INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS

INBO Newsletter

6th World Water Forum: INBO will present its solutions for better Water Resources Management

Kyoto - Japan - March 2003 - 3rd WWF

Mexico City - Mexico - March 2006 - 4th WWF

Istanbul - Turkey - March 2009 - 5th WWF

Dakar - Senegal - January 2010 - INBO GA

The next World Water Forum, to be held in Marseilles, France, from 12 to 17 March 2012, will be the "Forum of Solutions".

For several decades, especially from the early 1990s, water resources management at the level of river basins has experienced a very big development and many countries worldwide have used it as the basis of their national legislation on water or tested it in pilot national or trans-boundary river basins.

For example, the Water Framework Directive now requires basin management from the 27 Member States and from Candidate Countries of the European Union.

INBO was created in 1994 to support the creation or strengthening of Basin Organizations in the World and has now achieved very positive results.

Yes, water resources must be managed at the scale of river, lake and aquifer basins, whether national or transboundary!

The 188 INBO Member-Organizations or Observers in 68 countries have developed effective management processes, tools and practices which, undoubtedly, improve water resources management and the best practices should be quickly fostered to cope with the major challenges that are the water needs of a rapidly growing world population and, of course, the necessary adaptation to climate change.

INBO, which already participated in all the previous Forums, is getting mobilized to present its solutions in Marseilles and share them with all interested institutions.

Adapting to the effects of climate

From 21 to 23 January 2010, 268 delegates coming from 41 Countries, representatives of Governmental Administrations in charge of water management, of Basin Organizations, of interested bi and multilateral cooperation agencies and associations, met in Dakar in Senegal, during the eighth World General Assembly of the International Network of Basin Organizations (INBO).

The five round tables organized on this occasion allowed defining field actions for adapting the integrated and participative management of basins of local, national and transboundary rivers, lakes and aquifers, as well as of related coastal waters, to the probable consequences of Climate Change on the hydrological cycles.

At the end of the meeting, the Delegates adopted the "Declaration of Dakar", whose main points are as follows:

Floods, shortages, pollution, wastage, water-related diseases, destruction of ecosystems: the seriousness of the situation in many countries requires that comprehensive, integrated and consistent management of water resources, respecting the aquatic ecosystems and territories is implemented to preserve the future and the human heritage.

It is thus necessary to especially take into account the situation of the 276 rivers or lakes and several hundreds of aquifers over the world, whose resources are shared by at least two riparian countries or sometimes much more: their joint management is thus strategic and a priority.

Adaptation of water management to the effects of climate change is urgently needed worldwide!

Global warming now seems to be unavoidable and one of the first consequences will be to increase the frequency and impact of extreme hydrological phenomena.

Should ambitious measures be globally taken by all the countries to appreciably reduce their emissions of greenhouse-effect gases, the effect on climate would only be perceptible at best at the end of the century.

Handing of INBO World Presidency from Mr. Kóthay to Mr. Ould Merzoug

During the past forty years, the number and intensity of floods and droughts have already increased, sometimes in a spectacular way.

It is necessary to react quickly, before it is too late and it is clear that the control of gas emissions alone is insufficient to change this evolution within the deadlines.

Freshwater resources will be directly affected in the coming years, with significant impacts depending on the regions and foreseen scenarios.

Indeed, these effects will cumulate with the significant pressures linked to demographic growth, urbanization and development.

The demographic, economic and ecological consequences are likely to be very significant.

"If the greenhouse-effect gases are responsible for global warming, freshwater is the first victim"!

Quick action will allow reducing costs and damage: INBO is worried about the "no-action cost"!

The basins of rivers, lakes and aquifers are the relevant territories for organizing participative management of water resources and aquatic environments, transboundary cooperation and indispensable adaptation policies to anticipate the hydrological and hydrogeological consequences of these changes.

Protection against floods must pass through a coordinated approach and it is first necessary to make the "upstream-downstream" common cause a main item of consistent management on the scale of basins and sub-basins.

In the transboundary basins in particular, cooperation between riparian States should be promoted.

The availability of freshwater, in sufficient quantity and quality, may become, in a generation from now, one of the main limiting factors of the economic and social development in many countries.

Climate change will also worsen the structural problems which already lead to water scarcity in many areas: on this subject it is useful to make a distinction between drought and scarcity, the latter being initially related to a permanent and structural imbalance between available resources and abstractions.

The prevention of recurring droughts can, no more, be done on a case-by-case basis, but must be planned in the long term, by solving the structural problems which occur.

It is essential to intensify efforts for better managing water demand and thus reducing the pressures on the resources especially in time of drought, by reducing, in particular, abstractions for irrigation, which are the most significant in many areas.

Mobilizing new resources and creating reserves should be planned, but after rationalizing water demands and only when it will be ecologically acceptable and economically reasonable.

The development of hydropower may contribute to the adaptation to climate change, while improving the living conditions of the poorest populations.

But building new dams will not be enough without the implementation of water saving and recycling programs, proactive water management together with constant incentive measures for more rational uses, facilitated by education, innovation and new technologies.

Dakar - 20 - 23 January 2010

change in basins: tools for action

268 attentive Delegates from 41 countries

Water saving, leak detection, recycling, the reuse of treated waste-water, groundwater recharge, the desalination of sea water and research on low-consumption uses must become priorities.

In a context of increased pressure on water resources, the significance of irrigation should be stressed, as continuing the "business as usual" scenario would be irresponsible.

Feeding the world population today and in the future implies using, in all the countries, agriculture which is less water-consuming and less sensitive to climate hazards.

The farmers will be among the first victims of the fluctuations of water supply due to the variations of the climate.

Since the 1990s, river basin management has experienced a quick development in many countries, which made it the basis of their national legislation on water or experimented it in national or transboundary pilot basins.

Participation in decision-making of the representatives of different categories of users and associations for environmental protection or of public interest at the side of the concerned Governmental Administrations and local Authorities should be organized in Basin Committees or Councils in particular.

Basin Management should also rely on integrated information systems, allowing knowledge on resources and their uses, polluting pressures, ecosystems and their functioning, risks assessment and the follow-up of their evolutions. These information systems will have to be used as an objective basis for dialogue, negotiation, decision-making and evaluation of undertaken actions, as well as coordination of financing from the various donors.

Systems for warning against floods, droughts and pollution should be improved and coordinated for better facing the natural disasters caused by water or men and for protecting human lives and properties.

If climate change can no more be doubted, significant uncertainties remain regarding its local impact and the best way of facing it in each situation. It is clear that it is necessary to reinforce research on climate in each large basin or area.

Adaptation will be based on Basin Management Plans or Master Plans that define the medium and long term objectives to be achieved.

The basin planning process is the best mechanism by which the demands could be adjusted to the available water resources in the long term, in order to avoid persistent shortage and to give a clear response to the necessity of also managing the increasing flood hazards in most areas of the world.

The investments necessary for sustainable management of water resources and ecosystems and for the operation, maintenance and renewal of public utilities require huge financial resources.

Adaptation to climate change will also require additional financial resources.

It is thus necessary to consider specific and additional financial resources by combining national or local administrative taxes, the pricing of community services, geographic and inter-sectoral equalization mechanisms and specific basin charges as incentives to limiting wastage and to removing pollution.

Cooperation between riparian Countries should be strengthened in particular for good management of transboundary rivers, lakes and aquifers.

It is now essential that cooperation agreements, conventions or treaties be initiated or signed between the riparian countries of these shared river basins to achieve indispensable common cause at the basin level and develop a common vision of the future.

Mobilization is essential for humanity to win the "water battle" and prepare the future and an organization on a basin scale is an effective solution, which deserves to be developed and supported.

INBO Member Organizations have experience and expertise which they intend to pool and put them at the disposal of all the countries and institutions which would like to follow them in an effective Basin Management approach.

At the end of the meeting, the Assembly congratulated the Hungarian Authorities, and in particular **Mr. László Kóthay,** Hungarian State Secretary in charge of Water, for the way they have fulfilled INBO World Presidency since the Debrecen General Assembly in June 2007.

The Assembly unanimously nominated **Mr. Mohamed Salem Ould Merzoug,** an academic, a former Minister and current High Commissioner of the Organization for the Development of the Senegal River (OMVS), **as the new INBO World President** until next General Assembly which will take place in 2013 in Brazil.

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INBO World General Assembly - Dakar - 20 - 23 January 2010

Dakar seen by the Hungarian delegates

For us, Hungarians, this Assembly was important as we transferred the INBO world presidency to our highly esteemed friend M. Mohamed Salem Ould Merzoug, High Commissioner of OMVS. During our Presidency from 2007 to 2010, INBO achieved very good results at regional and global level.

After the Hungarian team, OMVS took over the task of catalyzing the coming events and strengthening cooperation inside the INBO Family.

Why was this event so important for us?

It was a great opportunity for us to introduce the Hungarian culture in Western Africa. Since Mrs. de Grandmaison's initiative, every past President of INBO has the task of organizing an evening with his country folklore during INBO General Assembly.

Mr. László Kóthay at the Hungarian evening

The Hungarian evening was accompanied with specialties: "eau de vie", the "Pálinka", and wine offered by the famous Hungarian wine growers from Tokaj and Villány. Then the Hungarian folklore band "Törköly" started to play.

This music included four common types of dances that are still played in festivals and other events inside Hungary.

The dancers of the "Hajduság Dancing Team" stepped onto the stage and introduced folk dances: "Transylvanian Whirling", "bottle dance" from Somogy Region, the "Hortobágyi botos" (Dancing with sticks on the Puszta of Hortobágy), and the well-known quick "csárdás" from Trans-Tisza area.

After this dance show, the guests had the opportunity to taste some Hungarian cuisine specialties which were prepared under the guidance of two famous Hungarian master chefs who won medals and were world champions.

Our guests tasted the Gulash, fish and meat specialties, and different traditional cakes at dinner. After dinner, a few basic steps were shown for those who wanted to learn the Hungarian traditional dance. At last, some participants tried our traditional costumes to take pictures as souvenirs.

All the participants appreciated.

Of course, we are curious about what our African friends will give us as a surprise in the next Assembly in Brazil in 2013.

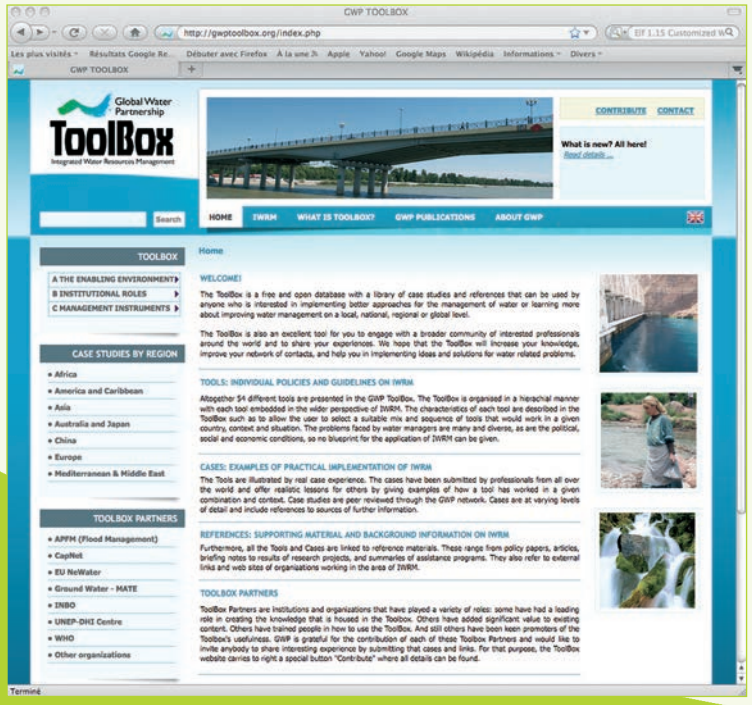
László Kóthay
Past President of INBO
laszlo.kothay@vkki.hu

INBO - GWP

GWP Partners with INBO on Knowledge Sharing

The Global Water Partnership (GWP) was created in 1996 to support Integrated Water Resources Management (IWRM).

One of its core knowledge products is the ToolBox, a free access and online database containing case studies and reference documents.



The Toolbox is also a place to engage with a broader community of professionals around the world and to share their own experiences.

The GWP Toolbox partners are institutions and organizations that have played a leading role in creating the knowledge housed in the Toolbox.

One of our important partners in this regard is INBO which has been involved in knowledge development with GWP on basin management.

An example of projects published in the Toolbox library that deserve mention is a Polish-French Twinning Project "Implementation of the Water Framework Directive in Poland" and its application in the Upper Vistula Basin.

Another example is the pilot project in Körös/Crisuri Transboundary River Basin shared between Romania and Hungary.

For more information about the GWP Toolbox, go to:

http://gwptoolbox.org

Aurélie Vitry
GWP
Aurelie.Vitry@gwpforum.org

www.gwp.org

Global Water Partnership

INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS

INBO around the world

2nd International Symposium - "Sustainable River Basins" 29 September to 1st October 2010 - Mexico

The Mexican Ministry of the Environment and Natural Resources (SEMARNAT), the National Water Commission (CONAGUA) and the National Commission on Forestry organized, In Mexico D.F., the second International Symposium on "Sustainable River Basins", to which more than 1,100 participants attended.

A broad consensus emerged to achieve better use and better management of water resources, forests and soils, conditions for having basins able to provide protection against increasing natural phenomena.

Mr. Jean-François Donzier, INBO Permanent Technical Secretary, was invited to present, in the plenary session, the tools developed by INBO, particularly in Europe, with the Framework Directive, to introduce Integrated River Basin Management, especially to promote adaptation to climate change.

This event was part of the preparation for the 16th Conference of the Parties (COP 16) of the United Nations on Climate Change, held in Cancun from 29 November to 10 December 2010.

Mexico

AsDB and the future of water in Asia 11 to 15 October 2010 - Manila

Manila

Over 600 participants coming from 53 countries in the Asia Pacific region discussed, at the home office of the Asian Development Bank (AsDB), about problems and solutions to the water crisis that threatens both the economic growth of the region and its environmental sustainability.

AsDB called for more genuine partnerships to increase knowledge and provide coordinated solutions.

The International Network of Basin Organizations (INBO) participated in this conference, especially in workshops on Integrated River Basin Management.

Mr. Jean-François Donzier, INBO Permanent Technical Secretary, stressed the advantage of strengthening exchanges of experience among Asian River Basin Organizations and those of other continents, in our world network.

Experiences of river basin management in Brazil 22 to 26 November 2010 - Fortaleza and Atibaia

The National Forum of Brazilian Basin Organizations mobilized more than 1,400 participants in Fortaleza, from 22 to 25 November, to discuss arrangements for reviewing the National Water Resource Management Plan.

The 2nd International Symposium of the "Inter-municipal Consortium" of Piracicaba-Capivari and Jundiaí Rivers (PCJ) was held in parallel in Atibaia (State of São Paulo) from 23 to 26 November 2010, in the presence of all partners in water management of the States of São Paulo and Minas Gerais and neighboring countries of the International Parana River Basin.

A strong delegation from the Loire-Brittany Water Agency, twinned with the PCJ Consortium, presented the French experience in river basin management.

Mr. Jean-François Donzier, INBO Permanent Technical Secretary, participated in both events to support the development of the Brazilian Network (REBOB) and the Latin American Network (LANBO) of Basin Organizations and mobilize their members in view of the 6th World Water Forum in Marseilles in 2012.

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Fortaleza

6th World Water Forum

INBO is committed in the "Forum of Solutions"

Mr. Nicolas Sarkozy,
President of the French Republic

Thematic framework for the 6th World Water Forum

CREATING A BLUE MOVEMENT!

3 strategic directions	12 key priorities for water action
ENSURE EVERYONE'S WELL-BEING	Guarantee access to water services for all and the Right to Water
	Guarantee access to integrated sanitation services for all
	Contribute to better hygiene and health through water
	Protect populations and economies from risks
	Contribute to cooperation and peace
CONTRIBUTE TO ECONOMIC DEVELOPMENT	Balance multiple water uses
	Ensure food security
	Harmonize energy and water
	Protect and value ecosystem services and green growth
KEEP THE PLANET BLUE	Improve the quality of water resources and ecosystems
	Regulate pressures and footprints of human activities on water
	Respond to climate and global changes in an urbanizing world
CONDITIONS FOR SUCCESS	Good governance
	Finance water for all
	Enabling environment

The 6th World Water Forum will be held in Marseilles in France from 12 to 17 March 2012.

Every three years, the Forum is the largest global event on water.

While building on the results of the Istanbul Forum and other recognized international processes, the participants are asked to go beyond identifying problems and proposing solutions by thinking about ways to implement them.

The 6th World Water Forum should be the "Forum of Solutions".

The preparatory process will propose decisions by identifying targets for twelve **"Priorities for Action"** and three **"Conditions for Success".**

It will be based on a participatory and partnership approach open to all stakeholders concerned, particularly at the level of each of the four major regions of the world: Africa, America, Asia and Europe.

➤ A "Kick-off Meeting" for launching the process

Some 400 personalities coming from the entire world gathered in Paris then in Marseilles on 2, 3 and 4 June 2010 to launch the preparatory process.

The participants, among whom we noted the presence of Mr. Mohamed Salem Ould Merzoug, INBO World President, were received at the Elysée Palace, in Paris, on June 2 by the President of the French Republic, Mr. Nicolas Sarkozy, then took part, in Marseilles, in two days of round tables and workshops intended to format their ideas and projects for the Forum.

➤ The International Forum Committee

The International Forum Committee (ICF) is chaired by Mr. Benito Braga, Brazilian Governor of the World Water Council and vice-chaired by Mr. Guy Fradin, Director General of the French Seine-Normandy Water Agency and Member of INBO Liaison Bureau.

It is organized around four topical, regional, political and "Local Initiatives" Commissions.

Mr. Jean-François Donzier, Director of IOWater and INBO Permanent Technical Secretary, is responsible for leading the preparation of the Forum at the level of the "Europe" Region.

➤ The European Regional Process

A first meeting of all European organizations, heads of networks, was held in Brussels at the headquarters of the Walloon Region, on 21 December 2010, to involve all partners concerned and clarify the priorities specific to water management for the European Union, the Balkans, Russian Federation, Caucasus and Central Asia, when concerned, and of course the EU's outermost regions.

It is planned to organize five "Regional Water Meetings" to widely involve the partners of all these different geographical parts of Europe concerned, in particular, by the application of the Helsinki Convention of 1992 (UNECE), the implementation of the European Water Framework Directive and the Trans-European Cooperation via the European Water Initiative.

➤ The Thematic Process

Among the fifteen selected priorities, IOWater, INBO Secretariat, and OECD will coordinate with their partners, the topic of "good governance".

INBO and UNESCO will coordinate priority 1.5 "contribute to cooperation and peace", which relates to transboundary river and aquifer basin management over the world.

A "second partners meeting" took place in Paris on 17 and 18 January 2011 to bring all organizations interested by the Forum in working order to ensure its success.

