encourages the Authorities to establish procedures and standards to be complied with as well as control measures.

Measured parameters

Although it was noted that many similarities do exist as concerns the usual parameters monitored by the regional or national authorities, differences subsist regarding micropolluting substances. The study recommends that lists of parameters be jointly established as well as of the thresholds that require measurements.

Sampling methods

It was noted that the approaches are very different in terms of frequency. The study recommends that sampling programmes be set up according to the statistical accuracy required by yearly reports.

Analysis methods

There are no common standards used in the river basin. The adoption of international standards is recommended but this does not prevent the use of alternative methods as long as they are comparable.

Toxicity tests

Their use is increasing but is not systematic yet and the conditions under which the tests are implemented are different. It is advisable that their use be given priority for direct polluting discharges every time there are many substances.

BELGIUM

1ST MINISTERIAL CONFERENCE ON THE MEUSE

On 19 March 1999, the Ministers of France, the Walloon Region, Brussels Capital region, the Flemish Region and the Netherlands, involved in the protection of the Meuse, held their first Ministerial Conference.

During the conference, an assessment of the situation was made, concerning the activities of the working groups of the International Commission for the Protection of the Meuse (ICPM) and of the execution of the "Meuse" action plan.

The decisions made during this first Ministerial Conference concerned the European framework Directive, flood protection, groundwater, the participation of Germany and Luxembourg in the ICPM work and finally the relations between ICPM and NGOs regarding the activities related to ICPM missions.

International Commission for the Protection of the Meuse
Fax: 32 4 349 00 83
E-mail: secr@cipm-icbm.be

SPAIN

INTERNATIONAL RIVERS: COOPERATION AGREEMENT BETWEEN SPAIN AND PORTUGAL

On 30 November 1998, the Spanish and Portuguese Governments signed a Cooperation agreement for the sustainable water resources development of Spanish-Portuguese river basins. This agreement replaced those which had been in force since 1954 and 1968 related preferably, but not exclusively, to the hydroelectric development of the border sectors.

It also deals with Cooperation for improvement in water quality, prevention of droughts and floods, reduction of possible accidental pollution and exchange of information and technologies in all areas.

The agreement is based on a wider Cooperation which mainly covers the following areas:

- Regular and systematic data exchanges on all hydraulic variables,
- Co-ordination of management activities in extreme hydrological occurrences, either drought or floods,

- Joint studies on concrete aspects,
- Transboundary impact assessment for new projects.

It is a balanced compromise which takes into account the downstream water demands but also the new uses appearing upstream.

Owing to the uneven hydrological regime of rainfall in the Iberian peninsula, an emergency system was planned as regards downstream guaranteed volumes.

This agreement also defines a framework that enables all issues related to the co-ordination of water management in river basins to be dealt with. This framework is twofold as it deals with political issues - the Parties' Conference - and technical or legal issues as well - the Commission.

This Commission is very different from other existing international commissions. It is not a sole commission, with proper legal status, but two parallel commissions, one for each country, which regularly meet to deal with topics of common interest. This solution takes account of, among other issues, the water management structures which exist in both countries and which are not currently comparable.

José María Santafé Martínez
General Directorate for Hydraulic Works and Water Quality
Ministry of the Environment
Fax: 34 91 597 59 09

CATALONIA: WATER QUALITY CONTROL

Monitoring water quality is important due to the intensive use and scarcity of this resource. This water shortage is usual on most of the Spanish territory and in particular in the Northeast where surface water is mainly used for drinking water supply.

Monitoring is now possible with a network of 230 control stations with monthly or half-yearly manual samplings which determine the quality at each sampling point and its evolution over time, and with a network of automatic water quality monitoring and observation stations which measure, in real time, parameters suited to each station.

This network "XACQA" (*Xarxa automàtica de Control de la Qualitat de l'Aigua*) started operating between 1990 and 1994 with four stations provided by "Aguas de Barcelona" (AGBAR) and 6 stations built by

the Sanitation utility of the Generalitat de Catalunya's Department of the Environment. All these stations are built on the Llobregat river and have been the first phase of the project.

The second phase is under way, with 17 stations planned. Three salinity monitoring stations, complementary to those of the Llobregat river, and four sta-

tions (two on the Muga river and two on the Segre), provided by the "AGBAR" company, will start operating in 1999 and the completion of this network is planned for 2001.

Luis Antonio Balaguer
ADASA Sistema
Fax: 34 93 215 4349



THE DOURO HYDROGRAPHIC CONFEDERATION

RECHARGE OF LOW FLOW

When speaking of ecological flows and recharge of low flow, irrigation users' communities, ecological associations, electricity producers, fishermen and administrations have differing positions on the sharing of available resources but also on the quality objectives necessary to preserve the biogenic capacities of the aquatic ecosystems.

Methods for the calculation of ecological flows will have to be developed and applied scientifically and in a standardised way. Studies, based on the IFIM (Instreams Flows Incremental Methodology) method, are underway in the Douro basin. This method, considered as one of the best, combines and integrates the largest number of hydrological, geomorphological and biological data and makes it possible to carry out flow models of the rivers. Preference curves of species are established for each section of the river thanks to the evaluation of the usable microhabitat and by combining it with the hydraulic conditions, with the characteristics of the bed and the water, optimum for the development of each population.

This makes it possible to develop an ecological flow rate which can protect habitats in the rivers during all stages of the aquatic species' growth by studying the compatibility of these flows with those of existing uses.

Determining ecological flows is done using scientific studies particular to each river to validate methods by controlling the development and evolution of species and their biotopes.

Antonio José Alonso Burgos
Douro Hydrographic Confederation
Fax: 34 983 304 192

Urgent

Please register to participate in INBO's Workshop on "The Strengthening of Basin Organisations over the World".

The World Water Forum
The Hague - 20 March
2000

10h30 - 12h00

Registration:

www.iowater.org/inbo
Fax: 33 1 40 08 01 45
E-mail: stp-riob@oieau.fr

THE TAGUS HYDROGRAPHIC CONFEDERATION

THE TAGUS RIVER BASIN HYDROLOGICAL INFORMATION SYSTEM ("SAIH")

The Tagus "SAIH" system can, thanks to computerised processes, collect, transmit, process and display information on the basin's hydrological and hydraulic status, including the timely knowledge of the operation of infrastructures and control devices.

