

## Better basin management to face the great global challenges



**Fortaleza in Brazil will host  
the 9<sup>th</sup> World General Assembly  
of the International Network of Basin Organizations (INBO)  
from 12 to 16 August 2013.**

Every three years, the General Assembly is an opportunity to exchange between representatives of Basin Organizations worldwide, to mobilize the regional networks and to discuss about the main challenges of water management.

Thus five Round Tables are scheduled:

- **Institutional frameworks for action of Basin Organizations;**
- **Adaptation to climate change and prevention of extreme flood and drought phenomena;**
- **Participation of local authorities, water users and the public, role of Basin Committees;**
- **Management of transboundary rivers, lakes and aquifers;**
- **Funding for Water Management and River Basin Organizations.**

There will be simultaneous translation into English, Spanish, French and Portuguese.

Registration to the World General Assembly of INBO is free of charge.

The meeting is open to all INBO Member Organizations and Permanent Observers, and also to all the water Administrations and organizations, interested in Integrated Water Resources Management at the level of river basins over the world. You are invited to come and present a paper on your field experience.

**Please register now to participate!**  
<http://registration-inbo-ga-2013.inbo-news.org>

[www.inbo-news.org](http://www.inbo-news.org)

## At conclusion time...

...tangible progress for basin management and transboundary cooperation has been made

The topic of basin management and transboundary cooperation has been widely discussed during the last World Water Forum in Marseilles.

- **UNESCO and the International Network of Basin Organizations (INBO)** jointly coordinated the nine official sessions of Priority 1.5 "Contribute to cooperation and peace", mainly on the management of the basins of transboundary rivers, lakes and aquifers.
- **INBO** also coordinated with **OECD** Condition for Success 1.3 "Good governance" related to the development and implementation of national or transboundary **Basin Management Plans**.



- **The European Commission and UNECE** also coordinated two sessions of the European process on "the Water Convention" (Helsinki 1992) and on the implementation of **the European Water Framework Directive (WFD)**, in liaison with "Europe-INBO".
- **INBO** had the honor of being invited to be a key note speaker at **the ministerial round table on transboundary basins**, chaired

by the United States of America, Tajikistan and Zimbabwe.

- **INBO Member Organizations** were also invited to present their experiences and recommendations at an event dedicated to the management of large transboundary basins, organized at the "French Pavilion" by the International Office for Water, INBO Secretariat.

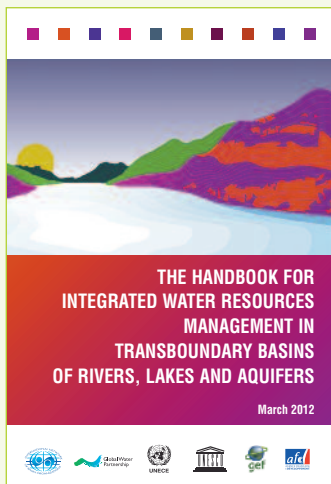
A large preparatory mobilization had taken place for over a year and many contributions were received on the "platform for solutions" website.

The sessions left wide room for lively and rich debates and discussions, and a large majority of participants converged on the interest of the basin approach, either national or transboundary, to address the global challenges of water resources management.

All the papers and photos of these events can be downloaded on the website:

[www.inbo-news.org](http://www.inbo-news.org)

## Handbook for Integrated Transboundary Basin Management



More than half of the world population lives in the basins of 276 transboundary rivers and lakes or nearly 300 aquifers.

Cooperation among the riparian countries is becoming imperative as pressure is increasing because of the global changes which are intensifying.

The integrated approach to water resources management appears as the basis for improved management of transboundary basins.

**The basins of rivers, lakes and aquifers are indeed the spaces where hydrological, social, economic and environmental interdependencies better appear.**

The experience gained allows today saying that it is possible to organize effective management on the basin-scale of transboundary rivers, lakes or aquifers, when there is a real willingness of the stakeholders concerned.



Nevertheless, significant progress remains to be done everywhere in the world.

To support this process, the International Network of Basin Organizations (INBO), the Global Water Partnership (GWP), UNECE, UNESCO, the GEF, EVREN and the French Development Agency drafted "the Handbook for Integrated Water Resources Management in the Basins of Transboundary Rivers, Lakes and Aquifers" presented at the World Water Forum in Marseilles.