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th WORLD WATER FORUM
MARSEILLE, FRANCE '12

Europe is preparing the 6th World Water Forum

Steering Committee Meeting in Brussels - 21 December 2010

The Plovdiv Meeting in Bulgaria - 20 to 23 March 2011

It is traditional that the host country, organizing the World Water Forum, coordinates the Regional Preparatory Process in its own region.

On proposal of the French partners, the International Forum Committee (ICF) has thus entrusted the International Office for Water (IOWater), INBO Permanent Technical Secretariat, with the coordination of the European preparatory process for **the 6th World Water Forum, to be held in Marseilles from 12 to 17 March 2012.**

Many European countries have developed effective tools and techniques for water management, both at the level of the large hydrologic cycle and of community utilities or of the control of individual uses.

The enlarged Europe is the continent where there is the greatest number of transboundary rivers, lakes and aquifers.

This theme is clearly strategic, especially in the case of climate change.

The European experience could be made available to all interested countries in the world.

During two meetings, held in Brussels on 21 December 2010 and in Paris on 18 January 2011, **the European Process Steering Committee and the main European partner networks identified a first set of Specific Regional Priority Targets:**

- **Improving transboundary cooperation in Europe,** particularly in the context of the UNECE Helsinki Convention of 1992;
- **Achieving Good Ecological Status of European Water Bodies in 2015,** by applying the Water Framework Directive;
- **Adapting to long-term water challenges** related to climate change and preventing extreme phenomena;
- **Developing sustainable agriculture in Europe** and ensuring a better balance between the objectives of food security and water management;
- **Coordinating the transport and water policies relative to inland navigation in Europe;**
- **Better coordinating the water policies and renewable energy policies in Europe;**
- **Improving drinking water supply and sanitation services in Europe;**
- **Developing new knowledge and know-how on river hydromorphology, restoration and protection of aquatic ecosystems;**
- **Developing public awareness and the skills of water professionals;**
- **Promoting technological innovation, the "Science - Policy" interface** and dialogue between researchers and water managers;
- Adapting water management to **the specificities of European outermost regions;**
- **Developing European cooperation with third countries in the field of water.**

Depending on their specialization, it was proposed to each major European Partner Network to lead or co-organize thinking on each **Specific Regional Priority Target,** retained as part of a WISE Process, which should enable the greatest number of interested stakeholders to participate.

Several general meetings have been thus scheduled on a regional scale, including:

- **Central and Eastern Europe and the Balkans** (Plovdiv - Bulgaria, from 20 to 23 March 2011), at the invitation of the Bulgarian Government and CEENBO;
- **Countries bordering the Black Sea** (Istanbul - Turkey, from 3 to 5 May 2011);
- **Central Asia** (Tashkent - Uzbekistan, from 10 to 12 May 2011), together with the Coordinator of the Specific Sub-Regional Process of Central Asia;
- **The Euro-Mediterranean Countries** (Oporto - Portugal, from 27 to 30 September 2011), at the invitation of the North ARH Basin Organization and Portuguese District Authorities, as well as Europe-INBO and MENBO.

Other general meetings should be organized for **the three Caucasus countries and the Russian Federation.**

Side events are planned during **the Stockholm and Amsterdam Water Weeks.**

Mrs. Nathalie Kosciusko-Morizet, the French Minister of Ecology, Sustainable Development, Transport and Housing at Paris meeting January 2011

World Water Forum
Regional Coordination Europe - IOWater
21, rue de Madrid - 75008 PARIS - France
Tel.: +33 1 44 90 88 60 - Fax: +33 1 40 08 01 45
europe-region.secretariat@european-region-wwf2012.eu

http://european-region-wwf2012.eu

Launching of INBO Academy

The objective of **INBO Academy** is to develop the skills of Basin Organizations' staff. INBO is proposing training courses either in close cooperation with its Members, for exchanging good practices among Basin Organizations worldwide, or in close cooperation with external partners, more specialized in one concern or another.

INBO Academy is proposing e-learning courses, thanks to web-conferences and to Internet.

Some courses are run at predefined time (live sessions with the lecturer), and others are available 24h/7d, with an asynchronous link with the experts through the Web.

A session lasts 2 hours.

Several sessions can be combined in homogeneous modules, from 1 up to 4 sessions.

A first training course was organized in April 2010 in close cooperation with the European Center for River Restoration (ECRR) on "Basics of Ecological River Restoration": essential tool to achieve "Good Ecological Status".

Oversubscribed 3 times, the course gathered 20 participants, and the feedbacks were very positive. The sessions were very interactive, with a lot of questions to the experts during discussions.

Following this successful experiment, **a session in Spanish was scheduled on late 2010,** in cooperation with the Iberic Center for River Restoration (CIREF).

INBO Academy will again propose in 2011 a series of e-courses on the different topics interesting Basin Organizations.

More information:

www.inbo-news.org

IUCN

NEGOTIATE: to reach Agreements over Water

The Toolkit of IUCN

NEGOTIATE is addressing those interested in designing, leading, or participating in negotiation for consensus building on sustainable water resources management.

Water practitioners are increasingly called upon to negotiate workable agreements about how to best use, manage and care for water resources.

NEGOTIATE makes the case for constructive engagement and cooperative forms of negotiation in dealing with complex water issues.

It guides users through ways of building meaningful participation of stakeholders in decision making over water by unpacking constructive approaches such as Multi-Stakeholder Platforms (MSPs) and Consensus Building.

It focuses on the diversity of agreements which can be produced to regulate or encourage fairer and more effective water allocation and use.

A chapter includes a focus on Rewards, Rights, Risks and Responsibilities.

■ Multi-Stakeholder Platforms

MSPs foster discussion among stakeholders.

It can proactively and constructively assist stakeholders grappling with difficult water-related issues by contributing to a sounder basis for negotiation and decision-making.

■ Consensus Building

A consensus building approach ensures that all the relevant stakeholders are at the table, that negotiations are managed in a problem-solving (or value creating) way, and that the parties commit to workable and adaptable agreements.

It involves six steps: convening, clarifying responsibilities, deliberating, deciding, implementing agreements and training.

An agreement is the tangible product of negotiation: it leads to policies, laws, charters, codes of conduct, contracts and other management and allocation arrangements.

Claire Warmenbol
Environment and Development Group
IUCN
International Union for Conservation of Nature
Claire.Warmenbol@iucn.org

www.iucn.org/water

CAP-Net - INBO

Improving Water Governance at the River Basin Level

Stockholm World Water Week 2010

A very interactive seminar

Cap-Net and the International Network of Basin Organizations organized a seminar **"Improving Water Governance at the River Basin Level"** on 9 September 2010, during the Stockholm World Water Week.

It was reminded that the basin approach is fundamental for water resources management and River Basin Organizations have an important role to play in advancing IWRM.

This seminar aimed at exploring:

- key water governance issues at the river basin level and at discussing success factors and bottlenecks drawing from experiences from several developing countries.
- the issue of performance measurement, showcasing the results and insights of the **"Key Performance Indicators (KPI)** in Africa" project.

A selection of case studies, together with two discussion sessions provided the participants with an improved understanding of the environment necessary to facilitate water governance on the river basin scale and insights into the potential application of performance monitoring of a River Basin Organization.

More information:

www.worldwaterweek.org

World Water Council

For a new Water Policy

The World Water Council adopted a strategy for 2010-2012, placing an emphasis on developing a new policy of sustainable infrastructure development, and the efficient management and use of water resources for future generations. A particular focus is on generating political will to solve the very complex challenges facing developing countries.

Four key strategic objectives have been identified that deal with the most pressing issues:

1. **Supporting political action to improve water and sanitation services and water management as part of the run-up to Rio +20.**
2. **Deepening the involvement of major water users in solving global water challenges:** innovative platforms will be created for discussing financing of water services and management.
3. **Strengthening regional cooperation to achieve water security and economic development:** a focus will be placed on challenges related to transboundary water management.
4. **Mobilizing citizens and consumers to address the global water crisis.**

This work entails participating at global public events, developing the capacities of professionals and policy makers, communicating around the impact of innovations and improving the media coverage on water problems and solutions worldwide.

The preparation process of the 6th World Water Forum of Marseilles in 2012 is closely tied to the four strategic objectives with a specific focus on solutions.

The Council will encourage lasting concrete commitments through a mechanism involving wide participation (in the spirit of the French "Grenelle") and will create true mobilization of citizens in a friendly, festive and popular atmosphere.

World Water Council
d.bostrom@worldwatercouncil.org

www.worldwatercouncil.org

General Assembly on Water in Mounta i

Mountains should remain the water towers of Europe!

The "General Assembly on Water in Mountains" took place on 22, 23 and 24 September 2010, in Megève (France), simultaneously with the 8th Conference of the "EUROPE-INBO" Group of European Basin Organizations for the implementation of the Water Framework Directive.

They drew attention to the need for anticipating the consequences on hydrological cycles of climate change in the European mountains and for urgently proposing essential adaptation measures.

The Conference gathered **600 participants,** representatives of national administrations, Basin Organizations, municipalities, researchers, NGOs and companies, coming from **41 countries** of the European Union, the Balkans, the Mediterranean, Eastern Europe, Caucasus and Central Asia, as well as from Australia and China.

The participants noted that the European mountains are already among the first victims of climate change:

In one century, the average temperature of the Alps has increased more than the double of total global warming.

More than 600 participants coming from 41 Countries

The models forecast in the Alps an increase in temperature by 2100 ranging between + 2.6 and + 3.9°C.

Warming could be significantly higher in upper mountains to reach + 4.2°C above 1,500 meters.

The alpine glaciers, which have already lost between 20 and 30% of their volume since 1980, could still loose from 30 to 70% of their volume by 2050; almost all the smallest ones would then have disappeared! Snow cover will be reduced, especially at low and medium altitude…

With the decrease in snow cover and glacier melt, the water regimes of all major European rivers coming from mountains are now changing and this phenomenon does not only affect Europe: all the world's large rivers and their main tributaries have their headwaters in mountains.

The flows of the large European rivers with snow-glacier regime will be significantly modified in the next decades: on the average, there would be before 2100 an increase of 20% in the winter flows, but a reduction of 17% in spring and up to 55% in the summer flows, especially in the Central and Southern Alps. Aquifer levels could also lower by 25% in the Southern Alps.

In the basins of all large European rivers having their headwaters in mountains, flood frequency and intensity will greatly increase in autumn, winter and spring, as well as summer droughts.

The other consequences of climate change in mountains will be severe erosion, landslides, degradation in river quality and an increase in water temperature.

Climate change will also have a significant impact on hydropower production, the cooling of thermal and nuclear power plants, river navigation…

Competition between water uses will become fiercer particularly for irrigation in the south and with widespread snowmaking, which will become essential for the 666 current alpine ski resorts to ensure proper winter season.

Planning, development and protection of mountains are thus considerable stakes on a European and worldwide scale, especially for the regulation of the fresh water resources often used several hundred kilometers downstream in the plains.

For all the participants in the Conference, the question is no more to discuss about the reality of climate change, especially in mountains, but to launch different programs as fast as possible for adapting to it, mainly with regard to fresh water resources management, before it is too late!

Taking into account the great diversity of local situations, it is essential to quickly identify these changes and their consequences, basin by basin, and in each sub-basin, and to better analyze the ecological and socioeconomic consequences on the various activities.

The "General Assembly on Water in Mountains" presented field experiments, which were successful and gave results, which can be generalized or inspire others to progress.

ins - Megève - 22 - 24 September 2010

Many solutions already exist: it is necessary to disseminate them and develop their implementation.

Three main categories of actions can be considered:

❶ **Firstly, saving water and facilitating recycling:** leak detection, re-use of treated waste water, groundwater recharge, desalination of sea water, research on low water-consumption uses must become priorities. New low water-consumption techniques for snow management of skiing areas are, for example, already used in Megève, in particular…

❷ **Then, rethinking the management of mountain water, lakes, wetlands and soils by taking into account, better than today, the strategic constraints of water supply** to the populations and agricultural, industrial and tourist economies at **the foothills and in plains downstream,** and by developing a "new risk culture".

Conservation and storage of water resources, development of slopes and lands to hold water during rainfall, management of plant and forest cover, protection of wetlands, development of protection areas, natural flood plains, recovery of degraded river beds…, the new regional planning policies will have to optimize the water reserves available for the community and to prevent natural hazards.

❸ **Finally, better recognizing the role of mountains for the community as a whole and better helping the mountain dwellers, within integrated basin policies,** so that they can manage the territories, ecosystems and mountain water resources, build the integrated equipment necessary upstream for continuing to protect downstream areas against risks and provide the plains with abundant quality water, which they will increasingly need…

It will then be necessary to establish institutional and financial mechanisms for payment by the main downstream beneficiaries of the services provided by the managers of mountain ecosystems in the upper basins.

Mr. Van Sevencoten
Flemish Environment Agency

It is necessary to develop "win-win" strategies and to quickly launch programs of measures "with no regret", whose implementation will be anyway required in all possible scenarios, since water is essential in almost all the sectors whose development depends on its availability and its quality.

Planning must be made in the basins of large rivers and based on strong intersectoral and also international cooperation when river basins are transboundary.

With the Water Framework Directive, the European Union has an effective tool which should also be used to develop these strategies of adaptation of water resources management to climate change.

Several Member States of the European Union are already developing such strategies; for instance, France has just launched a public consultation for its National Adaptation Plan.

In 2011, a European Information Center on the effects of Climate Change should be created and, in 2013, the European Commission will propose a Common Strategy to the Member States.

The measures needed for adapting water management to climate change will have to be integrated in the next Management Plans and Programs of Measures (2015 - 2021, then 2021 - 2027) of the European Water Framework Directive (WFD).

An attentive and involved audience

www.eauenmontagne.org

www.inbo-news.org

UNECE: revisiting health in the Pan-European region

2nd Meeting of the Parties of the Protocol on Water and Health

Bucharest, Romania, 23-25 November 2010

The "London Protocol" on Water and Health is the first international legal agreement adopted specifically to protect human health through the prevention, control and reduction of water-related disease, the improvement of water management and the protection of ecosystems.

It aims to attain access to safe drinking water and sanitation for everyone.

The second Meeting of the Parties took place on 23-25 November 2010 at the invitation of the Government of Romania, in Bucharest.

Five years after the entry into force of the Protocol, the meeting discussed a wide variety of topics: ratification and implementation of the Protocol, equitable access to drinking water, information and public participation.

In 2006, more than 170,000 cases of water-related disease were reported in the Pan-European region.

In order to reduce this much too high number, countries should establish monitoring and early-warning systems, as well as contingency and outbreak response plans.

Extreme weather events such as floods and droughts are increasingly affecting facilities for water supply and sanitation by flooding water treatment plants or increasing pollutants' concentrations in drinking water in case of droughts: the Parties developed Guidance on water supply and sanitation in extreme weather events.

Ensuring water supply and sanitation is especially difficult for disadvantaged groups and distant rural populations.

The 2nd Meeting of the Parties in Bucharest

Awareness-raising material on the specific challenges of such small-scale water supplies was prepared.

The Protocol on Water and Health is thus an important instrument to achieve the human right to water and sanitation recently recognized by the United Nations General Assembly. Ways and means for ensuring equitable access to water were discussed at the meeting, based on the outcomes of a survey on this issue which fed into a collection of good practices.

Sonja Koeppel
UNECE
Convention on the Protection and Utilization of Transboundary Watercourses and International Lakes
sonja.koeppel@unece.org

www.unece.org

UNESCO - AFD

Towards Joint Management of Transboundary Aquifer Systems: methodological approach

Aquifer systems, which represent an important part and sometimes the only water resource available in a country, are unequally known.

Much more frequently than transboundary rivers, transboundary aquifers are shared between various countries which generally use them independently, partially for drinking water supply and for industrial uses, but mainly for irrigated agriculture.

This leads more and more to cases of overexploitation and pollution which create tensions at all levels, with a risk of crises and conflicts between countries sharing the same aquifer.

For all these reasons, **it is today important to improve knowledge and promote a reasonable and sustainable integrated management of transboundary aquifer systems.**

To reach this objective, a methodological approach and a guidance document were developed by UNESCO, the Water Academy, BRGM and INBO, with financing from the French Development Agency (AFD).

This approach highlights the main challenges facing transboundary aquifers, their specificities, and the need for Integrated Water Resources Management (IWRM).

It then describes the different tools available to improve knowledge and the development of this precious resource: technical, legal, institutional and economic, but also educational and cooperation instruments.

Finally, it proposes a progressive and multiform approach for joint, equitable and sustainable transboundary aquifer management and it describes the mechanisms required to create the proper institutional structure for the management of shared ground (and possibly surface) water resources.

Raya Stephan
Division of Water Sciences
International Hydrological Program
UNESCO
R.Stephan@unesco.org

www.unesco.org

www.inbo-news.org

All information is available on the Web

www.inbo-news.org

AWIS: access to information on the African water sector

The African Water Information System (AWIS) is an initiative launched in 2007 by a group of institutions from the North and South: OMVS (Organization for the Development of the Senegal River) through ANBO (African Network of Basin Organizations), CREPA (Regional Center for Water Supply and Sanitation) PS-Eau (Water Solidarity Program), IOWater (International Office for Water) and WEDC (Water Engineering and Development Center).

AWIS aims to build the information management capacity of organizations in the African water sector through sharing knowledge, experience and information between water professionals, communities and local and national governments on a pan-African scale.

Over the period 2007 to 2010, the feasibility and appropriateness of **AWIS** were positively tested as part of a project financed by the European Water Facility.

It is a great success, thanks to the involvement of twenty relay partners spread across the African continent and that feed the knowledge base, news, "waterlibrarysite" of the Web portal.

AWIS will start to expand its network of relay organizations in 2011, continuing to build know-how in information management.

Some figures on AWIS:

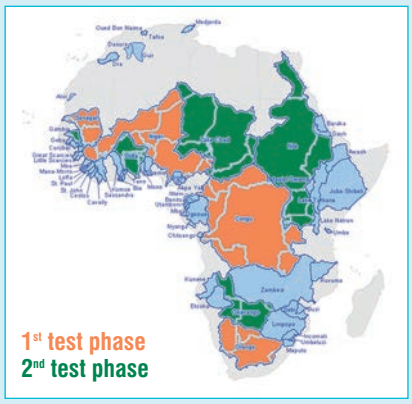
20 Organizations, focal points of French-speaking and English-speaking Africa (Basin Organizations, documentation centers, administrations, associations, consulting firms), 100 current events, 500 referenced documents, 160 indexed websites, 3 topical newsletters in 2010, 90,000 visitors in the last 12 months.

www.african-wis.org

SADIEau AfricanWIS Système Africain d'Information sur l'Eau African Water Information System

RAOB - ANBO · OMVS · International Office for Water · WEDC · pS-Eau

Performance Indicators for African Basin Organizations



The project of **the International Network of Basin Organizations (INBO)** for the development, testing and comparison of Performance Indicators for African Transboundary Basin Organizations ended in September 2010.