The data issued by this system, once processed and validated, should be useful to the various departments of the Tagus Hydrographic Confederation and other public or private companies and organisations of the basin.

The Tagus river basin management is characterised by:

- High significance of the water supply: the population is about 7 million inhabitants in the basin proper, in addition to the 1.5 million inhabitants of the Spanish Southeast basins and to the 3 million inhabitants in Portugal.
- Large irrigated areas: more than 120,000 ha of public or private irrigated areas.
- Large hydropower infrastructures.
- The Tagus-Segura transfer on which depend the water

supply and irrigation of the Southeast of the peninsula.

The Tagus basin "SAIH" project includes a network of 202 control stations linked by a communications system via the Hispasat satellite, a basin control centre in Madrid, three regional processing centres in Guadalajara, Talavera de la Reina and Plasencia and four local centres for data display with a 15-minute maximal frequency in Entrepeñas, La Roda, Toledo and Cáceres.

The control centre, located in Madrid, is responsible for the management of "SAIH", for the acquisition, storage, processing, display and dissemination of data.

At present, the operation tests of all control stations have been carried out and these stations have been integrated into the network. It is planned that the network will be operational before the end of 1999.

Francisco Javier Flores Montoya
Tagus Hydrographic Confederation
Fax: 34 1 554 5502
francisco.flores@chtajo.es

THE JUCAR HYDROGRAPHIC CONFEDERATION

JUCAR-VINALOPO INTERCONNECTION

Due to their low rainfall, the Vinalopo, Alacantí and Marina Baja regions do not have sufficient clean water resources to meet demands without overexploiting aquifers. The current Hydrological Plan has estimated the deficit at 80 hm³ per year in the basin.

The Plan objective is to reduce this deficit in order to restrict the overexploitation of aquifers and to supply water to the population by transferring water resources from the Jucar basin to the Vinalopo river.

In order to make this transfer effective, the needed infrastructures are going to be built by the Public Company, namely "Agua del Jucar, S.A.", set up on 21 October 1998, with a budget of 25,000 million pesetas (153.3 million euros), of which 50% will be financed by this public company and 50% by the users.

Spanish legislation on water resources stipulates that "when the use of surface and ground

water may affect their common interest, groups of users will be able to form General Communities to defend their rights and maintain and develop these interests". The Jucar Hydrographic Confederation has since initiated the creation of:

- the Upper Vinalopo's General Community of Users, set up in 1996, which concerns the supply of water to about 58,000 people and to an irrigated area of 8,600 Ha.
- the Middle Vinalopo's General Community of Users which will regroup 60,000 consumers of drinking water and users of an irrigated area of 21,000 Ha.

These two public institutions will contribute to both the funding of infrastructures and the sharing of water, together with the Jucar Hydrographic Confederation.

Juan Manuel Aragonés Beltrán
Jucar Hydrographic Confederation
Fax: 34 96 393 8801

THE EBRO HYDROGRAPHIC CONFEDERATION

FLOOD CONTROL: AN AUTOMATIC INFORMATION SYSTEM

The objective of the system, which has been operating since 1997, is to make relevant centralised quantitative and qualitative hydrological data available in real time to the basin managers in order to assist them in making decisions.

The Ebro Hydrographic Confederation has been entrusted with the construction and operation of the system. This organisation is responsible for the planning and management of public water resources in the Spanish part of the Ebro and Garonne river basins.

The system was designed to:

- optimise water supply for different uses, especially the supply of urban areas, irrigated areas, power stations and the recharge of low flow.

- ease flood forecasting and take preventative measures to mitigate potential damage.
- permanently monitor pollution loads in watercourses and canals used for water supply.

The system is structured with control points, concentration points and the information processing centre, located in Saragossa, which is its central unit. It is there that all data are centralised, processed and stored and decisions made under normal and extraordinary conditions

FLOOD MANAGEMENT IN DECEMBER 1996 AND JANUARY 1997

100 to 200 mm rainfall occurred from 16 to 19 December 1996 in various left bank sub-basins in the Pyrenean area, from the Aragon river to the Segre. To this rainfall were added the effects of snow melting which caused a centennial flood. SAIH collected the data on rainfall and flow rates in real time and started operations of storage/release of the different dams in the corresponding sub-basins. These operations provided for flood attenuation and phase change at confluences. It enabled the protection of large towns such as Frago and Tortosa. Damage was prevented through flood control.

Then, from 20 to 26 January 1997, a similar, although larger, phenomenon affected 7 left bank sub-basins. It was controlled thus preventing harmful effects to towns such as Saragossa and Tortosa.

It is estimated that the damage thus prevented by an adequate management of the flow of both floods have amortised the investments required for building the system.

Antonio Coch Flotats
Head of the Hydrological Planning Department
Ebro Hydrographic Confederation
Fax: 34 976 23 43 06



Latest News

The next General Assembly of the International Network of Basin Organisations (INBO) will be held in Cracow - Zakopane (POLAND) from 30 September to 4 October 2000, at the invitation of the Polish Authorities

Information:

www.iowater.org/inbo
Fax: 33 1 40 08 01 45
E-mail: stp-riob@oieau.fr

FRANCE

ADOUR-GARONNE

TOWARDS THE MANAGEMENT OF NEARBY WATERS

Within the framework of its policy for supporting employment, the French Government has developed a programme whose aim is to financially assist employers who would propose young people, looking for employment, a job which would meet unsatisfied collective needs. The basic principle of this approach is summarised in the title of the programme: "New services, new jobs".

The Water Agencies have been aware of the opportunities provided by this programme whose goal can only increase the advantages of the investments they finance.

Indeed, all aspects of water management require more or less the dealing with some neighbourhood issues that need **strengthened field activities**.