This handbook aims to provide practical advice to improve transboundary basin management, using more than

**60 practical examples** of actions already successfully initiated in various basins.

The handbook itself and its English version on CD-ROM can be obtained free of charge, subject to availability, by E-mails to:

[secretariat@inbo-news.org](mailto:secretariat@inbo-news.org) or [gwp@gwp.org](mailto:gwp@gwp.org)

Digital versions of the English Handbook can be downloaded, free of charge, on GWP and INBO websites:

[www.gwp.org](http://www.gwp.org)

[www.inbo-news.org](http://www.inbo-news.org)

# More than 128 Organizations from the whole World are signing "the World Pact for Better Basin Management"

**World Pact for better basin management**

1. The establishment and strengthening of basin organizations in their own territories, especially transboundary commissions, authorities or other transboundary basin organizations, technical agencies, cooperation organizations and implementation of joint projects and actions in different basins, considering the focus and promoting essential elements in the following order:
  - a. It is necessary to increase regional integration by harmonizing policies and laws and by implementing the regional programme of control of water quality to improve water and groundwater resources management in the basin.
  - b. It is necessary to create or strengthen the bodies dedicated to the management of water resources and aquatic environments and protection of the riparian water user.
  - c. It is useful to develop or strengthen existing mechanisms for facilitating the bilateral or multilateral dialogue in the strategic field of basin management.
  - d. The representatives of the civil society and the local authorities should be better associated and involved in the management of the basins where they live.
  - e. It is necessary to increase cooperation among basin organizations through the use of their own and their rights to facilitate the sharing of experience and know-how in best practices in their basin management and development of their activities.
2. Commitment of Basin Organizations
 

Recognizing the need of urgent action, the representatives of the organizations that have signed the "World Pact for Better Basin Management" agree as well, in all cases under the status powers and within the limits of their competence, to continue to work together for the benefit of governments and international institutions:

  - a. acting in favour of the environment, facilitating the creation of basin organizations when they do not exist, strengthening existing organizations and promoting their activities, and providing technical assistance and advice for sustainable water management and the progressive realization of their responsibilities in the field;
  - b. supporting processes of sustainable, integrated joint and participative management of water resources and environments existing in the strategic scale of local, national or transboundary basins according to the law;

world population growth, migration, increasing urbanization, climate change ...

They encourage the riparian countries sharing basins of transboundary rivers, lakes and aquifers to organize joint management, to sign the necessary cooperation agreements and to establish the institutions needed for their application.

**They express their will to commit themselves** alongside their national governments and international institutions for:

- **improving water governance**, facilitating the creation of Basin Organizations where they do not exist yet, strengthening existing organizations;
- **organizing dialogue** with the stakeholders recognized in their basins;
- based on prior assessment, facilitating the agreement of the various stakeholders on **"a shared vision of the future of their basin"** and developing, through dialogue and transparency, **Management Plans** for setting out the goals to be achieved in the medium and long term;
- **developing successive action and investment plans** that meet the economic, social and environmental priorities of the basins;
- **making better use of water** and ensuring low consumption of this scarce resource by better control of the demand, while encouraging more efficient uses, and according to the case, the use of non-conventional resources;
- **better taking into account the significance of ecosystems** and of the services they provide in making decisions for the development and management of river basins;

- **mobilizing the financial resources** needed for carrying out governance reforms, ensuring a long-term good basin management and implementing the action and investment plans needed and ensuring their lasting operation;
- **organizing in each basin a harmonized data collection** as part of **Integrated Water Information Systems**;
- supporting initiatives of Regional Cooperation Institutions for **harmonizing policies and legislation in the field of water** and for developing joint action plans at the basin level;
- **strengthening institutional and technical cooperation** with counterpart Basin Organizations in their region or other parts of the World;
- **organizing better liaison with Research Organizations** to better focus their work on the priority aspects of basin management and rapidly disseminate their findings in the field.

They also committed themselves to promote the Pact to other Basin Organizations, that have not signed it yet, for inviting them to join and also becoming signatories quickly.

The commitment also provides for the establishment of a **symbolic basin passport** to reinforce the feeling of citizenship in their river basin.

The French Basin Organizations committed themselves in Marseilles to increase to 1% of their budget, their cooperation activities with least developed countries and to double their twinning arrangements with basins abroad.

The French Overseas Departmental Water Boards established a **Network of Basin-Islands** to integrate in the development concepts the insular and specific nature related to the smallness of the territory and the strong connection between terrestrial waters and coastal waters, including coral lagoons.

**Ceremonies for the signing of the pact** were also organized:

- in **Beirut (Lebanon)**, on 27 April 2012;
- at **Lac Beauport (Quebec-Canada)**, on 23 Mai 2012,
- in **Rio de Janeiro (Brazil)**, on 19 June 2012 during the UN Conference RIO+20;
- in **Vogüe (France)** on 15 November 2012 during the General Assembly of the French Public Local Basin Bodies (EPTB).

**Initiated by the International Network of Basin Organizations (INBO), its Regional Networks in Africa, America, Asia, Europe and the Mediterranean, and French metropolitan and overseas Basin Committees, the first ceremony was organized for signing the "World Pact" on Friday 16 March 2012 in Marseilles during the World Water Forum.**

Among the 69 signatories present in Marseilles, there were European and African Transboundary Basin Organizations, as well as the Basin Committees of Quebec or the Brazilian Basin Committees represented by their national Associations, and the pilot Basin Organizations of Cambodia, Laos and Vietnam in the Mekong River Basin.