During the three years of implementation many tests were carried out in 10 pilot basins: Congo (CICOS), Gambia (OMVG), Lake Chad (CBLT), Lake Victoria (LVBC), Niger (NBA), Nile (NBI), Okavango (OKACOM), Orange-Senqu (ORASECOM), Senegal (OMVS), Volta (VBA).

They spread across the continent, had a wide variety of legal, institutional, socioeconomic or geographic contexts.

Interactive workshops for feedback and exchange between the basins allowed **INBO** to achieve an excellent appropriation of the project by the beneficiaries, best guarantee for the sustainability of such an approach using indicators in the river basins.

The final list of indicators includes:

- **20 indicators on the governance and operation of organizations in charge of the implementation of integrated management in transboundary basins;**
- **15 indicators on each river basin, describing its condition, pressures and responses.**

Basin Organizations have highlighted the entirely new and significant contribution of the project on the "Governance of a Basin Organization" aspects.

The exercise allowed the self-evaluation of organizations on their operation and achievement of their missions. It also helped to gradually include indicators in the various processes of reporting to the Councils of Ministers or to donors.

Moreover, comparison of the strengths / weaknesses of each pilot basin, through a web application for displaying results, allowed basins to consider future discussions on these specific points.

Disseminating the results of the project during the General Assembly of the African Network of Basin Organizations (ANBO), or during the World Water Week in Stockholm in 2010, showed a strong interest of basin organizations and donors on these notions of performance indicators but also the significant needs in terms of popularization and support for their future use.

INBO directed this project, in partnership with the African Network of Basin Organizations (ANBO), IOWater and Ecologic. The project was financed by the European Water Facility (ACP Water Facility) and the French Ministry for Foreign Affairs.

More information:

www.riob.org/PITB

Africa

ECOWAS

"Dialogue on Infrastructures" in the water sector

"Dialogue on Infrastructures" is a project financed by **the Water Resources Coordination Center of the Economic Community of West African States (ECOWAS).**

The goal is to provide Basin Organizations with dialogue tools to support the development of their investment plans for water in a consultative framework.

It deals with:

- Identifying the main existing and planned infrastructures in ECOWAS space;
- Examining the consultation mechanisms used;
- Analyzing the decision-making processes on a sample of infrastructures;
- Assisting in the formulation of recommendations on consultation mechanisms;
- Facilitating joint work of the experts' panel.

IOWater, as **INBO** Permanent Technical Secretariat, carried out a survey involving NBA, ABV, OMVG, OMVS and MRU, and ECOWAS States, plus Mauritania, to gather information on current consultation mechanisms.

A bibliographical analysis was produced of international law documents in the world, of texts available on a pan-African or regional and national scale or from donors' reports.

A series of interviews was carried out with some key stakeholders involved in the decision-making process on three major infrastructures selected by the steering committee of the study: Bui (Ghana), Manantali (OMVS), Kandadji (NBA).

A panel of experts, thanks to participatory facilitation techniques adapted to joint work, produced, during a workshop in February 2010, **7 families of recommendations to improve dialogue on infrastructures.**

They were presented to Basin Organizations at the end of the workshop.

The last step is to submit these recommendations to key stakeholders from 4 West African basins.

Implementation of the Regional Water Information Center

The 15 countries of the Economic Community of West African States (ECOWAS) decided to create a Regional Water Information Center.

The ECOWAS's Center for Coordination of Water Resources (CCWR), which is responsible for the management of this Information Center, developed tools for managing and disseminating information, using:

- **The portal of the Information Center,** whose content is now directly managed by the CCWR and which allows firstly to disseminate multilingual information (French/English) and, secondly, to organize the sharing of documents between the various partner countries.

The authorities in charge in each country can view and/or feed the various sections of the portal according to their access and update rights.

- **A database of IWRM indicators** using the data found in the tables of the "inventory of water resources in West Africa".

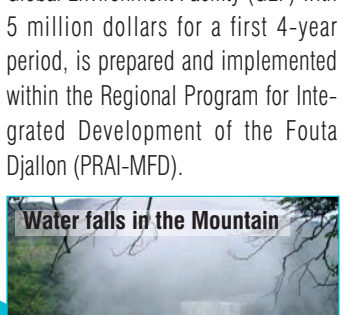
Interfaces were also developed to enable the updating and viewing of the contents of that database in the form of tables, graphs and maps, dynamically generated from the available data.

www.aquacoope.org/CEDEAO

African Union

Integrated Natural Resources Management of the Fouta Djallon Mountain

This project, which is financed by the Global Environment Facility (GEF) with 5 million dollars for a first 4-year period, is prepared and implemented within the Regional Program for Integrated Development of the Fouta Djallon (PRAI-MFD).


Water falls in the Mountain

It includes 4 main components:

1. **Strengthening regional cooperation for planning and implementing natural resources management:** to contribute in establishing a regional legal and institutional framework; to assist in the adaptation, harmonization and application of national laws and regulations; to create a regional information system to assess and follow-up the natural resources of the Fouta Djallon Mountain.
2. **Improving natural resources management and the living conditions in the mountain:** to support integrated natural resources management in pilot sites and river basins; to create new activities generating income to improve the living conditions of the Fouta Djallon populations.
3. **Capacity building of the interested parties in integrated natural resources management:** to create and consolidate local community institutions.
4. **Project management, follow-up and evaluation, dissemination of information:** to create operational institutional bodies; to carry out the follow-up/evaluation of the outputs and impacts of the project, to disseminate information.

International Coordination Office of the African Union
unafrik@sotelgui.net.gn
Mr. Atigou BALDE
Ministry of Mines, Energy and Water Resources - Guinea
atigoudire@yahoo.fr

Organization for the Development of the Senegal River (OMVS)

Management Chart for the Resources of the Senegal River

Since its creation in 1972, "OMVS" has participated in the economic and agricultural development of Guinea, Mali, Mauritania and Senegal, through joint exploitation of water resources of the Senegal River Basin.

The basin water balance is changing due to:

- increase in water consumption,
- changing of priorities between uses (hydropower, etc.),
- emergence of new environmental constraints,
- evolution of natural hydraulics in the basin.

We also noted a downward trend of the natural inputs, observed over the last fifty years in the basin.

The Senegal River in Saint-Louis

Will it continue in a context of global climate change and with what effects?

Faced with such a situation, "OMVS" wanted to have a monitoring tool, **the Resources Management Chart (RMC)** and entrusted the "CACG" with its development and operational use.

The tool allows:

- **Monitoring and knowledge of the hydrological status of the basin,** by centralizing information regarding water resources, climate parameters and uses in the basin.
- **Understanding the observed phenomena,** by establishing volume balances explaining, in retrospect, the distribution of the resource. The RMC generates new analysis indicators for understanding the hydrological functioning of the basin such as the balance between consumed volumes / lost volumes in the system.
- **Operational decision-making support:** the RMC proposes water allocations for each use which are compatible with the resource as well as a forecast of water releases in the coming seasons.
- **Evaluation of actions carried out:** collected data are used as indicators for evaluation in particular by comparison between predicted and achieved values in water balances.

Jean-Luc TROUVAT
In charge of "International Studies"
CACG
jl.trouvat@cacg.fr

A participatory approach in drafting the "SDAGE"

The Master Plan for Water Development and Management of the Senegal River (SDAGE) is the document that should guide the mobilization of water resources while integrating climate change and limiting impacts on the natural environment. It should allow establishing a comprehensive vision of the development of the Senegal River Basin by integrating various sectoral objectives.

The facilitators' team in the field

"OMVS" has entrusted the BRL engineering/"Eau Vive" group with the design and implementation of a strategy for participation in the "SDAGE" development process of all categories of stakeholders involved in water resources development in the basin. **This approach better enhances the Local Coordination Committees (LCC).**

For a wide dissemination of the "SDAGE" content, under preparation, to all the stakeholders, it was necessary to mobilize field facilitators, who would support the LCCs.

The implementation of this participatory process includes:

- The recruitment of 33 facilitators who speak the local languages and know the relationships in the area covered by each LCC;
- The formulation of messages to be disseminated;
- The development of communication tools (picture boxes, community radio broadcasts, leaflets...);
- The training of facilitators to these tools and in their field work;
- The feedback of field work and stakeholders' responses to the LCCs.

Guillaume Fabre
BRL engineering
guillaume.fabre@brl.fr

www.brl.fr

www.omvs.org

OMVS
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SÉNÉGAL

Africa

Niger Basin Authority (NBA)

Renewed confidence of the States

The Heads of State in Abuja

The Summit of Heads of State and Government of the Niger Basin Authority (NBA) countries was held on 16 September 2010 in Abuja, Federal Republic of Nigeria.

This summit came two years after the previous meeting in which the Investment Program up to 2027 (amounting to €5.5 billion) and the Niger Basin Water Charter had been approved, marking the culmination of the Shared Vision started in 2002.

Since then, thanks to a round table of donors held in 2008, funding announcements have reached €1.4 billion. But the States' contributions to the functioning of the ABN have slowed down, partly because of the global financial crisis.

This Summit appointed General Collins Ihekire to the position of NBA Executive Secretary.

The Heads of State decided to strengthen the key functions of the NBA as regards the overall regulation of the Niger River and management of environmental and social impact assessments of planned large dams. They also opted for sustainable financing mechanisms for NBA and paid arrears in contributions, a pledge to renewed confidence.

Finally, they asked to accelerate the application of the Water Charter of 2008: rules for sharing costs and benefits related to transboundary hydraulic infrastructures and drafting of a Comprehensive Convention with statutes and legal system for NBA common infrastructures.

The World Bank reaffirmed the NBA partners support. Thus, NBA, with modern institutional and technical tools, has a legitimacy to play a central role in Integrated Water Resources Management (IWRM) in the Niger River Basin.

Abdou Guero
NBA Technical Manager
p.fraval@netcourrier.com

www.abn.ne

Lake Victoria Basin Commission (LVBC)

Management of transboundary water resources

The Lake Victoria Basin Commission (LVBC) organized, on 5th September 2010 in Stockholm, Sweden, as part of the World Water Week, a seminar that discussed regional management of transboundary water resources.

Nearly 100 experts from different parts of the world attended.

In his paper on the Governance Mechanism of the Lake Victoria Basin Commission - Past, Present and Future Outlook, the Executive Secretary of the Commission, Dr. Tom Okurut, told the participants that management of shared natural resources called for an approach that would minimize conflicts and realize maximum benefits for communities.

Dr. Okurut during the seminar

Many presentations allowed discussing about the Nile Basin Initiative, about Promoting Regional Cooperation in East Africa, the three River Basin Management Projects of Mara, Kagera and Sio-Malalaba-Malakasi, about the environmental management project in Lake Victoria Basin, as well as about Research Initiatives (VicRes) and the role of research in Management of Transboundary Water Resources.

Participants noted that the LVBC, as institution of the East African Community, was a prime example of regional efforts to manage transboundary water resources.

Charles-Martin Jjuuko
Communications and Development Awareness Officer
Lake Victoria Basin Commission
jjuuko@lvbcsec.org

www.lvbcom.org

SADC

"Bridging Waters"

The SADC (Southern African Development Community) Secretariat in collaboration with GTZ-Implemented Support Program has published a four-part documentary series titled "Bridging Waters".

The series, each part of which is 25 minutes long, underlines the importance of transboundary water management in the SADC region.

More than 70 percent of water allocated to the various uses in the SADC region comes from shared river basins.

Thus, the series highlights the role of water as a vehicle for peace and integration, unlocking a high potential for regional prosperity.

The first part is a general introduction to transboundary water management in the fifteen SADC Member States, while the other three present projects in the three major river basins of the Limpopo, Orange-Senqu, and the Zambezi.

This DVD is available free of charge.

Further information about shared river basins in the SADC region and their river Basin Organizations is also available from the "SADC Water Sector Collaboration Portal" at:

www.icp-confluence-sadc.org

Dr. Horst Michael Vogel
Head of GTZ Program
Transboundary Water Management in SADC
Horst.Vogel@gtz.de

www.sadc.int

Lake Chad Basin Commission (LCBC)

Demarcation of international boundaries

Niamey, Niger's capital, hosted from 27 to 28 July 2010, an awareness workshop on the demarcation of international boundaries in Lake Chad Basin in the presence of Dr. Abdullahi Umar Ganduje, LCBC Executive Secretary.

The consequences of the drying out of Lake Chad are reflected by, among other things, high population mobility and an extension of survival activities that are not concerned by geographical boundaries.

The situation does present risks of conflicts damaging for sub-regional peace and security. To prevent these risks of transboundary instability, the Lake Chad Basin Commission (LCBC) convened experts and people in charge of border issues in the riparian countries of Cameroon, Niger, Nigeria and Chad, to a workshop to raise awareness and increase knowledge on boundaries in Lake Chad Basin.

Please be reminded that the demarcation of boundaries in Lake Chad Basin was conducted from 1988 to 1990 under the control and supervision of experts from the riparian countries.

The objective is to develop an action plan for better control of the physical limits, documentation and legal instruments by the Authorities and the populations of the four riparian countries. A preparatory experts' mission was fielded by LCBC to check the physical existence of boundary marks and see their current status, to meet local Authorities to ascertain compliance with borders and to check the location of new villages.

Practical actions will be carried out by LCBC and the riparian States for the rehabilitation of boundary marks, the extension and intensification of intermediate marks and their periodic maintenance.

Alex Blériot MOMHA
CBLT
amomha@yahoo.fr

www.lakechadbc.org

A boundary mark

Cameroon

A case study of water pollution in the municipal lake of Yaoundé

Yaoundé municipal lake

A study was undertaken to have a lasting approach to the management of Yaoundé Lake, the pollution of which is increasing.

The degree of pollution of the Mingoa stream, the main tributary of the lake, was also evaluated for major contaminants.

One important function of the lake is to serve as spawning grounds for fish used as food by the local community.

Yaoundé has no city-wide wastewater disposal and sanitation network. Disposal of wastewater by households is unchecked and contributes to the pollution of streams, posing serious hazard to public health.

The mismanaged waste has a negative impact on rainwater sanitation as well as on the streams.

The lake is located in the town center of Yaoundé, where population density is high. The primary threat is rapid urban development which increases pollution. With the current rate of surface water pollution, the cost of treating drinking water will escalate beyond the management ability of the municipal Authority.

Norbert F. Tchouaffe Tchadje
University of Dschang, Cameroon
ntchoua@gmail.com

www.univ-dschang.org

Mali

Villages threatened by the deterioration of the banks

As part of its mission on prevention of natural hazards and protection against pollution and nuisances, the Niger River Basin Agency - Mali (ABFN) intervenes in the Kewa Rural Area to take care of the development and protection of some parts of the banks and building of safe bridges on natural collectors in villages.

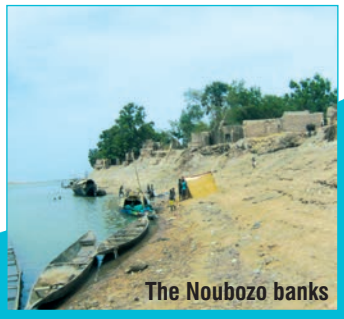
The secular Cities of Kouakourou, Koulenzé, Koa and Noubozo all along the Niger yearly suffer from major insecurities.

Bank slides lead to a countless number of houses collapsing each year in each village, forcing some families to move entirely or partly on still flood-prone sites.

Throughout the rainy season, producing activities are hampered due to inadequate bridges to transport goods and people.

Soumaïla BERTHE
Niger River Basin Agency (ABFN)
soumaberthe@hotmail.com

www.environnement.gov.ml



The Noubozo banks

North America

Canada - Quebec

A Clearer Vision of water management in Quebec

Quebec has more than 4,500 rivers and 500,000 lakes on its territory. This natural bounty accounts for over 3% of the world's freshwater reserves.

Quebec has chosen to manage these resources on a watershed basis in an integrated, coordinated, and sustainable manner.

However, this more complex approach to management, even though better adapted to the realities of water management, requires a solid understanding of its practical application.

A study to identify stakeholders, contributions, activities, products, and expected results was therefore undertaken.

A model was constructed using the Logical Framework Analysis: it presents the main elements of IWRM on two scales of intervention: the State and River Basin Organizations.

The elements of this perspective were subject to detailed description. But many elements were too complex to be described in a satisfactory manner. This was the case for dialogue, participation, and coordination. It was proposed to use descriptive methods based on the theory of Complex Adaptive Systems such as "Outcome Mapping", "Annual Learning Forum", and "Project Completion Report".

These methods enable stakeholders to know the emerging trends in order to sustain or modify them. They break out the "silos" in which the stakeholders sometimes find themselves confined, by formulating the "expectations" of each of them.

Bruno Robert
Ministry of Sustainable Development, Environment and Parks
bruno.robert@mddep.gouv.qc.ca

www.mddep.gouv.qc.ca

ROBVQ:

The "Blue-Green Project": Joint Plan for action against the blue-green algae

In 2007, the Province of Quebec was affected by an increased proliferation of blue-green algae. On more than 150 lakes, a water flower visible with the naked eye was formed.

The Ministry of Sustainable Development, Environment and Parks (MDDEP) developed the blue-green algae Action Plan (2007-2017) and mandated the Regrouping of the River Basin Organizations of Quebec (ROBVQ) to coordinate an $890,000 program for intervening on the lakes affected by blue-green algae.

"ROBVQ" initiated **the "Blue-Green Project":** a program including four components -awareness, bordering belts, monitoring and follow-up as well as a Water Master Plan- which mainly aims at raising awareness on the causes and stakes related to blue-green algae and gathers the actions undertaken for documenting the impacts of the blue-green algae on water bodies, the evolution in time and the effect of the actions undertaken.

"ROBVQ" and the 40 member River Basin Organizations (RBOs) are continuing, for the third year of this plan for fighting against blue-green algae, the actions planned for the 150 lakes affected by water flowers.

Among the actions for fighting, the campaign for the supply of trees is one of prime importance. Thanks to the financial contribution of the "MDDEP" and to the production of seedlings by the Ministry of Natural Resources and Fauna (MRNF), the "ROBVQ" and RBOs have been distributing nearly 1 million seedlings of 25 species since 2007, in order to restore the bordering belts and to decrease the phosphorus inputs into the rivers.

During the four coming years, almost 2,000,000 of additional trees will be planted on the whole territory of Quebec.

Alexandra Roio
Project Manager
Blue-Green Project | Coordination
ROBVQ
alexandra@robvq.qc.ca

Launching of information sheets on the development of residential properties

The Regrouping of the Basin Organizations of Quebec (ROBVQ) has launched a brand new tool: **Sheets on the development of residential properties.**

This tool provides information and advice on development and maintenance practices for properties so as to limit impacts on water. Six topics are covered: the riverside, phosphorus, lawns, rainwater and runoff, soil sealing and septic systems.

A citizen receiving this tool will find out that there are several options to help protect the water quality of his river basin.

According to Mr. Jean Landry, President of "ROBVQ", "sheets on the development of residential properties will expand awareness beyond the first few meters along a lake or a river and thereby involve the public beyond the riverside owners.

The six sheets allow public awareness and education".