The Agencies' Boards of Directors thus decided to assist the Governmental approach by promoting projects to local authorities (communities, syndicates, departmental and regional assemblies) but also to associations and trade chambers (industry, agriculture ...).

In all agencies, this assistance takes the form of a financial aid, which is complementary to that of the State, insofar as the job thus created complies with their overall objectives.

The Adour-Garonne Water Agency has been implementing this new policy since the beginning of 1998.

A first information campaign, addressing contracting authorities, has enabled the dissemination, in the whole basin, of a record of activities, presenting a set of projects that comply with the Agency's objectives and meet the concerns of local representatives.

The activities presented cover several areas:

- **pollution abatement** (the monitoring of industrial discharges into sewerage systems to check whether they are complying with standards, for instance)
- **drinking water** (organisation and follow-up of actions related to drinking water saving or to the upgrading of connections...)
- **agricultural practices** (management and use of the land spreading of sludge coming from waste water treatment plants)

- **environmental education for young people in particular**

- **the natural environment** with projects related to the maintenance and rehabilitation of rivers, mainly focusing on the knowledge of aquatic ecosystems, wetland management or on ecology-purpose developments.

A progress report was made a year and a half after these information campaigns started.

About 300 new jobs were created, half of which for the maintenance of natural ecosystems (rehabilitation of rivers ...). Drinking water saving, agricultural practices but also environmental education come next. Two thirds of the employers are local communities, professional associations and structures are sharing the other one third.

The objective is to create 1,000 new jobs in the basin.

Among all the actions started in Adour-Garonne, some deserve to be emphasized.

- For instance, the **trade chambers of agriculture** have signed agreements with the Agency for raising the awareness of farmers to the measures necessary for saving irrigation water, for the rational use of fertilisers, for the follow-up of sludge from waste water treatment plants, for controlling stock breeding pollution ...
- The **Chamber of Commerce and Industry of the Landes Department** hired 2 "chargés de mission" to intervene in small and medium companies and with craftsmen to implement a pollution prevention policy.

Alain DUCHEIN
Adour-Garonne Water Agency
Fax: 33 5 36 37 28
duchein@eau-adour-garonne.fr



LOIRE-BRITTANY



LOIRE-BRITTANY / THE RIO DOCE TWINNING

On the occasion of the 3rd General Assembly of the International Network of Basin Organisations, a partnership agreement was signed in Salvador de Bahia, Brazil, on 3 December 1998, by Mr. Ambroise GUELLEC, President of the Loire-Brittany Basin Committee and former Minister, and Mr. Dalto Favero BROCHI, Executive Secretary to the Brazilian Network of Basin Organisations, who participated on behalf of the Rio Doce Basin Committee (Brazil) which is being set up.

This agreement plans in particular:

- exchanges between local elected officials, industrialists, farmers, public servants of both basins,
- short experts' missions for the training of technicians and specialists,
- information and awareness raising of the public and children at school.

It deals with various aspects: institutional (setting-up of appropriate basin organisations), financial (charges, aid) and technical (water databases, quality monitoring, multiannual action plans, basin master plan,...).

Jean-François Talec
Loire-Brittany Water Agency
Fax: 33 2 38 51 74 27

Dalto Favero Brochi
Brazilian Network of River Basin Organisations
Fax: 55.19.460.40.43

RHONE-MEDITERRANEAN-CORSICA

ABATEMENT OF METALLIC POLLUTION IN THE BIENNE



The Bienne is a mountainous river (average flow rate of 30 m³/s, length of 62 km), a tributary of the Rhone. Its catchment area (650 km²) is in the east of France in the Jura range (karstic plateau). It is characterised by a rain-snow regime with floods in spring and autumn (decennial flood of 680 m³/s) and low flow in winter and summer.

Its basin's environment is well thought of: it hosts an extensive agriculture focused on the production of well-known cheese (Comté, morbier, bleu de Gex), significant forestry (forests cover 60 % of the territory) and a developing tourist activity (Nordic ski in winter, environmental leisure and fishing in summer).

The Bienne crosses the towns of Morez (8,000 inhabitants) and Saint-Claude (14,000 inhabitants) in which specific industrial activities are carried out: micro-mechanics, spectacle industry (47% of the French production), plastics technology, etc.

...faced with toxic pollution...

In 1995, an analysis of Bryophyte (aquatic moss that can aggregate micro-pollutants) showed that the Bienne was highly

contaminated with metals (copper, nickel). Sludge of the Morez treatment plant was also contaminated with these metals (up to four times the standard).

This toxic pollution is detrimental for the river and for the tourist activity of a region which is well-known for the quality of its environment.

...requiring an overall approach

This metallic pollution comes from many small companies and from the sludge of treatment plants of small towns which is also contaminated.

This is the reason why the partners concerned (communities, the Franche-Comté region, the State, the Natural Park, the Water Agency, etc.) have gathered and signed a "river contract", the objective of which is to reduce this pollution and rehabilitate the river.

Finally, an overall action plan concerning 400 companies was formulated to reduce metallic discharges by 75%.

A partnership protocol, signed in 1998, associated all stakeholders to the implementation of this action plan. It foresees:

- investments in 11 polluting companies and for treating the sludge coming from the Morez treatment plant;
- an overall follow-up of the operation of facilities;
- a metallic pollution assessment of the Bienne.

Currently, investments have been completed and their optimisation is under way. A first progress report has shown that the metallic pollution of the Bienne had been greatly reduced.

Jean-Louis PRIME
Rhone-Mediterranean-Corsica Water Agency
Fax: 33 4 72 71 26 01
LeanLouis.PRIME@eurmc.fr

ARTOIS-PICARDY THE AUDOMAROIS SAGE

In 1996, upon the request of the **Local Water Commission (LWC)**, the International Office for Water (IOWater) intervened to assess the consequences of the "Artois-Picardy" "SDAGE" (**Master Plan for Water Development and Management**) on the Audomarois and organise an information session on this topic.

Four LWC's working groups were organised in which more than 90 members of the LWC participated.

They dealt with:

- the "Aa river",
- the "Audomarois swamp",
- the "canal" and "aquifer".

An analytical and synthetic method was developed by the **Audomarois Regional Natural Park (RNP)**, to which the LWC entrusted the implementation of the **Water Development and Management Scheme ("SAGE")**, with IOWater's assistance.

Raising the awareness of elected officials enabled:

- the identification of priorities and lines of thought for the second implementation phase,
- their comparison with technical and scientific work and with planning documents.

The following phases of the "SAGE" implementation are ongoing and deal with:

- ➔ trends and scenarios,
- ➔ choice of strategy and objectives,
- ➔ actions and management measures.



drm@eau-artois-picardie.fr

RHINE-MEUSE

A WATER DEVELOPMENT AND MANAGEMENT SCHEME FOR THE LARGUE



The Largue is a river located in the southern part of Alsace.

The Local Water Commission (LWC), made up of local elected officials, representatives of the users and governmental administrations, formulated the "SAGE" (Water Development and Management Scheme).

It met for the first time in December 1996. Since then, about thirty LWC meetings and sub-working groups have been necessary for validating the different phases of the "SAGE". The key points were the following:

- validation of the inventory and assessment in June 1997,
- determination of the stakes and orientations in December 1997,
- approval of the objectives and action plan in June 1998.

The "SAGE" project deals with water quality improvement,

low flow management and with resuming maintenance of the Largue and its tributaries to solve erosion and bed silting problems.

The "SAGE" project, together with all the comments received, was submitted to the Basin Committee for approval. Indeed, the role of the Basin Committee is to issue recommendations for the harmonisation of all "SAGES", and to make sure that the quality and quantity objectives defined in the "SAGE" are consistent with those of the Master Plan for Water Development and Management.

The Largue "SAGE" managed to undertake a true dialogue regarding the LCW's work and reflections. For each major step of the "SAGE", commissions were gathered to widely inform the different users, and take into account their expectations and the definition of common objectives.

The Water Development and Management Scheme, together with the advice provided and the

deliberations of the Basin Committee, were made available to the public during two months in the city halls of the towns concerned.

It defines management rules and the actions and developments to be undertaken to comply with these regulations and estimates the financial consequences. Finally, it identifies the means necessary for following up these orientations.

LWC intended to meet once a year to follow up the "SAGE" implementation and define a more precise schedule for the implementation of the different actions.

The Largue "SAGE" is the first "SAGE" which has been approved in the Rhine-Meuse Basin, and the second in France.

Denis BESOZZI
Rhine Meuse Water Agency
Fax: +33 3 87 60 49 85
besozzi@eau-rhin-meuse.fr

RUSSIA

REORGANISATION OF WATER MANAGEMENT

A programme per river basin

The organisational structure of the management system is presented in the form of a chain: Federal Ministry of Natural Resources, Basin Water Boards, the Local Committee on Water Management.

A basin programme can be implemented in various forms. For instance, the basin programme for the Volga plans the restoration of the whole region. The basin programme for the Ob is focused on water resources to solve the problems of restoration, utilisation and protection that arise.

The case of transboundary river basins

In the case of a transboundary watercourse, the last link of the chain is the Basin Co-ordinating Council, made up of representatives from the constituents of the Russian Federation and other riparian countries.

This management scheme is regulated by the Law on environmental protection and Water Code of the Russian Federation and by basin agreements concerning the transboundary rivers' utilisation and protection.

Bilateral agreements and contracts may be signed for the joint use of water resources.

An example of such an agreement is that signed by the Chelyabinskaya (Russia) and Kustanaiskaya and Kurganskaya (Kazakhstan) Oblasts.

Agreements may be signed by different States of the Russian Federation, in the Ob river basin for instance. Local programmes were formulated according to general objectives (drinking water supply, water bodies restoration, rational water use, flood protection, catchment restoration, wastewater treatment and utilisation, monitoring networks) taking into account the local features.

The reasons which led to the formulation of the Ob river basin programme were diverse and the Basin Co-ordinating Council has the very important and complex task:

- to formulate a strategy for water use in the basin;
- to co-ordinate the local objectives to establish a priority order;
- to designate the sources of the programme financing and investments;
- to specify the programme targets and its implementation phases.

There is a number of problems that make implementation difficult:

- difficult economic situation in several basin regions;
- lack of a concerted method to formulate standards;
- delay in the payment of taxes on water use according to the Water Code of the Russian Federation.

Prokhorova N., Pozdina Y.
RosNIIVKh, Yekaterinburg
Tel./Fax: +7 3432 74 82 42
E-mail: vhroot@water.uran.ru

HUNGARY

REGIONAL COUNCILS FOR WATER MANAGEMENT

Regional Water Management Councils (TVT) were created between 10 and 20 June 1998 on the territories of the Water Directorates.

The Councils held 3 meetings in 1998, during which they accepted the terms of reference and organisation and discussed about the plans related to the water management and sanitation policy.

Some councils are also examining certain projects of national interest, for instance:

- Departmental schemes for sanitation and waste water treatment in the Departments

of Pest, Nograd, Jasz-Nagy-kun Szolnok.

- The plan for the building of the Kigyos-Igal-Ferenc supply canal in the Maros river basin.
- All issues related to the development of hot springs and to the disposal of the water used.

In order to make their activities more efficient, the Councils created regional and municipal sub-commissions for water management and a commission for flood control.

Kalmán. Papp
National Water Office – OVF
Fax: 36 1 212 0775

FRENCH-HUNGARIAN COOPERATION FOR THE MANAGEMENT OF WATER DATA

Due to its central location in the heart of the Danube basin, Hungary has already developed very effective informative tools for water resources management, particularly regarding flood management.

With the prospect of membership to the European Union and the implementation of the future community framework directive, the Hungarian authorities want to develop their capacity for integrated water resources management.

To do this, the National Water Office ("OVF") and the Water Resources Research Centre ("VITUKI") of the Ministry for Transport, Telecommunications and Water ("KHVM") have started up a Co-operation programme with France and in particular with the International Office for Water (IOWater), which aims to develop their **Integrated System on Water Data (ISWD)**.