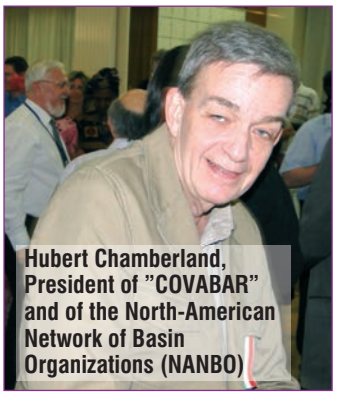
This project was carried out as part of "ROBVQ's Blue Green Project" to reduce the proliferation of blue-green algae.

It was made possible thanks to the financial participation of the Ministry of Sustainable Development, Environment and Parks (MDDEP).

Nadège Doyon
Project manager | Blue-Green Project
ROBVQ
nadege@robvq.qc.ca

www.robvq.qc.ca

Committee for Dialogue and Development of the Richelieu River Basin (COVABAR): Ten years at the citizens' service!



Hubert Chamberland, President of "COVABAR" and of the North-American Network of Basin Organizations (NANBO)

The National Water Policy was unanimously adopted by the National Assembly of Quebec on 22 November 2002.

Protection and recovery of the water resource and its importance to life and health of ecosystems and human beings have become a joint project, simple to state but difficult to achieve because of economic development.

This project of recovery of water resources concerns all levels of the community, from international to local, and is also the responsibility of political and economic organizations and private citizens.

It depends on co-responsibility. And those who would like to reduce it to a series of technical gadgets are mistaken.

We must move from the cult of the instantaneous to the reign of duration.

The consequences of our actions on future generations and the rest of the world are too often disastrous due to the lack of a long-term vision.

Our society has little awareness of the value of the living world. It knows less and less its collective wealth and thus manages it very badly.

Governments can encourage this creativity.

But the enterprises also, under pressure from global markets, often perceive collective rules enacted by the State as harmful constraints.

This is scary!

The project of society that requires the vision of "integrated river basin management" should be up to ambitions. We must overcome the resistance to change expressed by so many stakeholders...

Let us not be discouraged!

All the administrators of "COVABAR" have believed it possible to innovate in this area.

"COVABAR" has set up the **Collaborative Council,** which gathers the representatives of all sectors, providing them sustainable cross-cutting priorities.

But the resources allocated to it by the Government of Quebec, as for the 39 other Basin Organizations of the Province, remain insufficient as compared to other River Basin Organizations in Canada, the United States, Europe, South America and Africa.

"COVABAR" is inviting the citizens of its territory to take into account the recovery of the water resource according to a sustainable development approach: this work is staggering!

Hubert Chamberland
President of COVABAR

www.covabar.qc.ca

"Champlain 2010 Talks": when water and history bring men together

Integrated river basin management was at the core of the discussions of the second **"Champlain Talks",** which gathered nearly 200 participants in France on the banks of the Charente River in Rochefort, Saintes and Angoulême on 2, 3 and 4 September 2010 at the invitation of **the Charente Public Basin Body (EPTB)** under its twinning agreement with **the Committee for Dialogue and Development of the Richelieu River Basin (COVABAR).**

Let us recall that in the 16th century the French navigator, Samuel de Champlain, left the mouth of the Charente River to build the City of Quebec on the bank of the St. Lawrence River.

The discussions dealt with the link between regional planning and water management, a central issue for both the EPTB Charente, under the Water Development and Management Scheme (SAGE) of the Charente Basin, and "COVABAR", in charge of drafting the Water Master Plan (WMP) of the Richelieu Basin and of the Richelieu / St. Lawrence Management Area.

The challenge of having better joint planning documents in the fields of water and urban planning has been emphasized as well as the importance of marshes and watercourses in the development and structuring of the territory.

The participants evidenced that organization is not always coherent and discussed the concept of "water territory" and different levels of competence and responsibility.

Emphasis was given on the need to integrate water into all the regional planning policies and to have a competent operator on the appropriate scale such as an "EPTB" or basin organization.

Finally, as we are all water stakeholders, citizen involvement was the focus of the debates.

Many elected officials and managers signed **the "Twinning Charter of the Charente River and Richelieu River Basins",** which is the founder act of the cooperation between cousins from both sides of the Atlantic.

Célia Levinet
EPTB Charente
celia.levinet@fleuve-charente.net

www.jumelage-charente-richelieu.net

Signatories of the River Basins' Twinning Charter

North America

USA / Mexico

Cooperation for transboundary water management

Integrated management of transboundary rivers and aquifers is a major challenge. Basins are in continual flux.

Changing climate strains ecosystem services and growing water demand outstrips supplies.

These processes raise the need for transboundary cooperation but governance is uncoordinated.

Over the past decade, United States - Mexico binational teams of managers, scientists and citizens have strengthened ties to improve management of the transboundary San Pedro and Santa Cruz River Basins, leading to better understanding of how platforms for cooperation can support the prioritization of water resources management policies.

The University of Arizona's Udall Center for Studies in Public Policy and Water Resources Research Center, together with the Upper San Pedro Partnership and Friends of the Santa Cruz River in Arizona, have fostered linkages with the Mexican National Water Commission's Northwest Region Basin Organization, State agencies in Sonora and universities across the border in Mexico.

Aquifer assessment has received special attention, given the importance of groundwater for human and riparian ecosystem needs.

Likewise, concern with climate change impacts on water supplies has led to a focus on adaptive water management.

Improved information flows on climate and water, diagnostic tools and adaptation strategies have strengthened partnerships.

Challenges remain: the "border security" context, information that still partly follows bureaucratic channels and institutional asymmetries that complicate decision-making, etc.

However important gains in both basins are recognized by stakeholders binationally, and by sponsors providing increasing financial support for transboundary cooperation.

Anne Browning-Aiken
University of Arizona
browning@email.arizona.edu.

THE UNIVERSITY OF ARIZONA

http://ag.arizona.edu/azwater/taap/index.html

The International Boundary and Water Commission (IBWC): Rio Grande/Rio Bravo Basin Management

The International Boundary and Water Commission (IBWC) offers solutions to binational problems, turned out from the boundary and water-rights treaties and agreements between Mexico and the United States. According to these treaties, the IBWC main objective is to protect and preserve the water resource, as well as the maintenance of the infrastructure built on the terrestrial boundary.

The 1944 Treaty specifies the IBWC jurisdiction, and mentions the equitable distribution of the Rio Grande waters.

On the environmental field, the watershed border represented by the Rio Grande has been progressively institutionalized, and it has become a "complex labyrinth of International, Federal, National and Local Institutions", which haven't achieved the sustainable development of the region. The IBWC has not found the correct way to manage the problems related to the quantitative distribution of the Rio Grande waters. The environmental problems are still there: fair water distribution and watershed sustainable development have become a bilateral challenge.

The adjustment of the Rio Grande institutionalization is necessary to improve flow variability management. The current approach of this basin management deteriorates the quality and preservation of the water. An adaptive and inclusive approach in the variability of the basin's flow, could favor the sustainable development by minimizing the harmful effects of global climate change on the environmental equilibrium of the Rio Grande.

The variability of the flow is an important factor for the ecosystem preservation and conservation. The Rio Grande Basin management depends on it.

It means that the environmental condition of the Rio Grande makes evident the lack of capacity and flexibility of the quantitative distribution mechanisms of the bordering waters. IBWC cannot any more take care of water distribution of the Rio Grande waters under the 1944 quantitative terms. IBWC is called to develop a central role in the updating of the distribution terms of the Rio Grande watershed at the Mexico - United States border.

Luzma Fabiola Nava Jiménez
Laval University
Quebec Institute of High International Studies (HIS)
luzma-fabiola.nava-jimenez.1@ulaval.ca

http://www.hei.ulaval.ca

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

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Latin America and the Carribean

Haiti

Overall management of river basins to reduce floods

Devastated last January by a deadly earthquake, Haiti has become the symbol of a martyr country.

Yet deep institutional reforms are being developed in the fields of water and regional planning.

"DINEPA" and "CIAT" made multisectoral efforts to reclaim the territory and manage water resources.

Last March, an assignment was carried out to characterize the status of river basins and related stakes.

The identification of technical, institutional and socioeconomic actions to be jointly implemented to restore "life" and stability in these hydrogeological units, allowed defining a benchmark for overall management.

Please be reminded that major risks occurring each year during the hurricane season are deadly floods linked to solid transport by impressive runoff.

Floods in Haiti

These risks have been greatly increased since last January after the earthquake by the destruction of buildings and the presence of makeshift camps often in a flood-prone area.

Land reclamation, land management, transformation of socioeconomic activities (agriculture), technical hydraulic development and other coordinated emergency or long-term actions will be the keys to new overall management, reduced risks and reconstruction in Haiti.

Gérald Jean-Baptiste
General Director - DINEPA
communication@dinepa.gouv.ht

www.dinepa.gouv.ht

The XI "CODIA"

Mexico D.F., 3-5 August 2010

The Latin-American Water Directors Conference (CODIA) was established in 2001. It brings together the official institutions of the 22 Ibero-American countries, including Spain, which hosts the Permanent Technical Secretariat, Portugal and Andorra.

The VII Ibero-American Forum of Ministers for the Environment, in June 2007 in San Salvador, recognized "CODIA" as a consultative body for water issues.

The Ibero-American Water Program was approved at the XVIII Ibero-American Summit of Heads of State and Government (Salvador, October 2008).

The challenges of sustainable financing of water management and governance have been some of the main issues of the XI "CODIA, held in Mexico City from 3 to 5 August 2010.

Different perspectives have been analyzed related to the Ibero-American Water Program, the Cooperation Fund for Water and Sanitation of the Spanish Agency for International Cooperation for Development (AECID) and the Ibero-American Water Information System (SIAGUA).

Mexico presented the results of the Regional Policy Dialogue on Climate Change Adaptation in the Water Sector in Latin America and the Caribbean.

As it is necessary to establish regional strategies for climate change adaptation, the countries will promote the training of technical experts, specialized in water issues.

The main agreements reached dealt with:

- An Ibero-American Training Program on Water for 2011-2012.
- A Technical Seminar on governance and sustainable financing of water management.
- A document on Adaptation to Climate Change in the Water Sector, which was presented at the Conference of the Parties of the United Nations (COP-16) in Cancun from 29 November to 10 December 2010.

Miguel Antolín Martinez
Directorate General for Water
Ministry of Environment and Rural and Marine Affairs (MARM)
Fax : +34 91 453 5306
mantolin@mma.es

www.marm.es

www.codiastp.org

CODIA

Challenges of Integrated River Basin Management in Latin America and the Caribbean

The Copiapó River (Chile)

In practically all the countries of the region, the new water laws promulgated 10 to 20 years ago, as in Mexico, Brazil, Venezuela and Peru and others under discussion as in Ecuador, have each articles on the creation of organizations for water resources management at the level of river basins.

This undertaking requires:

- creating capacities for governance at the level of each river basin;
- obtaining sustainable sources of financing for the Basins Organizations;
- supporting water resources management bodies (Basin Councils or Committees);
- giving these organizations clear statutes and protocols for the implementation of their activities;
- formulating and carrying out river basin plans;
- obtaining an effective participation of the various stakeholders.

It is important to create these Basin Organizations, based on a pragmatic approach, while moving away from the extreme ideologies which prevent their effective creation.

Lorena G Coria
corialorena@yahoo.com.ar
Axel C. Dourojeanni
Fundación Chile
axeldouro@hotmail.com

Latin America

Brazil - Paraguay

Transboundary management of the Apa River Basin

The Apa River

Brazil shares 26 transboundary sub-basins with the countries of the Parana River Basin. The Apa River Basin is located in the Transboundary Parana / La Plata River Basin. The Apa River Basin is cross-border between Brazil and Paraguay. It is located in the South Pantanal in the Upper Paraguay River Basin.

The Apa River Basin is facing significant problems of soil degradation, water use for irrigation, fishing and deforestation. The Apa River supplies water to two cities bordering the river, Bela Vista (Brazil) and Bella Vista (Paraguay).

The studies on the region began in the 1960s with afterwards the drafting of the Conservation Plan of the Upper Paraguay Basin (PCBAP) in the nineties and most recently the GEF Project at the beginning of the 2000s.

However, the action coordinated since 1998 by **the Inter-municipality Consortium for Integrated Basin Development of Apa and Miranda Rivers (CIDEMA),** which gathers 23 municipalities of the Apa and Miranda River Basins, resulted in the proposal for transboundary water management of the Apa River.

With the support of GEF Project, "CIDEMA" has promoted since 2001 a coordinated action with the National Water Resources Council (CNRH) and the Technical Office of Transboundary Water Resources Management (CTGRHT), with the aim of identifying how to promote technical cooperation in transboundary water management.

In order to improve knowledge and exchanges in the watershed, the "CTGRHT" organized two meetings in Ponta Porã and Bela Vista with the participation of representatives of all partners.

They allowed identifying management opportunities and recommended **the establishment of a cooperation agreement between Brazil and Paraguay for transboundary water management of the Apa River.**

This agreement was ratified by the Paraguayan Senate on 21 April 2008 and by the Brazilian Congress on 24 September 2009.

This Agreement plans for the participation of governments, water users and the civil society in conformity with the national water laws of each country involved. This participation is possible within the Local Coordination Committee (LCC) that can be compared to a Basin Committee on each side of the basin, with an Advisory Committee for coordination. The Agreement plans for two operational and technical offices in the basin, in Bela Vista (BR) and Bella Vista (PY).

Mauri Cesar Barbosa Pereira
Collaborator of CIDEMA 1998-2005
Áurea da Silva Garcia
Collaborator of CIDEMA until 2009
and of MUPAN
mauri.pereira@terra.com.br.

Brazil

Basin Masterplans in the State of Tocantins

Even in the heart of the dry season, the Rio das Balsas and its tributaries carry clear waters.

Meanwhile, in the Rio Sao Valerio, although close, only a trickle of water is flowing, which is not even enough to supply water to the city of São Valério da Natividade.

In each of these two river basins, the Government of the State of Tocantins, with the help of Japanese Consultants (Nippon Koei Lac Co. Ltd.) and IOWater, is finalizing master plans for water resources management, aimed at reconciling its multiple uses.

Hydrogeological studies have shown that the contrast between the two basins is explained by the presence of the karstic aquifer Urucuia and its resurgences, guaranteeing the basic flow of the Rio das Balsas.

In the first basin, the orientations of the Master Plan focus on the necessary arbitration between environmental preservation, the practice of eco-tourism and projects for building hydropower plants.

In the Rio Sao Valerio basin, the master plan indicates the need to build a regulating dam, storing a portion of the water during the rainy season and preventing that the people suffer from lack of water during the drought that characterizes this region of Northern Brazil.

In addition to drinking water supply, the project will develop irrigated agriculture.

For the follow-up of the master plans, Brazilian law provides for the creation of basin committees. However, in the predominantly rural river basins of the Rio das Balsas and Rio Sao Valerio, the government is reluctant to create a new organization, as the population is already highly solicited to participate in multiple participative organizations, for example in the fields of health, education and tourism.

The proposed solution is thus to **create an inter-municipal consortium,** allowing the municipalities of the river basins to pool their resources and expertise to ensure the implementation of the master plans for water management.

Such a consortium may also receive financial resources from **the taxes on water use,** thereby ensuring the sustainability of its operation.

Belizario Franco Neto
belifranco@srhma.to.gov.br

www.recursoshidricos.to.gov.br

Diving board over the Rio Ponte Alta, main tributary of the Rio das Balsas

Colombia

The Magdalena - Cauca Basin Management Plan (BMP)

The Regional Autonomous Corporation of the Río Grande de la Magdalena (CORMAGDALENA) is coordinating the various regional institutions involved in the management of the Magdalena-Cauca Basin.

The Basin Management Plan shows a perspective of what would be the river basin in 2019 if the proposed quality objectives are achieved.

Environmental, social and economic conflicts have arisen in the Basin.

The BMP focuses on the legal obligations of "CORMAGDALENA" and is becoming a strategic planning tool for the region.

The BMP sets the inter-institutional objective of improving the basin's environmental quality by fighting against deforestation, pollution and artificial reduction of flow.

It gives "CORMAGDALENA" the ability to fulfill its duties with respect to environmental management.

Juan Gonzalo Botero Botero
Executive Director
Maria Margarita Londoño Mejia
Director of Planning and Data Processing
CORMAGDALENA
mlondono@cormagdalena.com.co

www.cormagdalena.com.co

The Magdalena River

Environmental Zoning of the Blanco River Basin

The Blanco River

The Regional Autonomous Corporations, entrusted with the management, protection and control of water resources, are defining criteria for managing their territory.

The development of the river basins started in 2005, pursuant to Resolution 2431 of 29 November 2005, which declares that the environmental Authorities "Cormacarena", "Corpoorinoquia", "Corpoguavio", "CAR" and National Nature Reserves are responsible for the development of the Blanco River Basin.

An Advisory Council is made of representatives of universities and research institutes to provide technical advice.

The composition of local and topical working groups is defined according to the inventory made by the Basin Technical Committee.

The active participation of environmental Authorities has helped identify criteria and establish an environmental, ecological and socio-cultural zoning of the basin with water resources being the main baseline.

There are constraints for improving the biological, geomorphological and hydrological processes.

The main objective of Environmental Zoning is to define basin sectors, according to their potential for uses, for harmonious and sustainable development, conservation of ecosystems and environmental development of the territory. It is based on the interpretation and integration of the topical elements of the inventory, as well as on environmental problems and conflicts present in the study area.

Environmental determinants

The Constitution of 1991 gives the Colombian State the obligation to ensure regional planning and sustainable natural resources management.

The Law 388 enacted in 1997 makes the Regional Autonomous Corporations responsible for implementing policies, plans and projects on the environment and renewable natural resources and for preparing the environmental components of regional planning.

To meet these demands and to achieve sustainable operations, the Corporations have defined a series of environmental determinants which, among other things, imply:

- taking into account the river basins as structural elements of regional planning;
- defining areas for environmental protection and conservation of ecosystems;
- identifying risks and natural hazards and proposing actions to face them;
- defining intake and discharge areas and establishing rules for achieving water quality objectives.

The country has achieved positive results with the adoption of these determinants.