The main results obtained are:

- The methods used in France in the French Water Data Network were adopted and have already been implemented in Hungary;
- The development of a first conceptual model of the ISWD hydrological data adapted to the Hungarian context;
- The definition of technical terms of reference for setting up a "pilot project for the standardisation of exchange procedures and ground water management", with the possibility of applying them within the framework of the management of an international aquifer, together with Romania.

Gyula Szabo - VITUKI
Fax: 36 1 216 1514
E-mail: szabogyula@vituki.hu

CZECH REPUBLIC

PRECIPITATION-RUNOFF MATHEMATICAL MODEL: "HYDROG"

The Odra River Authority operates a multi-functional water management system (WMS) that fulfils a lot of objectives, such as water supply, minimum flow recharge, use of water for energy and recreation.

Flood protection is one of the main functions of this system.

Currently the network comprises 43 measuring stations and 30 stations are being built. The Odra River Authority receives weather forecasts from the Czech Hydro-meteorological Institute. Nowadays, we experimentally use the results of the ALADIN numerical forecasting model which forecasts the regional precipitation values twice a day for the next 48 hours.

All the data are essential for measuring the flow in each watercourse and for flexible, optimal control of the Odra River's water.

The HYDROG Programme, a software for flood monitoring, enables to carry out a simple simulation of flood episode development and to perform a permanent on-line monitoring of basins with reservoirs. This implies that the river basin be divided into sections of watercourse and reservoirs. The system uses a combination of hydraulic and hydrologic approaches to measure flows.

The HYDROG Programme already works in the Ostravice and Olše catchment areas, i.e. on an area of approximately 1,950 km². It was used during the flood in July 1997 for the first time. The flow reducing effect was on the level of 200 m³/s.

Data processing for the Opa-va and the Odra catchment areas is under way and the model is going to be extended to cover the whole Czech part of the Odra river basin, i.e. an area of approximately 6,000 km². The flow forecasts referring to the Odra river downstream of the Olše should be used by Poland to complete its own forecasts.

Milos Stary – MYSOFT Bron
Moetoslav Turek
Odra River Authority
Pavel Puncochar,
Ministry of Agriculture
Fax: 420 2 218 129 83
E-mail: punchovar@mze.cz



Hungary: presentation of a conceptual model

POLAND

WROCLAW "RZGW" STUDY ON WATER POLLUTION

Due to their anthropogenic origin and higher solubility in presence of detergents and other organic compounds, the concentrations of polycyclic aromatic hydrocarbons (PAH) in ground water are much lower than in surface water. In heavily polluted surface water, this concentration often exceeds 1000 ng/dm³ and even 100,000 ng/dm³ in waste water. In municipal waste water the PAH concentration considerably increases after intensive rain due to flushing automobile fuel, gas, petrol product from road surfaces.

In Poland, the permissible content in drinking water amounts to 15 ng/dm³, while in accordance to WHO it should not exceed 10 ng/dm³.

Due to the hydrophobic characteristics of PAH, soil is the component of the natural environment where the biggest amount of PAH is collected but, on the other hand, soil is where the biodegradation processes are most intensive. Till now, regulations defining the permissible content of PAH in soil were

only introduced in the Netherlands. In Poland, the Institute for Cultivation, Fertilisation and Soil Science ("IUNG") has worked out criteria for the evaluation of soil pollution with PAH. A concentration of 25-35 µg/kg in soil is considered as a basic reference and, except in the zones under the direct influence of some industrial plants, no pollution with PAH was observed in the country. Roads often cause pollution of the grounds but its scope is limited to the 50-200 m zone on each side of the road.

On the basis of the investigations executed by the National Geological Institute in 1991 - 1995, concerning the geo-chemical monitoring of water sediments, the contents of PAH in river deposits showed concentrations from 25 µg/kg up to a thousand µg/kg for some sampling points located within the Upper and Middle Odra managed by the Wroclaw Regional Water Authority ("RZGW").

Wojciech Rejman
Wroclaw "RZGW"
Fax: 48 71 221 339
ezgw@wroc@infond.wroc.pl

POZNAN "RZGW" BASIN MODELLING

Freshwater supply is an increasing problem in Poland. The water demand for irrigation and drinking water supply is increasing and will be even higher in the years to come. In order to meet these increasing needs the Polish Government has planned to build a number of reservoirs up to year 2005. The construction of these reservoirs is a part of the national plan for increasing the number of so called "small retention" and improve water resources management.

Co-ordinating the implementation of this nation-wide plan is one of the most important tasks of the seven Regional Water Authorities ("RZGW"). This problem is especially important in the area of Poznan "RZGW" which includes the Warta river basin.

The Wielowies Klasztorna reservoir, located in the central part of the Proсна river, the second Warta river tributary, is intended to improve river flow regulation and flood control, to secure water supply for irrigation, to provide, in the future, drinking water to the cities of Kalisz and Ostrow Wielkopolski.

Localisation, optimisation and environmental impact assessment will be the most difficult problems to be taken into consideration when building this reservoir as it will affect natural conditions with respect to surfa-

ce and groundwater flow, water quality and hence flora and fauna.

For these reasons, Poznan "RZGW" has implemented a pilot project with an entirely integrated modelling, new in Poland, using the MIKE system.

The experience obtained has shown that this mathematical model is a highly valuable tool for evaluating investment alternatives and for minimising environmental impacts.

This pilot project could not have been implemented without funding from the Danish Environmental Protection Agency and the participation of "VKI/DHI" (Denmark) and GEOMOR (Poland).

Krzysztof Piechowiak
Poznan "RZGW"
Fax: 48 61 865 6953
rzgw@pzn@elmo.nask.pl



UKRAINE

THE SOUTHERN BUG TOWARDS A BASIN COMMITTEE

By alternating between training and experts' missions in the Ukraine and a seminar in France, with the support of the Rhone-Mediterranean-Corsica Water Agency, this pilot project, funded by the European Commission's TACIS programme and the French Ministry for Foreign Affairs, deals with integrated water resources management in the Youjny Bug river basin (Southern Bug), after a first phase aiming to raise the awareness of executives of the Ministry for Environmental Protection and Nuclear Safety as well as of local representatives from communities and industry.

This experience is likely to be used for other basins in the Ukraine and for international basins such as that of the Dniestr or the Dniepr.

The training courses have introduced executives to the

French institutional arrangements and therefore made it possible to think about their adaptation to the Ukrainian context.

Draft legal texts are taking shape and towards the end of the programme, proposals will be made to the Ukrainian Soviet for formalising the Bug basin pilot system with the possibility of extending it to the whole country.

The Vice-Minister in charge of Water and Aquatic Ecosystems is himself leading the formulation of this new water resources management policy, all the more so that, in March 1999, the Ukrainian Ministry for the Environment gathered under its responsibility the State Committees for water resources, geology and mineral resources and hydrometeorology.

MONITORING WATER QUALITY IN THE BUG, LATORICA AND UZH RIVERS

The Ministry for Environmental Protection and Nuclear Safety has entrusted the REDECO - IOWater - VERSEAU group with the development of a strategy for improving and protecting water quality in the transboundary basin of the Bug, Latorica and Uzh rivers, tributaries of the Vistula. This project, costing a total of 1.980 million Euros (12.900 MFF), is financed by the European Commission's TACIS programme and involves the Ukraine, Poland, Belarus, and Slovakia.

The project, which applies the terms of the Helsinki Convention, plans:

- to develop a control and follow-up strategy for water quality in the Western Bug basin,
- to apply the European directives on water quality in this basin,
- to define and promote analysis and technical control procedures in accordance with the terms of these directives,
- to propose possible changes in these directives according to the results obtained.

The project is based on:

- the collection of existing data regarding quality,
- the identification of the main point sources of pollution,
- an assessment of non-point sources of pollution,

It should enable the standardisation of procedures in all the riparian countries.

A basin information system, gathering the various data collected both at national and international levels, will be the tool for the standardised, co-ordinated and permanent follow-up of water quality in order to control pollution.

The system will make it possible to facilitate the collection and processing of data related to water quality, develop the national information system in the Ukraine, and to use data exchange procedures at international level between the Vistula riparian countries.

A computer expert was seconded by IOWater to Kiev in April 1999 for one year.

Alexandre MAZURKIEVITCH
Ministry for Environmental Protection and Nuclear Safety
Fax: 38 044 228 51 83
E-mail: dnipro@ukrnet.net

Latest News

The next General Assembly of the International Network of Basin Organisations (INBO) will be held in Cracow - Zakopane (POLAND) from 30 September to 4 October 2000, at the invitation of the Polish Authorities

Information:

www.iowater.org/inbo
Fax: 33 1 40 08 01 45
E-mail: stp-riob@oieau.fr

THE MEDITERRANEAN TURKEY

PROTECTION OF IZMIR BAY AGAINST POLLUTION AND INTEGRATED MANAGEMENT OF AEGEAN RIVERS



Irrigation systems in the Gediz basin

When they met in Paris on 5 March 1997, the Turkish and French Ministers for the Environment agreed to launch a pilot project aimed at the integrated management of water resources (infrastructures and pollution control) of the three Aegean rivers, Gediz, Kuzey Ege and Menderes, in the Izmir area.

This project, which particularly aims to control pollution in Izmir Bay in the Aegean Sea, is supervised by a joint steering committee made up of the Ministry for the Environment, "DSI", Iller Bankasi and "SPO", on the Turkish side, and of the Ministry for the Environment, the French Embassy in Turkey, the Rhone-Mediterranean-Corsica Water Agency and IOWater, on the French side.

The French Ministry of Economy, Finance and Industry has agreed to pay an amount of 3.200 million French francs out of the "FASEP" Fund for the first phase of this programme which was jointly implemented by IO-Water, ANTEA, BRL Engineering and SEURECA-SPACE, in support of a technical field team made up of the Turkish partners.

For 18 months, IOWater has organised and planned the actions of many experts. Using existing collected information, these actions have made it possible to assess the state of this area, both in qualitative and quantitative terms, in order to "prove the feasibility of integrated water resources management in the Aegean river basins", and to propose measures to make further progress.

In Izmir, on 22 March 1999, World Water Day, the International Office for Water, on behalf of the group, ceremoniously submitted the final conclusions of this first phase to Mr. Firuz Demir YASAMIS, the Turkish Under

Secretary of State for the Environment, in the presence of Mr. Cyril BOUYEURE, head of the Trade Commission of the French Embassy in Ankara and Mr. Laurent CAPLAT, representative of the French Ministry for the Environment.

A detailed presentation of the document was given to the joint Pilot Committee who approved the conclusions.

In addition to an overall assessment and a detailed survey of the area, the study of the first phase recommended three main actions corresponding to the terms of reference:

- **A priority action programme**, with a budget of 40 million Euros, regroups 28 projects, the most important of which deal with water quality protection in the Gediz basin. In general terms, these actions are to be undertaken in the short term and involve urban or industrial treatment plants.

This priority action programme was drawn up after the assessment of the ability to pay of the different water users in the region and the simulation of a financial system based on their contributions.

- **A pilot institution for the Gediz basin**: the study proposes the creation - based on existing texts regarding associations in Turkey - of a basin organisation applying the principles of integrated management, users' participation and the use of financial incentives through the introduction of taxes on withdrawals and discharges, so that the funds collected can then be used for the preservation of water quality.

- **A basin information system**: it is broadly outlined in the assessment document which deals above all with the quality of collected data, their comprehensiveness, and the partnership between the various data producers. In the medium term, this system could be supported by a local body such as the one proposed for the Gediz basin.