Diego Alonso Reyes Pabón
Regional Autonomous Corporation of Cundinamarca (CAR)
dreyesp@car.gov.co

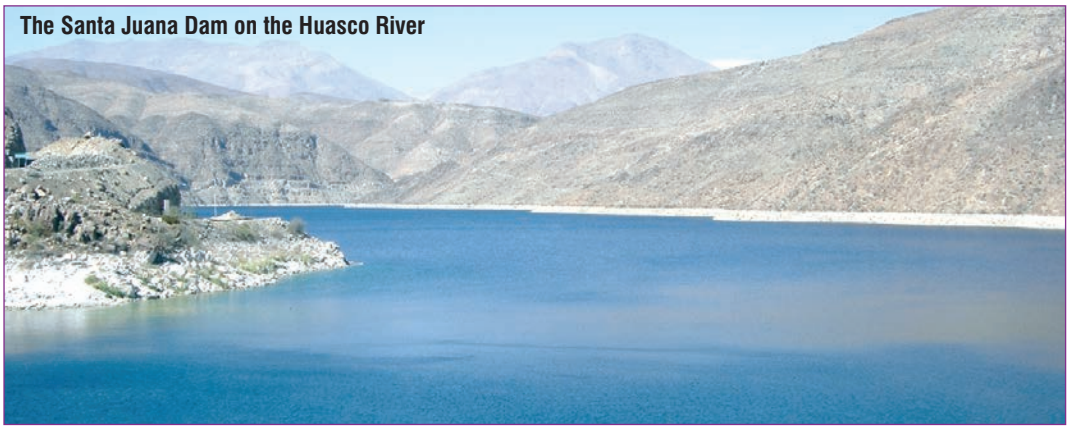
www.car.gov.co

CAR
Autoridad Ambiental con Alternativas de Desarrollo
Corporación Autónoma Regional de Cundinamarca

Latin America

Chile

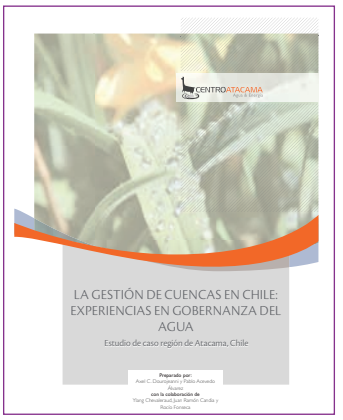
The Water Resources Management Program


The Santa Juana Dam on the Huasco River

The objective of the "Water Resources Management Program" of 2001 (WRMP) is to promote and implement national, regional and local strategies for integrated, decentralized and sound management of water resources at the level of river basins, which guarantee the participation of the State and all sectors concerned.

The WRMP plans to:

- Include in each basin the various stakeholders' visions on the use, management and regulation of water resources in the decision-making processes and in the development of policies.
- Promote decentralized water resources management thanks to the active participation of the basin stakeholders.
- Recognize that water is a natural, social and economic good. Water management must take into account environmental conservation and protection, while contributing in the improvement of the population's living conditions and in the economic development of the basin.
- Coordinate the development of hydraulic infrastructures.
- Promote capacity building of the stakeholders for the application of regulations, the resolution of conflicts and integrated water resources management at the level of river basins.



The WRMP study benefited from a contribution of US$ 10 million from the Global Environment Facility (GEF). The implementation of this program requires an investment of US$ 300 million.

Axel C. Dourojeanni
Pablo Acevedo Álvarez
Fundación Chile
axeldouro@hotmail.com

CENTROATACAMA Agua & Energía

www.innovacionambiental.cl/centroambiental

Initiatives in the Bio Bio and Andalien River Basins

From 1993 to 1995, a Governmental initiative was taken to organize "Integrated Water Management in the Bio Bio River Basin", with Japanese funds, under the administration of the World Bank and with the technical cooperation of the French Government. However, this initiative was stopped due to the doubts and weak position of the Administration of the time and to the opposition of some interest groups of the Region.

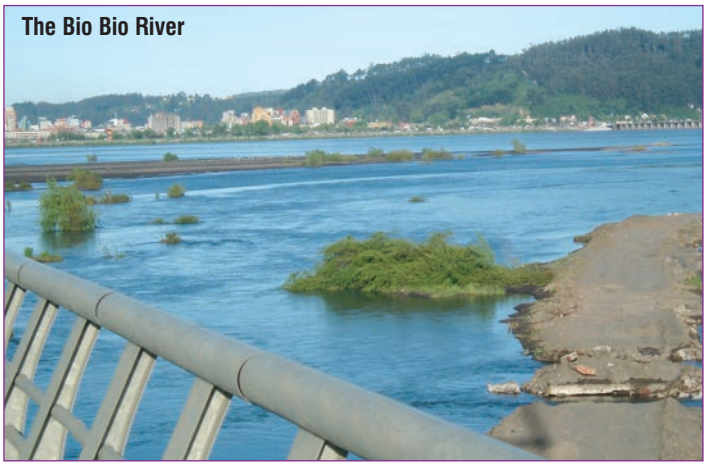
Later, the creation of **the Bio Bio Regional Irrigation Council** and the drafting of the Regional Irrigation Strategy in 2001 led to an Agreement for Programming Irrigation, between the Regional Government of the Bio Bio and the Ministries of Public Works and Agriculture, for an amount of investment of 840 million dollars between 2009 and 2015.

Following the significant damage caused by the floods in winter 2006, a strong pressure from the local organizations of **the Andalien River Basin led to the creation in 2007 of the Public/Private Partnership or Water Council,** integrated by public, private stakeholders and the Civil Society.

It was firstly orientated towards the definitive solving of the floods problem and, at a later stage, to the implementation of a model of integrated basin management, through a wide and democratic participation of the local stakeholders.

A Program was drafted in 2009, with regional financing, for strengthening the scientific bases of water governance in the Andalien River Basin.

Rámon Daza Hurtado
Bio Bio Region
ramon.daza@mop.gov.cl


The Bio Bio River

Mekong River Commission - MRC

Strategic Environmental Assessment of Hydropower on the Mekong

The MRC released the final report of **the Strategic Environmental Assessment (SEA)** for hydropower development projects proposed on the mainstream Mekong River.

There might be up to twelve hydropower projects in Cambodia, Lao PDR and on the Lao-Thai border.

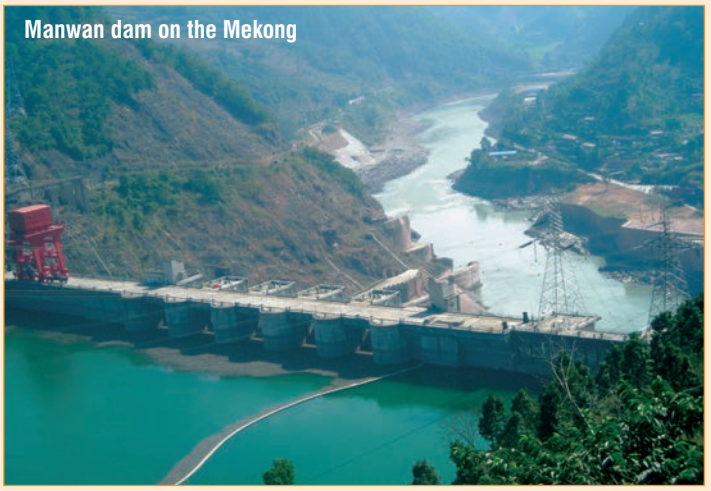
The 14 month study critically assesses the impact mainstream hydropower projects would have on the river's environment.

The SEA draws on the opinions of a range of stakeholders who often hold diverse views on how the basin's resources should be developed and protected.

The SEA outlines the extent to which natural processes, fisheries, aquatic and terrestrial biodiversity, and livelihoods may be affected by hydropower development and how these impacts can be avoided, mitigated or minimized by adequate planning.

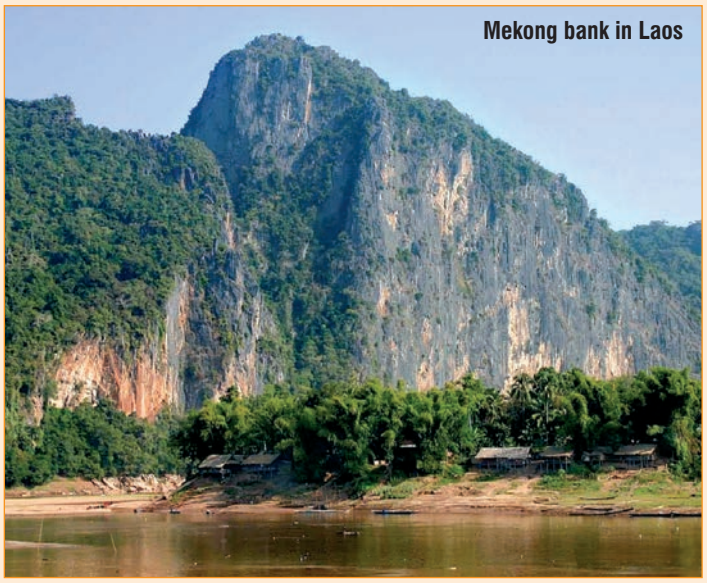
The SEA presents four strategic options for mainstream Mekong hydropower development which range from "cease all dam development" to "complete development" for proposed projects.

The SEA provides the basis for discussion within the MRC on what benefits can be considered sustainable and viable and on impact mitigation mechanisms.


Manwan dam on the Mekong

In depth discussion will be held by MRC and Member Countries on individual projects such as Xayaburi under the MRC's formal procedures for Prior Consultation (PNPCA).

First Prior Consultation for an hydropower development project


Mekong bank in Laos

The Mekong River Commission (MRC) received from the Government of Lao PDR the official notification for a proposed mainstream Mekong hydropower development project in Xayaburi Province.

This project would be the first of this kind on the Mekong mainstream, downstream of China, and would be capable of generating 1,260 megawatts of electricity, mainly for export to Thailand.

This notification triggered, for the first time, **the MRC's Procedures for Notification, Prior Consultation and Agreement (PNPCA) process,** a requirement of the 1995 Mekong Agreement for countries to jointly review any dam proposed for the mainstream with a view to reaching consensus on whether or not it should proceed, and if so, under what conditions.

Member Countries must notify the MRC's Joint Committee in the event they wish to engage in any major infrastructure developments on the mainstream Mekong or tributaries, if those developments may have significant transboundary impacts on people or the environment downstream.

In total, six hydropower projects are being proposed for the Mekong mainstream in Laos between Chiang Saen and Vientiane.

The Xayburi project is only one of them and so the MRC commissioned **a Strategic Environmental Assessment (SEA)** of all the proposed mainstream projects including an analysis of the effects of dams built and being planned in China upstream.

Tiffany Hacker
Communication Advisor
MRC
damian@mrcmekong.org

www.mrcmekong.org

www.inbo-news.org
All information is available on the Web
www.inbo-news.org

Asia

China

Cooperation in the field of water

Visit of a dam on the Hai River - December 2010

Access to water has become a major concern in China. It has in fact only 7% of the water resources of the planet for a fifth of the world population.

The location of these resources is also uneven: abundant in the South, it is lacking in the West and North. Finally, water quality is threatened by pollution from industrial, urban and agricultural discharges.

To cope with these challenges, China is building significant infrastructures and modernizing water management.

For such a purpose, the Chinese Government develops international cooperation, with the European Union in particular, within the River Basin Management Program (EU-China RBMP).

An agreement was signed by the Chinese Ministry of Water Resources and the French Ministry of Ecology and Sustainable Development to develop cooperation in areas of common interest such as integrated water resources management and protection.

Under this agreement, two cooperation projects are being finalized:

- **The first project focuses on water management in the vicinity of nuclear plants.** Most Chinese power plants are currently located in coastal areas, but many construction projects along the rivers are being studied. The French Government invited a delegation from the Chinese Ministry of Water Resources for a study tour in France at the beginning of 2011. The delegation met the Directorate General for Energy and Climate and the Agency for Nuclear Security. It visited the plant of St Laurent-des-Eaux, which coordinates the radioactive discharges from the four power plants of the Val-de-Loire, and encounters all the problems related to nuclear power plants on a river.
- **A second project concerns river basin management.** It associates the Chinese Ministry of Water Resources and the French Water Agencies, as well as IOWater, which coordinates the project on the French side, and several partners, the EPTBs (River Basin Public Bodies) and municipalities in particular.

This cooperation focuses on the Hai River, whose basin covers 318,000 km², including four provinces (Hebei, Shanxi, Henan, Inner Mongolia) and two Big municipalities (Beijing and Tianjin).

To identify specific ways of cooperation, a Chinese delegation visited France in September 2010 for the International **"EUROPE-INBO 2010"** Conference in Megève, which gathered the European Basin Organizations on the implementation of the European Water Framework Directive.

A French delegation from IOWater and Seine-Normandy and Rhone-Mediterranean & Corsica Water Agencies travelled to China in the Hai River Basin in early December 2010.

In addition, within the EU-China River Basin Management Program and the agreement signed by the Yellow River Commission and INBO, several Chinese delegations visited INBO Secretariat in Paris, which introduced them to the organization of water policy in France and to the French 50-year experience in basin management.

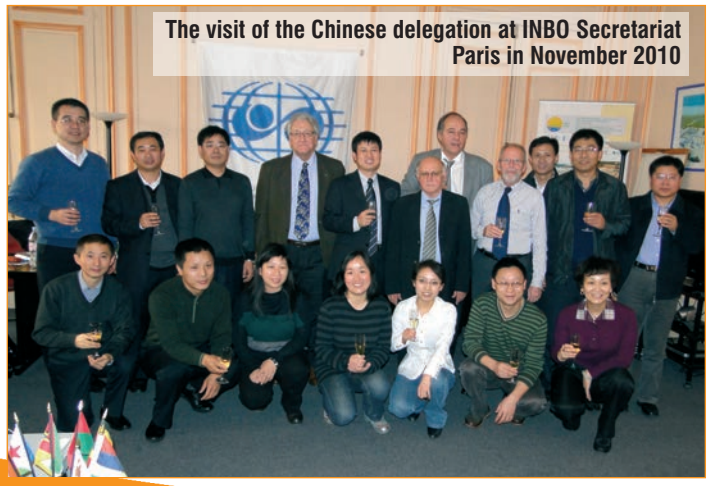
A visit in France of the National Water Training Center (NWTC) and of the National Data Reference Center for Water (SANDRE) was also organized in November 2010.

Denis Quenelle
French Ministry for Foreign Affairs
denis.quenelle@diplomatie.gouv.fr

www.euchinarivers.org

EU-CHINA
River Basin Management Programme
中国－欧盟流域管理项目

The EU-China Forum in Zhengzhou in July 2010


The visit of the Chinese delegation at INBO Secretariat Paris in November 2010

China

New models for River Basin Management

Jointly with the 7 Basin Commissions of the largest rivers, China is testing new models for basin management in response to serious issues.

A common feature of these models is to enhance cooperation and coordination between sectors or between administrative units to address either serious water shortage or water pollution.

Three river basin management models have been identified:

- The first model addresses inter-provincial cooperation in the Heihe sub-basin, an inland river bordering the Yellow River Basin.
- The second concerns the intra-provincial Talimu (Tarim), Shiyang and Shule River Basins in North-West China.
- The third model concerns River Basin Organizations on tributaries of the Pearl River.

These small-scale river basin organizations recently established are deemed as good attempts to promote IWRM and IRBM, and they constitute a significant innovation in implementing the 2002 China Water Law and integrating management systems of river basins and regional management.

Yang, Guowei Ph.D.
GWP China Council
yanggw1117@hotmail.com

The Heihe River

China: restoration of an urban lake in Wuhan

The Chinese Government designated Wuhan as a pilot area for sustainable development and as one of the four cities concerned by the French-Chinese agreement on sustainable urban development.

The City Hall of Wuhan, known as the city with 100 lakes, asked the City of Bordeaux for French experts to address the issue of pollution of its many lakes.

Messrs. Marc Abadie, Director General of the French Adour-Garonne Water Agency and Alain Juppé, Minister and Mayor of Bordeaux, went to China in September 2010.

On this occasion, the Wuhan Water Department and the Adour-Garonne Water Agency signed a cooperation agreement for the ecological restoration of the Great East Lake (Donghu Lake) and the development of a quality monitoring network to allow aquatic recreational activities (swimming, fishing, tourism), protection and sound development.

Marc ABADIE
Adour-Garonne French Water Agency
Fax: 05 61 36 37 28
marc.abadie@eau-adour-garonne.fr

www.eau-adour-garonne.fr

Messrs. Marc Abadie and Alain Juppé in China in September 2010

Nepal: Free speech

Strengthening regional cooperation

The Trisuli River in Nepal

The impacts of climate change on Himalayan watersheds have increased risks and modified flow regimes with a growing trend of large peaks in the rainy season and decreasing river flows in low-water periods.

As Himalayan glaciers are melting, it is likely that dry season runoff would increase for some years.

But this increment would only last several years and also depends on the volume of snow cover and glaciers.

It is now high time to look for a regional consensus between Nepal, Bhutan, India, Bangladesh and China PDR to face these changes.

Jagat K. Bhusal
Secretary, IHP-Nepal
Vice-Chairman, SOHAM Nepal
bhusaljagat@yahoo.com

www.soham.org.np

Asia

Vietnam

Dong Nai pilot project: IWRM on tracks!

The Vietnamese Ministry of Natural Resources and the Environment (MONRE), created in 2002, has been entrusted with the implementation of Decree 120 issued in December 2008 to develop a policy for Integrated Water Resources Management (IWRM) in Vietnam.

In compliance with the French-Vietnamese agreements on water, the Dong Nai Basin pilot project aims to provide MONRE with:

- **A national institutional support** financed by the French Loire-Brittany and Seine-Normandy Water Agencies (400,000 €), implemented by IOWater with the expertise of the French Water Agencies.
- **Assistance to the development of Dong Nai management plan and surface water monitoring,** financed by the French Ministry of Economy, Finance and Employment (800,000 €). It is implemented by SCE (pilot management plan) and Asconit Consultants (monitoring).

Year 2010 allowed putting on tracks the planned key actions:

- **A training/coaching plan for the national teams in charge of coordinating the preparation of management plans.** A first workshop on IWRM was followed by workshops addressing sectoral policy makers (agriculture, regulation of water regime and hydropower, industry and management of domestic water services).
- **An analysis of water data on the Dong Nai Basin,** existing in the various national and regional institutions, with the development of a catalogue of shared data sources (metadata database).
- **An overall evaluation of the monitoring means and devices existing in Vietnam and in the Dong Nai Basin,** by checking their compliance with national policy requirements.
- **Finally, the structuring of the Vietnamese DWRPIS** (Division for Water Resources Planning and Investigation of South Vietnam) team in charge of preparing the pilot management plan.

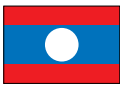
The project Steering Committee associated high-level personalities closely involved in French river basin management and cooperation with Vietnam, especially Mr. Serge Lepeltier, former Minister for the Environment, President of the Loire-Brittany Basin Committee and Mr. Jacques Oudin, honorary Senator and Chairman of the "International Cooperation" Commission of the Water Agency.

MONRE
webmaster@monre.gov.vn

www.monre.gov.vn

The workshop for launching the training plan on IWRM

Laos



Towards an IWRM project in Nam Ngum Basin

During a study tour in France organized by the Loire-Brittany Water Agency, the Lao delegation led by Mrs. Khempeng Pholsena, Minister to the Prime Minister, President of the Water Resources and Environment Administration (WREA) get acquainted with the French experience in water resources governance and management.

Mr. Jacques Oudin, Honorary Senator, Chairman of "International Cooperation" of the Loire-Brittany Basin Committee, then accepted an invitation from the Lao authorities to discuss modalities for cooperation on a pilot basin project in the Nam Ngum Basin, where a study was recently carried out with financing from the French Development Agency, to establish the conditions for planning water management.