Various missions (from November 1997 to March 1999), carried out by the Group's experts, have made it possible to establish precisely:

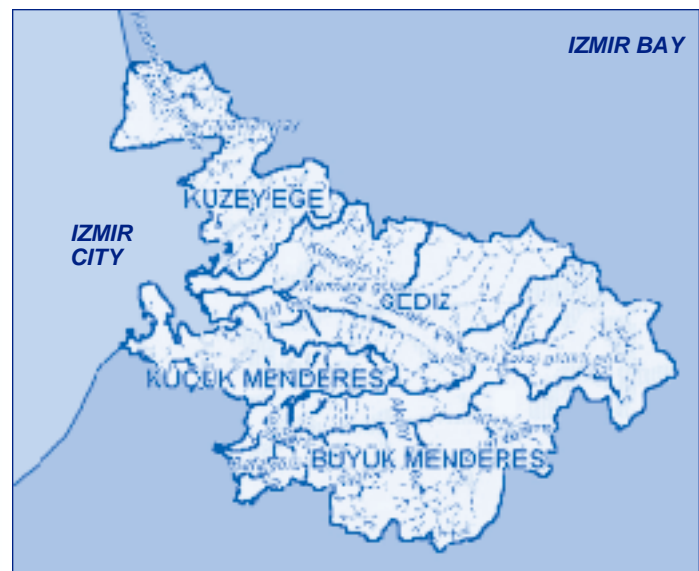
- The objectives to be set for this system, based on an analysis of the local partners' expectations;
- The organisation of the management structure and the necessary co-ordination for the efficient operation of this system;
- The identification of the information to be collected and the organisation of the information flow between partners, while ensuring that the quality of the data exchanged is controlled.

A 3-year working programme has been recommended, aiming at the collection and optimum development of regional data necessary for integrated water resources management.

It is essential to get effective and reliable measurements and analyses, thus ensuring an in-depth knowledge of the uses of abstracted water and of discharges, carried out while using the same standards whoever the network manager may be.

Taking into account the conclusions of the first phase of the Cooperation programme, the steering committee is now trying to mobilise the funds necessary for implementing the Priority Action Programme, by calling upon Euro-Mediterranean (MEDA) and multilateral funds, within the framework of the METAP III Programme in particular.

Mrs Serap KULELI
Ministry of the Environment
Fax: 90 312 286 2271



ALGERIA

NEW WATER POLICY

Currently, the public water service in large cities is provided by 35 Public Utilities (regional and from wilaya) for water supply. In the small and medium sized agglomerations, water supply is guaranteed by state owned companies or technical services at local community level.

Water costs are subsidised by the State up to 60%, and the tariffs administered only cover operating costs.

Some important institutional changes took place in relation to the new water policy adopted in April 1995, as well as the reforms taken on by Algeria in the transition towards a market economy.

Five principles are applied:

- the unicity of the resource: for its mobilisation, its use, and its preservation by establishing **river basin Agencies** in charge of carrying out all actions aiming to achieve integrated water resources management,
- dialogue: thanks to the establishment of **basin committees** and the reorganisation of the National Water Council,

- the economy: by promoting commercial management, competition, fair economic tariffs and realignment (**National Drinking Water Fund**),
- universality: by making water a concern for everyone (industrial water policies and **water saving** policy in agriculture)
- ecology: through conservation, **quality preservation**, prevention and communication strategies (taking care of sanitation, sanitation and pollution charges, development of wastewater treatment systems)

The on-going reforms deal with:

- **The establishment of five River Basin Agencies: Algérois-Hodna-Soumann, Constantinois-Méllègue-Seybousse, Oranie-Chott-Chergui, Chellif-Zahrez, Sahara.**

Since their creation, they have encountered huge problems: lack of know-how as regards integrated water resources management, lack

of institutional and organisational support, insufficient financial resources, shortage of qualified personnel in integrated management.

Thanks to State assistance providing initial funds, the agencies have been established and have begun activities.

The Basin Agencies are currently gaining knowledge about the basins. The programmes underway are based on the collection of data on water resources in order to assess the situation.

In 1999, the agencies will finance small projects which are directly linked to water saving and quality.

- **The setting-up of basin committees at the level of each agency.**

This involves:

- ➔ the reorganisation of public water utilities management: specialised establishments are to take on the management and operation of large facilities and installations covering several wilayas,

local communities organising the management and operation of facilities and installations on a local scale and of drinking water supply systems,

- ➔ the opening of the public water utility to competition: today communities are authorised to grant the management of their networks to whoever offers the best service,
- ➔ a new system of tariffs for water: gradual adjustment of the "tariffs/cost price" ratio within the framework of a new tariffs system by homogeneous zones with revisable tariffs, making it possible to progressively recover the real water cost.

Mekki ABROUK
Algérois-Hodna-Soumann
Basin Agency
Tel/Fax:
213 2 68 75 17 / 58 85 83

MOROCCO

THE OUM ER RBIA PILOT AGENCY

The law 10/95 of 16 August 1995 is the legal basis of water policy in Morocco. It aims to establish the legal instruments necessary for controlling the use of water resources and for their conservation.

It plans for the creation of basin agencies, for which the missions are extensive. These bodies, which have financial autonomy and a legal status, are in charge of:

- **State missions concerned with water law enforcement which are currently taken care of by State directorates (Directorate General for Water):**
 - the inventory of water rights and concessions,
 - the monitoring of quality and quantity, both for ground and surface water,
 - the issue of new permits and concessions for water withdrawals,
 - the control of the use of resources,
- **new missions within the river basin context:**

- the formulation and implementation of the water development plan which is to be integrated into the national water plan,
- the levying of pollution and withdrawal fees which will be reinvested in pollution control,
- providing contracting authorities with financial assistance and services for pollution control, improvement in water resources and flood management.

To help the structures and human resources of the Ministry of Public Works adapt to this new policy, the Director for Water at the French Ministry for the Environment and the Moroccan General Director for Water signed a special Cooperation agreement, on 19 April 1996. This agreement deals mainly with the creation of **a first pilot agency for the Oum Er Rbia basin.**

The International Office for (IOWater) is the main operator for the French Authorities. This programme, carried out between 1996 and 1998, with the assistance of specialists from the

Adour-Garonne Water Agency, included:

- awareness campaigns for users and communication actions among the population,
- assistance with fees and aid systems (institutional and financial aspects),
- training on floods (flood prevention, forecasting and warning),
- the restructuring of regional water analysis laboratories,
- the drawing up of the documents necessary for the effective implementation of the Oum Er Rbia pilot Basin Agency's financial services (procedures, control of tax bases, legal department, preparation of multiannual programmes),
- technical training courses for Moroccan executives leading to a "Higher Education Certificate in Engineering and Water Resources Management" with the assistance of the National School of State Public Works.

This action will be followed by a new 1999-2001 programme based on three main actions:

- ➔ the continuation of the assistance to the Oum Er Rbia Basin Agency with the formulation and drawing up of administrative and financial procedures linked to the first meeting of the Board of Directors,
- ➔ the setting-up of a basin information system to allow for quick access to information on the state of water resources,
- ➔ the development of an effective flood warning system in the Oum Er Rbia basin which is likely to be extended to the whole country.

Mohammed JELLALI
General Directorate for Water
Rabat
Fax: **212 777 86 96**

EMWIS EURO-MEDITERRANEAN INFORMATION SYSTEM ON KNOW-HOW IN THE WATER SECTOR

The Euro-Mediterranean Conference on Water Management which took place in Marseilles in November 1996 emphasized that all partner countries need an in-depth knowledge regarding stakeholders, tools and documentation available, techniques and methods used, programmes and research results, training opportunities, etc.

The information available on these topics being only fragmentary, scattered and heterogeneous, it seemed necessary to begin rationalising and make readable this information to get it easily accessible and usable.

The provisions for the implementation of an information system which, through the use of modern communication methods, would allow for the networking of pre-existing source systems: **EMWIS (Euro-Mediterranean Information System on know-how in the Water Sector)**, were approved in Naples (Italy) in December 1997, during a conference which gathered the Water Managers and the main operators involved in this project in the **27 countries concerned by Euro-Mediterranean agreements**: 15 countries of the European Union, Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Syria, Tunisia, Turkey and the Palestinian Authority.

EMWIS will use the Internet network which is already available in the 27 countries, in particular the networks **TEN-34/155** (Trans-European Network co-financed by the European Union) and **RAITNET** (Regional Arab Information Technology Network, co-financed by UNESCO).

A three-year programme for developing EMWIS is planned

(1999-2002). It includes the following actions:

- Organisation of the communication network;
- The elaboration and dissemination of directories (institutions, operators, experts, ...) and catalogues of information sources in the 27 countries;
- The development of a common access to existing computerised systems;
- The development of access to information not yet digitised (hard covers, microchips...)
- The extension of access procedures to additional languages (other than French and English which have been used since the beginning);
- Execution of common products for enhancing the information.

A "Management Committee" of ten countries designated for a three-year period, in particu-

lar those financing the Technical Unit, and the European Commission, sets the main strategic guidelines and validates the budgets and the yearly progress reports, under the chairmanship of Italy and the vice-chairmanship of Jordan. Three meetings were already held in March 1998 in Paris, in July 1998 in Rome and in Sophia Antipolis/Nice in December 1999.

In each country, the general management structure will be based on a "National Focal Point". A Co-ordination Committee will gather all the National Focal Points under the chairmanship of Algeria and the vice-chairmanship of France.

A "Technical Unit" will be managed by a consortium of the 3 European operators: IOWater (France), "CEDEX" (Spain) and "SOGESID S.p.A" (Italy). These operators, involved in the field of water information, have created a special **European Economic Interest Group** whose head-

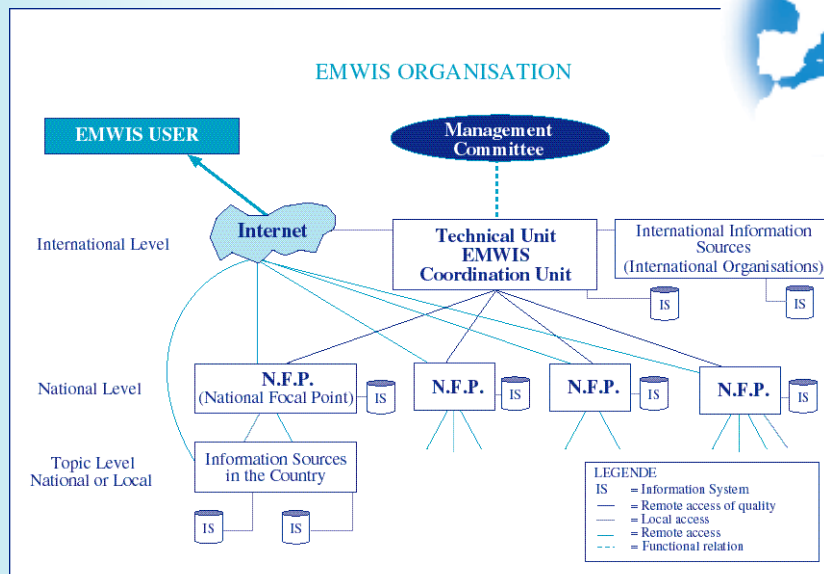
quarters are located in Sophia-Antipolis (France).

The overall budget of this project for a three-year period (1999-2002) has been set at 31.000 MFF, co-financed by the three countries which participate in the "Technical Unit", the European Commission and all the other countries as regards "National Focal Points".

The funding agreement was approved by the European Commission in July 1999 and allowed for the operational starting of the project.

The Ministerial Conference held in Torino (Italy - October 1999) reaffirmed the need for EMWIS quick development.

<http://www.semide.org>



The network newsletter

Secretariat:

International Office for Water
21, rue de Madrid
75008 PARIS - FRANCE

Tel.: +33 1 44 90 88 60
Fax: +33 1 40 08 01 45
E Mail: stp-riob@oieau.fr

The "Network Newsletter" is published with the support of the French Water Agencies



On the Web:

<http://www.iowater.org/inbo/> N° ISSN: 1265-4027

Publishing Director
J.F. DONZIER

Editor
A. BERNARD

Editorial Assistant
G. SINE

Production
Eau & Développement international
ESTER - BP 6916
87069 LIMOGES Cedex - FRANCE

Printing
Chastanet Imprimeur - LIMOGES