The two French Water Agencies, Rhine-Meuse and Loire-Brittany, will finance the project under decentralized cooperation and will share their technical expertise for the benefit of the Lao party, with support from the International Office for Water.

The Nam Ngum River Basin, a major tributary of the Mekong River, covers about 8,000 km^2 and is of vital importance to Lao PDR.

The challenges related to hydropower production are very significant as well as environmental degradation (soil degradation, water shortages, reduced fish stocks, deforestation ...).

The project aims to initiate a process of Integrated Water Resources Management (IWRM) with the Lao authorities through the development of tools and methodologies suited for the Nam Ngum Basin. Lessons learned will be disseminated at national level.

At completion of this 2-year project, Laos will have practical experience of development and testing of tools such as: planning, empowerment of local stakeholders, financing mechanisms.

Chanthanet BOUALAPHA
Director General of the Nam Ngum River Basin Committee
chanthanet@gmail.com

www.wrea.gov.la

Visit of Mrs. Khempeng Pholsena and the Lao delegation at INBO Secretariat in 2009

Eastern Europe, Caucasus and Central Asia

EECCA

Creation of the Regional Network of Basin Organizations

The international workshop on the development of **the Network of Eastern European, Caucasian and Central Asian Basin Organizations (EECCA-RBO) was held in Moscow on 31 May 2010.**

50 representatives of research, design, manufacturing and information institutions from Russia, Ukraine, Belarus, Moldova, Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Azerbaijan took part in this workshop.

The participants:

- **Recognized the importance of exchanges of information and experience** between water professionals, water users and other stakeholders in EECCA Countries;
- **Decided the creation of an EECCA network within the International Network of Basin Organizations (INBO);**
- **Adopted the objectives and methods** of the International Network of Basin Organizations as working basis for promoting Integrated Water Resources Management at a river basin level while meeting goals, specific to EECCA Countries.

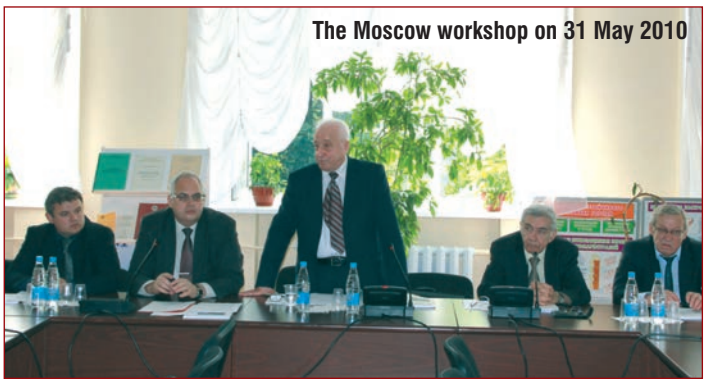
The participants thanked the UN Economic Commission for Europe (UNECE) and the Government of the Russian Federation for supporting this event and SIC-ICWC and the Moscow State University of Environmental Engineering for their organization of the workshop.

The Constitutive Convention of the Network of Basin Organizations from Eastern Europe, Caucasus and Central Asia was approved.

Mr. P.A. Polad-zadeh was unanimously elected President and Prof. V.A. Dukhovny Executive Secretary of the Network.

The Board of Directors comprises 15 representatives from all EECCA countries.

The working languages of the Regional Network are Russian and English.



The Moscow workshop on 31 May 2010

SIC-ICWC is taking charge of its Secretariat in Tashkent, Uzbekistan.

Prof. V. Dukhovny
Scientific-Information Center of the Interstate Commission for Water Coordination (SIC-ICWC) in Central Asia
dukh@icwc-aral.uz

http://sic.icwc-aral.uz

Aral Sea Basin Program

Since 1991, 2 Aral Sea Basin (ASB) Programs, ASBP-1 and ASBP-2 were developed and partially realized.

The ASBP-3 Project (2011-2015) was approved by the Central Asian Heads of State at the Summit in Almaty on April 28, 2009.

Yu. Khai. Rysbekov
SIC-ICWC
Fax : (998 71) 265 25 97
yusuprysbekov@icwc-aral.uz

Data administration in two pilot transboundary river basins

The countries of Eastern Europe, Caucasus and Central Asia are highly dependent on transboundary water resources for drinking water production, hydropower, irrigation, and for other uses: in these basins, it is therefore essential to develop effective policy between riparian countries to jointly manage water resources in accordance with the natural balance, especially as climate change threatens these resources quantitatively and qualitatively.

The implementation of these policies implies first and foremost to have a comprehensive assessment of water resources, based on consistent and homogenous information.

UNECE

In this context and as part of activities related to **"the Convention on the Protection and Use of Transboundary Watercourses and International Lakes",** whose secretariat is hosted by UNECE in Geneva, the French Ministry of Ecology, Sustainable Development, Transport and Housing (MEDDJT) has proposed a pilot project, the financing of which was approved by the Steering Committee of the French Fund for Global Environment (FFEM) in April 2010.

This project firstly aims to **build the data management capabilities of the main national and regional authorities in two pilot transboundary basins,** using methodologies that can also be applied to other transboundary basins of Eastern European, Caucasian and Central Asian countries.

On the other hand, at regional level, it should allow **developing tools for access to the information** (portal, catalogue of data sources, web services ...) and disseminating the results and feedback obtained in the two pilot river basins.

The feasibility study allowed identifying:

- **The Dniester River Basin,** shared by Ukraine and Moldova,
- **The basins of the Aral Sea** (Amu Darya and Syr Darya River Basins) shared by the 5 Central Asian countries (Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan) and Afghanistan.

This project is expected to be completed over a period of 18 months from September 2010. It will be administered by IWAC (International Water Assessment Center) and technically coordinated by IOWater. Following preliminary contacts, it will be developed on the Dniester in close collaboration with the Dniester III project financed by UNEP/UNDP /OSCE/UNECE/REC-CE, and will be part of the "Action Plan for the Protection of the Aral Sea" as regards the component for Central Asia.

Eastern Europe, Caucasus and Central Asia

Caucasus

REGIONAL ENVIRONMENTAL CENTER

Organizing IWRM in the Kura River Basin

The REC (Regional Environmental Center) Caucasus is in charge of the TACIS project "creating an enabling environment for integrated management of the transboundary Kura-Aras Basin".

The Kura Basin covers 205,037 km^2 and flows into the Caspian Sea.

It is the main river of the three South Caucasus countries. Armenia has 100% of its territory in the basin, Azerbaijan nearly 80% and Georgia over 50%.

The Kura River in Mingachevir (Azerbaijan)

Upstream, the basin is shared with Iran and Turkey.

The strategy proposed to the three Caucasian countries relies on the development of a national roadmap for structuring the main objectives to prepare management plans for the portion of the basin owned by each State and a regional roadmap to coordinate actions for developing a "roof" synthetic management plan. The latter covers the transboundary aspects of the entire basin.

The three States have closer relations with the EU under the European Neighborhood Policy.

The principles of the European Water Framework Directive have been used as a standard.

A coordination mechanism, based on the creation of a working group, is prefiguring the operating mode of an international commission.

The developed mechanism would allow technicians in South Caucasus countries to acquire and harmonize methodologies for planning water resources to be used more effectively in the basin following the example of the Common Implementation Strategy (CIS), established in the European Union to harmonize the implementation of the Water Framework Directive between the Member States.

REC Caucase
info@rec-caucasus.org

www.rec-caucasus.org

Kazakhstan

The Lake Balkhash Ecosystem Preservation Plan

Balkhash Lake Ecosystem is a unique natural complex on the Planet. It stretches on 900 km. from West to East and on 680 km. from North to South.

The ecosystem of Lake Balkhash makes a significant contribution to the ecological balance of the entire Eurasian region. It must not be destroyed, like that of the Aral Sea was.

Studies revealed that the lake level is critical, and its disappearance would cause disruption of the equilibrium in ecosystems with environmental and social impacts: conversion of fertile lands into deserts, emergence of huge areas of salt marshes, drying-out of coastal rivers, reservoirs and Ili delta.

With the support of the European Union, the Institute of Geography, KazGiproVodKhoz, CAREC and other organizations have conducted studies, but practical measures to reduce water losses have not been adopted.

The purpose of the Plan is the development of indicators and key lines of action for the conservation of the Lake.

Environmental sustainability of Lake Balkhash is largely dependent on the water supplied from China.

Additional water withdrawals by the PRC during the dry years, undoubtedly and dramatically reduced the amount of runoff into the lake.

Currently, water relations with China are built around the "agreement on cooperation on the use and protection of transboundary rivers", signed in 2001.

Reduction in the water volume of Lake Balkhash can be compensated by saving water and reducing water loss, by the introduction of new technologies and by creating a more efficient management system.

As a result of implementing the Preservation Plan, the Balkhash Lake will not disappear from the surface of the planet.

The population living in the basin will be ensured to have more stable, long-term and environment-friendly activities.

Bulat K. Yessekin
Team Leader
Lake Balkhash Ecosystem Preservation Plan
byessekin@mail.ru

Lake Balkhash

Fergana Valley

Integrated Water Resources Management

Since 2001, the "Integrated Water Resources Management in the Fergana Valley" project, aiming at improving effectiveness of water management through institutional reforms, has been implemented with financial support from the Swiss Agency for Development and Cooperation (SDC) in the three Central Asian Republics: Kyrgyzstan (Osh province), Tajikistan (Sughd province), Uzbekistan (Andijan and Fergana provinces).

The project is directed at the establishment of water user associations, the organization of canal management and definition of transparent, equitable and efficient rules for water distribution among users and between countries.

The project is being implemented by SIC-ICWC and IWMI in close cooperation with the national coordination and support groups of the three countries.

The following actions were carried out:

- **Review of the actual situation,** the IWRM implementation plan was developed with consideration of the local political, socioeconomic and water situations.
- **Development of the conceptual framework,** approved by the ministries of water management in the three States.
- **Training, capacity building, creation of consultative services.**
- **Application to pilot sites on the Transboundary Small Rivers:** Khodjabakirgan River (Kyrgyzstan / Tajikistan) and Shakhimardan River (Kyrgyzstan / Uzbekistan).

Phase 4, with the aim of applying and integrating the institutional, organizational and managerial approaches and testing them on the pilot canals and Transboundary Small Rivers, started in May 2010 and will be completed in 2011.

It has achieved the followings results:

- Efficient functioning of the organizations established for Water Resources Management and Governance.
- Better transboundary cooperation between the countries: Unions of System Water Users (USWU), System Water Committees (SWC), System Management Organizations (SMO) have been established on each side of the border; water consumption and water supply have become simpler and more reliable.
- Public participation in the water management process on an irrigated area of 138,000 ha.

The level of credit to the Project has grown, the IWRM approaches are now applied in Uzbekistan on an area of 320,000 ha.

Galustyan A.G.
SIC-ICWC
Tél./Fax: (99871)-265-16-54
imwr@icwc-aral.uz

Automation of hydraulic structures

Headwork of Big Fergana Canal in the Naryn River

The Fergana Valley Canal Automation Project was implemented with the support of the Swiss Agency for Development and Cooperation (SDC).

The SIC-ICWC in Central Asia prepared the terms of reference and supervised the implementation of the project. In addition, experts of the "Canal de Provence" Company (France) contributed to the project.

The project developed and implemented a Common Automated Control System (CACS) for water distribution in transboundary areas in Central Asia.

Besides, the project created the system of automation and monitoring for headworks, lateral inflow, gauging stations and intake structures, as well as data transmission systems.

The CACS has improved operation thus making labor of operating staff much easier as well as water distribution along the large canals.

Moreover, reliability, transparency and accessibility of water information are ensured for all concerned institutions and water users.

I.Begimov
SIC ICWC
Fax: (998-71)-265-27-97
begimov@icwc-aral.uz

Water Productivity Improvement at Plot Level

The Water Productivity Improvement at Plot Level Project (WPI), funded by SDC in Central Asia, shall contribute to enhance crop yields at plot level through improved farm and water management.

The project concerns five zones among the irrigated areas of the Fergana Valley in Kyrgyzstan, Uzbekistan and Tajikistan.

SIC-ICWC and the International Water Management Institute (IWMI) are establishing collaboration and cooperation with the Governments, national partners and donors.

Platforms are being created to facilitate exchange and mutual learning between the different stakeholders at all levels.

The WPI project focuses on the enhancement and dissemination of water-related knowledge to improve crop and water productivity at farm/plot level.

The project started in 2008 and will continue up to 2011. In 2008 - 2009, the project partners analyzed the existing research and extension materials concerning plot level water productivity and yield improvement in Central Asia. The socioeconomic background was evaluated in each country as well as the existing strategies and approaches.

Sh.Sh. Mukhamedjanov
SIC-ICWC
Tél./Fax: (998 71) 265 09 57
shukhrat_m@icwc-aral.uz

Awareness raising in the field

Europe

8th Conference of "EUROPE-INBO" Group

Megève - France - 22 - 24 September 2010

EUROPE-INBO

The 8th conference of the "EUROPE-INBO" Group for the implementation of the Water Framework Directive (WFD) took place in Megève, in France, from 22 to 24 September 2010, at the invitation of the French Water Agencies. It gathered 177 participants, representatives of national administrations and basin organizations as well as of NGOs and companies, coming from 42 Countries.

As the conference was taking place in the Alps, special attention was paid to hydrology in mountains and to the measures to be taken for adapting to the effects of climate change.

The work of the Conference was organized around six topics:

1. **Drafting of the WFD Management Plans,**
2. **The Programs of Measures 2010-2015 and their financing,**
3. **Combined implementation of the WFD and the other water-related European Directives,**
4. **Strategies for prevention of drought risks in Europe,**
5. **Measures for adapting Water Bodies to the effects of climate change,**
6. **Cooperation with the neighboring Countries.**

The Conference allowed reaffirming that integrated and sound water resources management is more than ever a priority, if we do not want that this vital resource becomes the limiting factor for sustainable development in Europe and in the World.

Organizing management on a basin scale seems effective, as evidenced by the action started in Europe with the successful implementation of the WFD.

However, there are still significant challenges for achieving "Good Status" within the very short time left before 2015 and delays are recorded in the publication of some WFD Management Plans.

Sweden, France, Portugal in the presidium of the "EUROPE-INBO" Conference

To promote their appropriation by the stakeholders concerned and thus ensuring their effectiveness, the Programs of Measures must be detailed at the level of sub-basins and involve the municipalities and all the local economic sectors concerned.

Government authorities must also get mobilized in the field, imposing basis measures, controlling the effective enforcement of regulations and accompanying local stakeholders in their projects.

In Transboundary Basins, the positive role of International Commissions was stressed, especially for the coordination of actions, harmonization of practices, decision-making by consensus, conflict prevention and exchange of information between riparian countries. But the Management Plans of Transboundary Basins must be more than a mere assembly of parts of national plans.

The cost of the WFD implementation will imply significant financial efforts raising the question of acceptability by users of an increase in the water price.

Frank and open discussions on financing should be organized on appropriate scales.

Of course, **citizen participation is a guarantee for the implementation of the Management Plans.** It should be oriented towards the general public and use suited tools according to the targeted audiences, geographic scale, objectives of the consultation and territory specificity.

The combined implementation of the WFD and the European "groundwater", "floods" and "marine strategy" Directives implies better coordination between the Basin Organizations and the proper Authorities, which is essential to guarantee the necessary synergy between these Directives.

Adapting water management to climate change is needed and urgent for prevention of drought risks in Europe in particular.

It is necessary to work out a strategic approach at basin level, which guarantees the adoption of effective and coherent adaptation measures by the various sectors and the various levels of governance.

Upstream-downstream common cause should be strengthened while keeping in mind that the mountains are the water towers of Europe and of the World and that climate change involves modifications in the water regime of all the large European rivers.

With the WFD, the European Union has an advanced tool which must also be used to develop strategies for adapting water resources management to climate change as soon as the 2nd implementation phase from 2015 to 2021.

Several European countries are already developing a national plan for adaptation to climate change.

The WFD is a successful example of regional initiative which can inspire other areas in the world.

Its principles and method can be applied in the neighboring countries of the European Union, especially in the Transboundary Basins, in Eastern Europe, the Balkans or the Mediterranean Basin.

www.inbo-news.org

"For facilitating the implementation of the European Water Framework Directive"

The European network of managers of research programs on water facing new prospects

The final Conference of **IWRM-Net** project "Improving research cooperation in the field of water policy through Europe" was held in Brussels from 1 to 3 December 2010.

It was an opportunity for IOWater and all partners to present the results of their activities and paths for future collaboration.

To allow for constructive exchanges between participants and speakers, the Conference was structured in three steps:

- The first day dealt with the trans - national coordination of research in the field of water;
- The second day focused on **IWRM-Net** activities and gateways that have been launched towards the future;
- Finally, the third day allowed the transfer of scientific findings from research to users, managers of rivers.

These three days were an opportunity for the **21 partners of IWRM-Net,** European managers of research programs, of showing how the challenges of transnational research were brilliantly met in terms of:

- **programming practices of research:** by identifying research needs, scientific specifications of calls for projects, coordination of research;
- **facilitation of a social network:** by providing tools for the different stages of exchanges between the partners - knowledge management tool, European Water Community - available on the project website;
- **research:** two calls for projects were launched in 2007 and 2009 respectively.

Pending the constitution of the "Joint Program Initiative" on Water, initiated by Spain and the Netherlands, the partners of **IWRM-Net** will have the opportunity to share and collaborate via the **"Scientific Project Coordination" (SCP).**

SCP is financed by the French Ministry of Ecology (MEDDTJ) and managed by IOWater with support from ONEMA.

It aims to coordinate **IWRM-Net** research projects beyond December 2010 and to completing them.

More information:

N. Amorsi
IWRM-Net
n.amorsi@oieau.fr

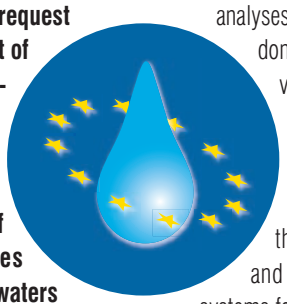
www.iwrm-net.eu

Water Framework Directive and chemical pollution

A database on "priority substances"

For the implementation of the Water Framework Directive (WFD), a revision of the list of "priority substances" and determination of the concentrations to comply with in rivers are needed.

In this context, upon request of the DG Environment of the European Commission, IOWater associated with INERIS created a database gathering 15 million of recent water analyses made in the surface waters of 28 countries.



After defining the data to be collected and creating the tools to collect and process the received data, a website for information on the contents of the new database was created.

Year 2010 was devoted to processing these data to enable experts from different European countries to decide whether the evidence is sufficient to register the substances on the list proposed to the European Parliament in January 2011.

A lot of expertise work and quality analyses of these data were also done to guarantee the relevance of the experts' conclusions on chemical substances.

This work has shown the particular strengths and weaknesses of current systems for monitoring the quality of surface waters: under-representation of lakes and coastal and transitional waters, incomplete geographic referencing, data storage to be changed.

It also confirmed the relevance of the approaches selected in the Daughter Directive on Environmental Quality Standards (2008/105/EC) regarding data quality.

Southern Europe

"NOVIWAM"

NOVIWAM
Novel Integrated Water Management Systems
Southern European Regions

The "NOVIWAM" project (Novel Integrated Water Management Systems for Southern Europe) aims to promote interregional cooperation on tools and methods for water management in river basins.

This project, financed by the European Union under the 7th FPRD, involves 5 regional partners in Albania, Cyprus, France, Portugal and Spain and should develop to neighboring countries facing the same challenges.

With the help of a feedback and sharing of know-how and technology, the partners are considering the solving of existing problems of water management in the Euro-Mediterranean climate space, in an eco-efficient, sustainable and competitive manner.

www.noviwam.eu

Europe

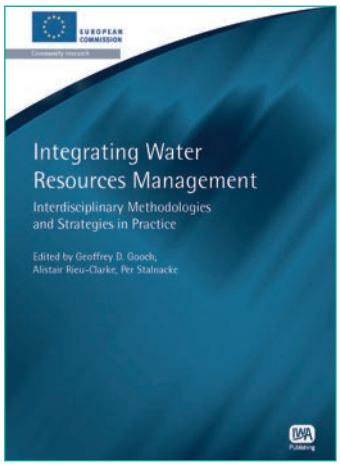
European Union

STRIVER : how to connect science and policy?

STRIVER (Strategy and Methodology for improved Integrated Water Resources Management - IWRM) is a three-year EC funded project 2006-2009 under the 6th Framework Program (FP6).

It develops interdisciplinary methods to assess and implement IWRM in four selected twinned catchments in six countries in Europe and Asia (Tungabhadra (India), Sesan (Vietnam and Cambodia), Glomma (Norway) and Tagus River Basins (Spain and Portugal), based on the development of a multidisciplinary knowledge assessment (policy, social and natural sciences) and case studies.

Two books present the outcomes of the STRIVER project, coordinated by NIVA and Bioforsk in Norway.

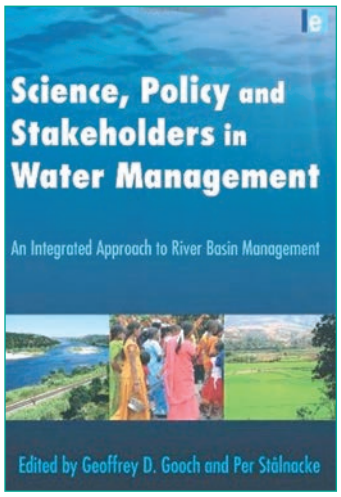


The book "Integrating Water Resources Management Interdisciplinary Methodologies and Strategies in Practice" provides a varied picture of IWRM frameworks, the main issues at stake, the challenges and problems arising and the solutions proposed by STRIVER.

34 authors from varied disciplines, backgrounds and perspectives have contributed to the book, which has been edited by Geoffrey D. Gooch (Linkoping University), Alistair Rieu Clarke (Unesco Center Dundee) and Per Stålnacke (Bioforsk).

In a new book entitled "Science, Policy and Stakeholders in Water Management - An Integrated Approach to River Basin Management" edited by Geoffrey D. Gooch and Per Stålnacke and published by Earthscan, the science-policy interface is examined both analytically and through the description of practical experiences from the four river basins in Europe, India and South-East Asia.

25 authors have contributed to the book.



Per Stålnacke (PhD)
Bioforsk - Norwegian Institute for Agricultural and Environmental Research
Fax: +47 630 09 410
Per.Stalnacke@bioforsk.no

www.bioforsk.no

Italy

The Northern Apennines River Basin District Management Plan

The Northern Apennines River Basin District covers an area of around 40,000 Km^2. It includes 7 Regions with a total population of 7 Million inhabitants and encompasses 48 main rivers constituting 10 watersheds that eventually drain into the Adriatic Sea, the Tyrrhenian Sea and the Ligurian Sea.

The Arno River flows through the City of Florence and the Reno River through the City of Bologna.

The River Basin District Management Plan (RBMP), approved in February 2010, describes 1,600 Water Bodies, the pressures and impacts due to human activity and concerns both surface and groundwater.

It classifies each Water Body on the basis of its quality status and describes the necessary actions that will be implemented to maintain or reach Good Ecological Status.

The Apennines Mountain range

The RBMP contains information for the application of the principle of cost recovery of water services taking into consideration long-term water demand forecasts in the District. The Authority has tested a methodology for economic analysis in a pilot area. The outputs underline that water prices and tariffs do not cover, at the moment, either financial or environmental or resource costs.

Moreover, the RBMP estimates the costs of water services as well as the necessary investment forecasts.

All information is included in a geo-database according to the WISE standards.

Each Water Body is mapped. The database allows assessing the measures and their possible review.

The 2010-2015 Program of Measures includes basic and supplementary measures that will be implemented during this cycle.

As regards a correct assessment of the effects of the RBMP measures, in addition to the monitoring activity carried out under Directive 200/60/EC, indicators were identified for each sub-basin.

The River Basin District Management Plan was drafted taking into consideration climate change scenarios. **A strong interplay with the Floods Directive was looked for.**

Taking account of the effects that extreme phenomena can have both on population, ecosystems and the quality of the resource, a methodology was implemented for the identification of the areas at risk of flash floods in the Arno River Sub-Basin.

Lucia Fiumi
Arno River Basin Authority
l.fiumi@adbarno.it

www.adbarno.it

Belgium

"Climate Change and Water: a common challenge"

14 October 2010, Brussels

"EUREAU" has organized, under the Belgian Presidency of the European Union and with the help of BELGAQUA, a European Conference dedicated to Climate Change and Water. It was attended by more than 200 participants who noted the institutional efforts made by the Member States to face climate change with the implementation of the Water Framework Directive.

The situation of the agricultural sector facing climate change is an example of the discussions.

The conference offered a networking possibility and the sharing of ideas was very positive.

Pierre-Yves Monette
Secretary General
EUREAU
European Federation of National Associations of Water and Wastewater Services
PY.Monette@eureau.org

http://eureau.org/conference2010

The participants in the "EUREAU" Conference

Solidarity with the poor

The Water Social Fund in Wallonia: a win-win mechanism

Some households have difficulties in paying their water bills.

As in every European country, the price of water in Wallonia has considerably increased during the last decade from € 2.5/m³ in 2004 to € 3.8 in 2010.

There was a 50% increase in 5 years. Many reasons can explain this increase: the development of the sanitation infrastructure, the decrease in drinking water consumption, the high level of service requested by users…

Meanwhile, the social inequities increased in Belgium. The Gini coefficient rose from 0.25 in 1997 to 0.31 in 2007.

In order to counter this effect, the Walloon Government set the obligation for each water supplier to withdraw a € 0.0125 fee on each cubic meter billed for building a "Social Fund" in order to help low-income households to pay their water bills.

This mechanism has been implemented by all suppliers since 2004. The Public Company for Water Management (SPGE) manages this fund.

An original system

This system ensures that the big consumers, i.e. the industries and high-income households, contribute more than the small consumers (low-income households).

The municipalities have the right to use 85% of the total fees, which represent about 1.7 million Euros for all Wallonia. The remaining 15% are devoted to technical improvement and management costs.

When households do not pay their bills after two reminders, a request to use the Social Fund is sent to the Public Center for Social Help (CPAS) which then investigates to determine whether the household has enough income to pay or not.

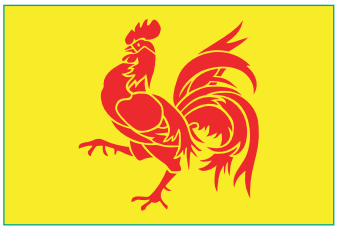
If the "CPAS" conclude that the non-payer is indeed a low-income household, it uses the Social Fund to decrease the total amount of the bill with a maximum of € 280 per household. This amount is increased for larger households.

A win-win mechanism

This system ensures that everyone wins something. For the poor households, it seems quite evident that this system is helpful as it allows them to pay their bills.

But it is also quite interesting for the water supplier as it avoids costs of recovery procedures. It ensures also that debt recovery is as low as possible and, therefore, allows a buffering of the increase of the water price.

This mechanism also ensures redistribution from high-income users to low-income users and thus reflects the solidarity principle.



Interest of the international community

This procedure meets the Millennium Development Goals by ensuring everyone to have (economic) access to safe drinking water.

Claude Pirotte
Public Company for Water Management
claude.pirotte@spge.be

www.spge.be

SPGE
Société Publique de Gestion de l'Eau

Europe

France

Joint implementation of the European Directives: The case of the downstream Ouche River

The Ouche, a right-side tributary of the Saone located in the "Côte d'Or" Department, belongs to the Rhone-Mediterranean Basin.

Its basin encompasses the territory of 130 municipalities, which host a population of 262,200 inhabitants.

The river basin is divided into two distinct entities: a relatively preserved area upstream and one very developed and built downstream. The Dijon agglomeration is located between the two units and has strong impacts on the basin downstream.

A Water Development and Management Plan (SAGE) and a River Contract have been undertaken since 2005.

The Ouche River

Two major lines of thought are interfering on the Ouche downstream: physical restoration of a man-made environment pursuant to the European Framework Directive and floods management by the re-establishment of floodplains (Floods Directive).

Ongoing processes and studies thus aim at restoring floodplains by replacing the current dikes at the edge of the low-water bed by protections closer to the inhabited areas.

The river, flowing in an alluvial area will then be able to restart meandering according to the variations of its flow and the erosion-silting processes.

The project has been based in particular on an experiment led for 10 years on the lands, property of the Joint Syndicate for Study and Development of the Ouche and its Tributaries Basins (SMEABOA): the free space of Fauverney.

A communication process and hydraulic study accompany the project for the municipalities, local elected officials and the agricultural world, first concerned by the re-establishment of floodplains on their lands, which grew less vulnerable with the building of large hydraulic developments.

Pascal Viart
Director
SMEABOA
Tél. : 03 80 67 45 17
smeaboa-dijon@wanadoo.fr

www.plan-ouche.fr

PlanOuche
j'aime ma rivière, je la protège

The Martinique

Laboratory for the European Water Framework Directive

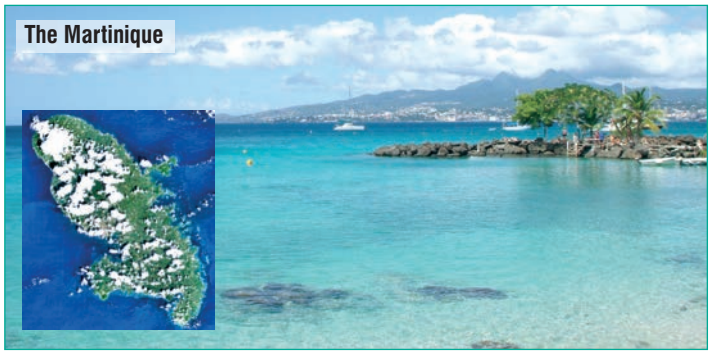
The step towards integrated water management is a recent approach in the Martinique. It began in 1996, year of the creation of **the Basin Committee** pursuant to the French Water Law of 1990, and to the 1992 decree on its implementation in the Overseas Departments.

In exemplar cohesion of the civil, voluntary, economic and political forces, the Martinique has developed a SDAGE (Master Plan for Water Development and Management) approved by the Government in 2002, integrating the requirements of the European Water Framework Directive of October 2000, and which was revised from 2004 to 2009.

The European Water Framework Directive provided a methodological framework under specificities and constraints related to islands and the Caribbean situation. The WFD is an opportunity for changing attitudes about water management, water being our common heritage.

Madeleine Jouye De Grandmaison
Vice-President of the Martinique Regional Council, 1983 – 2010
President of the International Network of Basin Organizations, 2004 – 2007
President of the Martinique Basin Committee, 1996 – 2010

MARTINIQUE



The Martinique

"EUROPE-INBO 2011"
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Cooperation

Artois-Picardy Water Agency

"Entre Deux Eaux" analyzes management practices in 10 transboundary river basins

Supported by the French Artois-Picardy Water Agency, two French researchers have traveled in 10 transboundary basins: the Cauvery, Danube, Euphrates, Ganges, Jordan, Nile, Okavango and Tigris Rivers and the Guarani aquifer, to study the best management practices.

The aim of the "Entre Deux Eaux" / "Between Two Waters" (E2E) project is to identify the difficulties and success factors, the needs, interests and priorities of the stakeholders in the field and to provide them with tools in order to facilitate project management to:

- integrate all local stakeholders in decision-making,
- reduce the underlying social and environmental risks,
- anticipate conflicts,
- improve project performance.

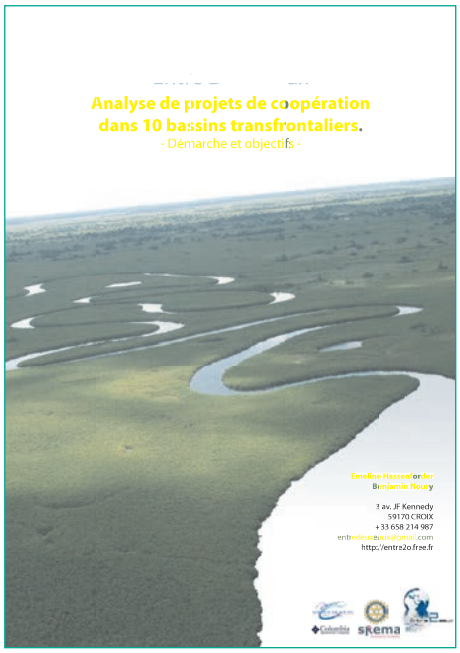
Interviews of 273 stakeholders involved in the management of these projects took place between November 2008 and June 2010. Case studies of 10 projects were carried out in cooperation with these stakeholders.

In parallel, a comparative analysis will enable project leaders to put into perspective their actions through a cross vision and to share their best practices.

The "Entre Deux Eaux" project has highlighted the importance of moving to transboundary river basin management starting from field considerations to guarantee sustainability of projects and cooperation.

The second project phase (2010-2011) aims to implement a local methodology for development control, as a supplement to traditional management methods (Prince2, PMBoK, MSP, OP3M, Balanced Scorecard), and a support to strategic decision-making of leaders and managers of transboundary river basins.

Emeline Hassenforder
Benjamin Noury
Managers
of the "Entre Deux Eaux" project
entredeuxeaux@gmail.com



http://entre2o.free.fr

Signing of a memorandum of understanding on cooperation with the Water Agencies of Bosnia Herzegovina

Signing of the memorandum

On 28 May 2010, the French Artois-Picardy Water Agency received the Directors of the Bosnia Herzegovina Water Agencies for the signature of an agreement concerning the implementation of the European Water Framework Directive and particularly the drafting of the Programs of Measures and Management Plans.

This memorandum is the continuity of a series of informal exchanges with this country that started in 2009 through the World Wild Fund (WWF Mediterranean Program).

The same year, our Water Agency had received a delegation of twelve persons from various services of the Ministry of Agriculture, Water Management and Forestry, which supervises the Water Agencies, for a seminar on the Water Framework Directive, which enabled a fruitful exchange between French and Bosnian experts.

The Artois-Picardy Water Agency took advantage of this signing of the memorandum to organize in 2010 an exchange between French and Bosnian experts on the monitoring program and the auto-monitoring system of wastewater treatment plants.

Following the signature of this memorandum, the Artois-Picardy Water Agency was invited in Bosnia Herzegovina to participate in a round table organized in the catchement area of the Drina River in the cities of Foca and Gorazde on the topic of river security.

Géraldine Aubert
Artois-Picardy Water Agency
Fax: 00 33 3 27 99 9015
g.aubert@eau-artois-picardie.fr

AGENCE DE L'EAU ARTOIS - PICARDIE

www.eau-artois-picardie.fr

Eastern and Central Europe

Albania

Transboundary cooperation for shared management of natural resources: the case of the Shkoder / Skadar Lake

Finding a balance between development and conservation of natural resources is perhaps the central dilemma of today's human communities.

When these communities directly depend on natural systems that are shared by two or more countries, the issue becomes even more complicated, and cooperation between the different sides of the border becomes an additional factor of key importance.

Lake Shkoder

The international Program for transboundary cooperation toward the management of shared natural resources on the Shkoder/Skadar Lake was carried out from 2000 to 2008.

It allowed specifying the communication strategy, the strategic action planning, the multi-stakeholders approach as well as the highest Albanian – Montenegrin authorities' commitment.

This study program was based on a permanent scientific and bilateral cooperation to meet the needs of water quality protection and sustainable use of this aquatic ecosystem. The study aimed to give better understanding of the lake ecosystem and its drainage area, and of the ecological and socio-economic importance of a good status of Shkoder/Skadar Lake.

The Management Plan for water quality protection and improvement of the current status of the lake was submitted by the policy-makers of Albania and Montenegro.

Dr. Djana BEJKO
Regional Environmental Center (REC)
University Luigj gurakuqi Shkoder - Albania
Fax: +355 2224 72 03
E-mail: DBejko@rec.org

http://albania.rec.org

REGIONAL ENVIRONMENTAL CENTER

Kosovo

How to secure water resources?

The World Bank project entitled "Water Security for Central Kosovo" aims to help the Kosovar Government in developing a program to secure water resources in the Iber River Basin, a transboundary river with Serbia, by, in particular:

- Providing a suitable and reproducible model for integrated water resources planning and management;
- Identifying structural and non structural priority measures for sustainable socioeconomic development;
- Quantifying achievable water savings.

The Iber Basin hosts the capital Pristina and the power plant that feeds it.

Other hydropower projects are being studied.

This project therefore aims to **present different baseline scenarios** with different goals, industrial and mining uses, agricultural and domestic uses in urban, peri-urban and rural areas and to propose a range of measures to secure water supply in adequate quantity and quality and suitable for each use, to improve the performance of services including an increase in efficiency and management of facilities, while preserving natural environments.

The development of these scenarios is based on the methodology used in the Drini River Basin during a former project.

The Iber in Mitrovica (Northern Kosovo)

The managers of the Iber River Basin with the project team

The assessment of surface and groundwater resources and the modeling of the hydro-geological system for the Iber Basin are an integral part of the project.

A component of the project aims to clarify the future vision by 2035 for both agriculture and municipalities and for the management of transboundary waters.

Using the WEAP (Water Evaluation and Planning) model, developed by the Stockholm Environment Institute (SEI) should help draft baseline scenarios.

Alternative scenarios, based on assumptions validated with the World Bank, will be supplemented by an analysis to identify priority investments.

IOWater and SCE are involved in the assessment of uses, in forecasting their short-term evolution and in the economic evaluation of the various measures recommended in the proposed scenarios.

One difficulty is the availability of data, most dating from the Serbian administration or simply not collected.

Project findings will be available during 2011.

Cyrille VALLET
Project Manager - SCE
cyrille.vallet@sce.fr

Eastern and Central Europe

Bulgaria

Success of the institutional twinning for the implementation of the Water Framework Directive and Economic Instruments

The 2-year twinning agreement between the Bulgarian Ministry of Environment and Water and the French Ministry of Ecology and Sustainable Development (MEDDTJ) ended in October 2010.

This project, financed by the European Commission, was implemented by IOWater and the French Artois-Picardy and Rhone-Mediterranean-Corsica Water Agencies.

On the French side, this twinning mobilized a full-time resident adviser in Sofia, Mr. Arnaud Courtecuisse, and many specialists from the MEDDTJ, the 6 Water Agencies, IOWater and BRGM ... a total of about 40 experts, 80 expert's assignments in Bulgaria and 2 study tours in France.

On the Bulgarian side, this twinning mobilized officials from the Ministry of Environment and Water and the 4 Basin Directorates: Eastern Aegean (Plovdiv), Western Aegean (Blaegovgrad), Danube (Pleven) and Black Sea (Varna).

The project had two main objectives:

1. **Providing support to the implementation of the Water Framework Directive (WFD) in Bulgaria;**
2. **Strengthening water policy in Bulgaria through better use of economic instruments.**

It was implemented through a large program of institutional assistance and capacity building at different levels:

- **at national level,** the Bulgarian Ministry and Basin Directorates gathered a Working Group to monitor the project activities and coordinate the drafting of Management Plans in the 4 basins. This Group benefited from training on different aspects of the WFD (presentation of methodologies, practical case studies, and tool for monitoring PoMs.);
- **in each basin,** the Basin Committees were associated to the development of the Management Plan and Program of Measures, and since the Urban Waste Water Directive emerged as the main measure, the actions targeted municipal officials responsible for investments in sanitation, with specific workshops and the development of an operational guide for project preparation.

The support to WFD implementation in Bulgaria took place in 3 phases:

- Until December 2009, the European calendar deadline for the publication of Management Plans, support to the development of Programs of Measures for basins, with: analysis of the work of the Basin Directorates; presentation of the methods used in France (to assess the effectiveness of measures, identify and justify the exemptions, address the lack of data ...); consultation with interested parties and the public ...;
- A 2nd phase from January to March 2010, with support to the implementation of reporting directly to the WISE website of the European Commission, which has resulted in a "green card" from the Commission confirming compliance with the WFD timetable by Bulgaria;
- The 3rd phase included support to the effective implementation of planned measures. This last component is particularly important because achieving Good Status by 2015 will depend on the speed with which the concerned contracting authorities (mostly municipalities for networks and wastewater treatment plants) will make the necessary investments in the field.

Seminar closing the twinning, Sofia, 6 October 2010

The strengthening of water policy through the use of economic instruments focused on two components:

➤ Improving the tax system:

It aimed to provide support to review the method of calculating the taxes levied by the Basin Directorates and donated to a National Environmental Fund; a gradual increase in the tax amount from the water sector should provide financial support to the WFD Programs of Measures.

Actions on this topic, led by the RM&C Agency, focused on the definition of taxes (pollution parameters, rate ...), on improving the information system and on the process for levying taxes.

➤ The economic analysis in plans and programs:

The work carried out under the twinning helped introduce the methods used in France and test them in the field in Bulgaria; it led to:

- A simple tool for calculating the potential increase in water prices, following the implementation of the Programs of Measures,
- A guide on cost recovery in water utilities, dealing with pricing policies and their social acceptability,
- A guide on the economic analysis when preparing Management Plans, its objective is to propose ways of improving the analysis for the next cycle from 2015 onwards,
- A Bulgarian version of "Ecowhat", a training module organized around a role play designed to understand the use of economic analysis in Management Plans.

Zvetanka Dimitrova
Ministy of Environment and Water
bd_dr@moew.government.bg

www.moew.government.bg

The Mediterranean

Union for the Mediterranean - UfM

IV Euro-Mediterranean Ministerial Conference on Water Barcelona, 12-14 April 2010

The Union for the Mediterranean, UfM, which gathers 43 Countries, the Arab League, European Commission and Libya as an observer, was officially adopted at the Paris Summit for the Mediterranean held on July 13, 2008.

The III Euro-Mediterranean Ministerial Conference on Water held in Jordan in December 2008, laid the basic principles for developing a Strategy for Water in the Mediterranean and a long term Action Plan in the region.

The Horizon 2020 Initiative for De-polluting the Mediterranean Sea had been adopted by the Euro-Mediterranean Environmental Ministers in Cairo, in 2006.

In 2009, the Member Countries of the process worked on the drafting of the Strategy for Water in the Mediterranean (SWM).

The Technical Drafting Group (TDG) prepared an ambitious document that provides a basis for the protection and sustainable management of water resources in the Region and which is articulated around the four major principles:

- Enhancement of integrated water resources management;
- Adaptation to Climate Change and improvement of drought and flood management;
- Promotion of water demand management, use of non-conventional water resources, and protection of quality of water and biodiversity;
- Optimization of financing the water sector.

The paper was presented at the Fourth Euro-Mediterranean Ministerial Conference on Water, held in Barcelona on April 13, 2010, under the Spanish Presidency of the European Union.

Unfortunately, although a consensus was reached on the Strategy, this document was not approved due to some political disagreements.

Negotiations are continuing at the level of the Ministries for Foreign Affairs.

Miguel Antolín Martinez
Coordinator of International Affairs
Directorate General for Water
Ministry of Environment and Rural and Marine Affairs (MARM)
Fax: +34 91 453 5306
mantolin@mma.es

www.ufm-water.net

The IV Euro-Mediterranean Ministerial Conference on Water on 13 April 2010 in Barcelona

"STRATEAU"

Youth, Experts and Politicians together

The Mediterranean Union of Young Ambassadors for Water (UMJAE) has developed "STRATEAU": a tool for strategic analysis and prospective on water demand/resources balances.

This is a modeling tool, produced with the support of France, Italy, Lebanon and Morocco, whose purpose is to enable local stakeholders to define their strategies according to the water stress. It was presented at the UfM Ministerial Meeting on Water in Barcelona last April,

After making a prototype on three basins, Rhone-Mediterranean in France, Sebu in Morocco and Nahr El Kaleb in Lebanon, which politically allowed testing the robustness and relevance of "STRATEAU," the lack of some technical data essential in South Mediterranean countries became obvious. We decided to take action and send our Young Ambassadors for Water in the field to feed "STRATEAU".

But sending youth in master programs to these countries is a financial burden that the Water Embassy cannot bear alone. "STRATEAU" design was financed by the French Water Agencies, ONEMA, Veolia and Suez. The success of this modeling tool, its adoption by the Southern countries shows that the field of water is rich in possibilities.

Lebanon alone will receive twenty engineering students in 2011.

Jeannette Pretot
President of the Water Embassy
ambassadedeleau@orange.fr

www.ambassade-eau.com

EMWIS

New technologies for better information in the Mediterranean

SEMIDE EMWIS

Working group at the European Environment Agency

The Euro-Mediterranean Water Information System (EMWIS) organized, with the European Space Agency, a workshop in Frascati near Rome in late September 2010 on inputs from space technologies for the water sector.

For countries that have no adequate measurement network for the characterization and monitoring of their water resources, technology applications of Earth observation provide reliable and affordable solutions to be quickly implemented.

There are many possible applications: water resources mapping, follow-up of indicators on drought, assessment of man-made pressures (irrigated, urban and discharge areas, etc.), flood and drought warning systems, identification of unauthorized abstractions, identification of pollution, improving efficiency in irrigation, etc.

The success of these applications goes through partnerships between space remote sensing centers and water authorities and capacity building of stakeholders so that they can appropriate the use of these technologies.

Advantage of exchanges of experience about the Water Framework Directive

The working groups of the Joint Process between the Water Framework Directive (WFD) and the Med-component of the EU Water Initiative are the opportunity of fruitful exchanges of experience:

➤ **The Mediterranean working group on water scarcity and drought (WS&D) met on 17 February 2010 in Madrid in parallel with a meeting of the European experts' group on the Water Framework Directive (WFD) working on the same subject.**

The meeting stressed the need to launch a new phase for the next 3 years.

The participants discussed various types of indicators to meet goals such as planning, current management, managing crisis situations, impact assessment, etc. A preliminary analysis of data availability for the development of such indicators was launched with the Mediterranean Partner Countries.

In parallel, a pilot data collection with quality control and calculation of indicators was carried out in two pilot river basins: Sebu (Morocco) and Litani (Lebanon).

This exercise was carried out by using the approach and tools developed for the EU expert group working on these issues. A summary was published and other pilot river basins could conduct this exercise in the near future.

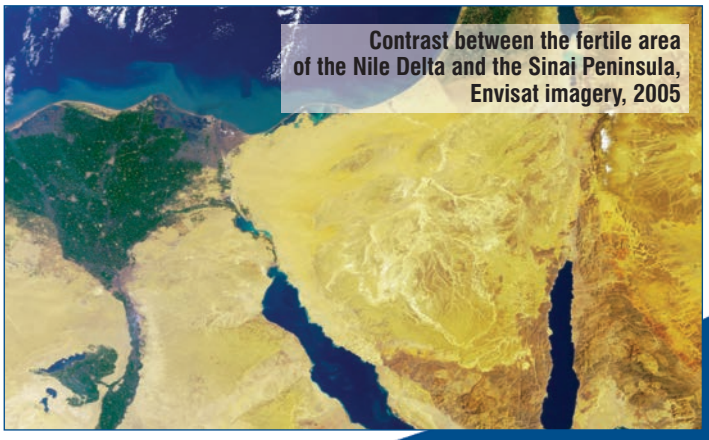
The importance of linking indicators with simulation models and Decision-making Supporting Systems was also addressed, in particular for the implementation of participatory processes with end users (e.g. drought or scarcity management plan).

➤ **The 2nd working group on monitoring and water quality control networks in the Mediterranean Partner Countries, who met in November 2010, highlighted the major challenges to which pilot projects should give responses:**

- fragmentation of responsibilities in water quality control;
- coordination to improve efficiency and quality of measures;
- interest to include targets on water quality in agreements on transboundary resources;
- better dissemination of information on water quality;
- need for characterization of Water Bodies and economic analyses to optimize management programs.

Towards a shared environmental information system in the Mediterranean

The European Commission and the European Environment Agency (EEA) launched work on the implementation of a Shared Environmental Information System (SEIS) in Europe and in the EU neighboring countries. **EMWIS** is one of the partners chosen by the EEA for the early stages of implementation in the Mediterranean countries. **Indeed, the recent work of EMWIS on the harmonization of National Water Information Systems (NWIS) contributes to the development of components for SEIS:** metadata catalogue coupled with a tool for map visualization, harmonization of water data, based on the System of Environmental-Economic Accounting for Water (SEEAW), recommendations for compatibility of the NWIS with the Water Information System for Europe (WISE) and the INSPIRE Directive.



Contrast between the fertile area of the Nile Delta and the Sinai Peninsula, Envisat imagery, 2005

www.emwis.net

The Mediterranean

Algeria

Wastewater treatment with activated sludge

The problem of wastewater treatment in Algeria is an issue that remains unsolved, despite many initiatives undertaken to date.

Most Algerian cities are developing without a rigorous sanitation plan, which now makes the search for solutions complex. Wastewater collection and treatment systems are poorly developed or nonexistent.

Wastewater treatment by low-rate activated sludge in aerobic stabilization ponds is a treatment process that has been, for most Algerian towns, the preferred tool for treating their wastewater because it has proven most reliable and easier to operate.

The wastewater treatment plant of the City of Setif (Algeria) is a good example of this type of process.

It has a capacity of 330,000 pop-equivalents and has been designed to accommodate 66,000m^3/d in dry weather.

Z. Bakiri
S. Nacef
Laboratory of Chemical Process Engineering (LGPC)
Ferhat Abbas University of Setif, Algeria
zahir.bakiri@gmail.com

The Setif Mosque

Egypt

European twinning on water quality: application to Lake Nasser

For 2 years, the Egyptian Ministry of Water Resources and Irrigation has been the beneficiary of this European twinning with Austria, France and Italy.

France is coordinating support to the implementation of an IWRM (Integrated Water Resources Management) policy through testing the preparation of a pilot Management Plan for Lake Nasser, using a methodology taking advantage of the fresh experience of the European countries in the implementation of the EU Water Framework Directive.

- **The first stage was the collection of information on the different studies undertaken on the lake,** such as the Lake Nasser Development Plan that has been used for the calculation of the potential pollution of activities and for building a baseline scenario of the pressures on the quality of the Lake in the future. The project created a web-based catalogue of water data that will be further fed by the Egyptian partners and will be used as a basis for the development of the Water Information System with support from EMWIS (Euro-Mediterranean Water Information System).

Lake Nasser

- **The second step was to undertake an analysis of the different water uses.** This sectoral review allowed collecting and modeling the data needed for the development of the different parts of the plan.

  This analysis was undertaken by IOWater for domestic and agricultural water uses, by the Rhine Navigation Commission and Strasbourg Navigation Service for shipping and by INRA for fishing and aquaculture activities.

  An assessment of the Lake Nasser monitoring program and environmental characteristics has been undertaken by the Austrian Environmental Agency and Italian experts.

  This study showed that the maintenance of good quality of Lake Nasser waters is possible with carefully controlled urban development. Nevertheless, agriculture and aquaculture development will have to be limited to avoid eutrophication of the lake.

  When using an approach of calculation of potential polluting flows, attention also could be drawn to the nutrients brought by the upstream activities from Sudan.

- **A program of priority actions for the next five years was proposed to control the impact of each sector on water quality.** It includes implementation indicators. The study evidenced the importance of identifying the Organizations responsible for the application of the recommended measures and their control.

After this successful test of the adaptation of EU planning methodology to the Egyptian context, the next objective is the application of these guidelines to other water bodies of the Nile.

Essam Khalifa
Egypt project Director
MWRI
essam@mwri.gov.eg

www.mwri.gov.eg

The Mediterranean

Iraqi Kurdistan

Can we guarantee the water resource?

The Autonomous Region of Kurdistan includes three provinces:

- Erbil (1.75 million inhabitants),
- Suleymane (1.56 million),
- and Dohuk (0.78 million).

For the KRG, Kurdistan Regional Government, a concerted water policy is a major component of development in the autonomous region as in Iraq as a whole.

Water is a major challenge at national and regional level, which must be jointly addressed with the neighboring countries (Turkey and Iran), as well as with other Iraqi provinces.

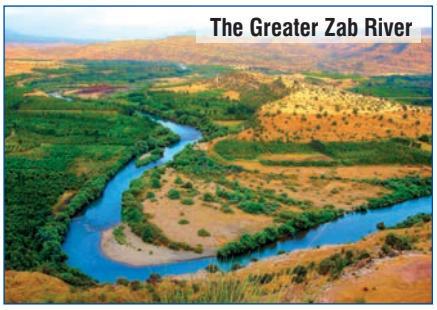
Different priorities must be combined, dams and electricity generation, irrigation and agricultural development, drinking water production and management, industrial development and environmental protection.

The exploitation of surface and groundwater resources for different uses is increasingly important, as the region is facing high population growth and is rich with unique and fragile ecosystems.

Irrigated agriculture alone, based on traditional and high water consuming practices, accounts for 70-80% of abstractions.

The Kurdistan Autonomous Region has currently no specific laws concerning water uses.

In 2010, the Ministry of Agriculture and Water Resources of Iraqi Kurdistan started, with French assistance, a study on the methods for implementing Integrated Water Resources Management (IWRM).


The Greater Zab River

Carried out by the "Canal de Provence" Company and IOWater, in partnership with BRGM and SCE, this study is primarily focusing on the Greater Zab River Basin, which covers the provinces of Erbil and Souleymane. The governance, planning and monitoring topics will be central.

The implementation of the general principles of IWRM will require from Iraqi Kurdistan an adaptation of its legislation to use these new concepts, and the acquisition of new practices by institutions and services in charge of water management.

Muhammed Amin Faris
General Directorate of Irrigation and Surface Water - GRK
mu_f2004@yahoo.com

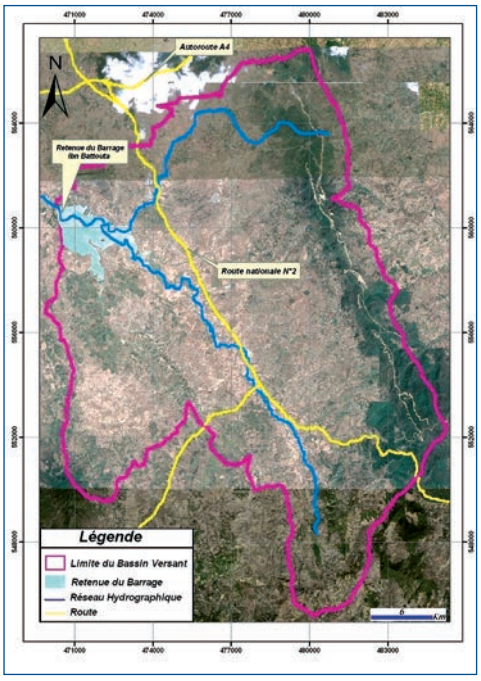
Morocco

Ibn Battouta Dam

The use of GIS to protect the watershed against pollution

Ibn Battouta dam is primarily fed by the Mharhar wadi and located 18 km from the City of Tangier and immediately south of Jebel Zinâk.

Its upstream watershed has an area of 178 km^2.



Waters regulated by the dam and released into the wadi bed are recovered at Bougdour station, which discharges them into the City of Tangier and its region; additional water in the rainy season is injected into groundwater through open cracks protected from erosion and pollution.

This dam is mainly intended to supply drinking water to the City of Tangier and its region.

Jouamaâ center is located within a mile from the dam reservoir, which is subject to various kinds of pollution: urban pollution (liquid and solid wastes), agricultural pollution (fertilizers, leaching of soil, etc.) and industrial pollution (Mlloussa free zone: Renault-Nissan platform).

A pilot project for the delimitation of protection areas combines techniques of satellite imagery processing with the possibilities offered by the Geographic Information System (GIS) to refine the analysis of field data and also for the structuring of a database.

A Data Type Model (DTM) has been produced to model these data and related information flows.

This study shows many advantages either in terms of achievement in the field or at the socioeconomic level.

It focuses on the fundamental objective of improving national knowledge on water resources and their protection, and provides a basis for any subsequent experimental study on surface water protection.

El khamlichi Ahmed Mortada
Loukous River Basin Agency (ABHL)
Faculty of Sciences of Tétouan
mortaada@yahoo.fr

World Water Forum
"The Forum of Solutions"
Marseilles - France - 12 - 17 March 2012

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The website of river basin management over the world

- The International Network of Basin Organizations
- The Regional Networks of Basin Organizations:
  - Africa - ANBO
  - Latin America - LANBO
  - North America - NANBO
  - Asia - NARBO
  - Brazil - REBOB
  - Central Europe - CEENBO
  - Eastern Europe, Caucasus, Central Asia - EECCA-NBO
  - The Mediterranean - MENBO
- "EUROPE-INBO" : European Water Framework Directive implementation
- The Network of International Commissions and Transboundary Basin Organizations
- The World Water Forum of Marseilles 2012

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INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS

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
Mail: inbo@wanadoo.fr
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