**The signatories commit themselves to apply in their respective basins the management principles recognized as the most relevant and most effective using the field experience acquired by the INBO Member Organizations for almost 20 years.**

They affirm as a prerequisite that the basins of rivers, lakes and aquifers, whether local, national or transboundary, are the suited areas in which to organize the joint management of water resources, aquatic ecosystems and all water-related activities in order to cope with the global changes related to rapid

## Already over 128 signatories!



[www.inbo-news.org](http://www.inbo-news.org)



Europe Synthesis session on 16 March 2012

This Process involved the Pan-European region as defined in the UN Commission for Europe, i.e. the European Union and candidate and associated countries, the Balkans, Eastern Europe, Caucasus and the Russian Federation. The five Central Asian countries, members of the UNECE, also participated in the concerned target groups.

### Strong involvement of European Commissioners and Ministers:

Four European Commissioners, **Connie Hedegaard**, Climate Action, **Andris Piebalgs**, Development, **Janez Potocnik**, Environment, and **Kristalina Géorgieva**, International Cooperation, Humanitarian Aid and Crisis Response, as well as the Director General of the Joint Research Center, **Dominique Ristori**, actively participated in the European sessions on their field of activity.

Several Ministers in charge of water in the EU Member States and Candidate Countries, in the Caucasus and the Russian Federation have been active in the sessions of the European Process, as well as European Parliament Members.

### Conclusions and proposals of the European region:

Work was concluded by four round tables organized around the reports of the twelve European official sessions on:

- **Management of European basins:** to ensure cooperation and peace, promote economic development, prevent risks, achieve good status of Water Bodies and adapt to climate change;
- **Multiple water uses:** for economic development and health of Europeans - urban and rural water, agricultural water, industrial water, hydropower, inland navigation, fisheries and fish farming, domestic tourism ....;
- **A new green and blue growth:** to protect and restore aquatic ecosystems and develop natural infrastructure;
- **Strengthened European cooperation with the neighboring pan-European countries and with the entire World:** for better water management.

It was reminded in particular that many European countries have developed institutional and financial tools and efficient techniques for water management, both at the level of the general hydrologic cycle and of community utilities, especially municipal management of drinking water supply and sanitation utilities, or control of individual uses.

At the Pan-European continental level, **the UNECE Water Convention**, called Helsinki Convention for transboundary water management, has been applied since 1992.

In the European Union, many Directives have organized water management since 2000, in particular **the Water Framework Directive (WFD) and its "Daughter" or associated "Groundwater", "Floods", "Marine Waters" Directives**, setting ambitious goals and strict procedures and deadlines for the Member States.

### Strong development and interactivity:

To support the European process and to open it to the greatest number of participants, a dedicated website was created to disseminate information and gather opinions and suggestions from everyone.

This site has received over **480.000 visitors** since its opening in March 2011.

All papers presented in the European sessions of the Forum and photographs are published there in particular.



<http://european-region-wwf2012.eu>



Andris Piebalgs, European Commissioner



### Can you better manage water resources by disregarding the reality of river basins?



TV Talk Show at the French Pavilion © IOWater - C.Runel

Under the "Special Consultative Status" of the UN Economic and Social Council (ECOSOC), which it obtained in 2007, the International Network of Basin Organizations (INBO) was accredited to participate with "Major Groups" in the RIO+20 International Conference, held from 13 to 22 June 2012 in Rio de Janeiro - Brazil.

With the participation of 191 UN Member Countries represented by their Heads of State or of Government and their Ministers, RIO+20 was a great event for all those who campaign for more sustainable development, and who came in great number to support the emergence of new ambitious agreements in this direction ...

Everyone and the official delegations were disappointed with the final declaration pompously entitled "The World We Want", as in times of economic crisis and in spite of the efforts of hundreds delegations, especially of the European Union, many governments have opposed to new constraints, reaffirming the primacy of national sovereignty ... The Diplomats, to achieve unanimity on the text, had to settle for a declaration with no real new progress and without firm commitments and a specific timetable.

Except, perhaps, on the protection of the ozone layer, they were able to agree only on the fact that almost none of the targets set in Rio in 1992 had actually been achieved, despite some progresses which are too individual.

Management of freshwater resources and access to drinking water and sanitation were the subject of a small chapter, for which it was necessary to fight hard, and quotes were made here and there when agricultural irrigation, floods or drought were mentioned: it's better than nothing and something at least!

**Besides the official international slackness, the civil society, in all its forms, has shown its vitality and ambitions in speaking in all the spaces that were reserved or open to it.**

INBO, and IOWater, which takes care of the former's World Secretariat, were able to bring their vision of modern management of local, national and transboundary river basins, as it is now applied in more than seventy countries, on the occasion of various events giving it high visibility:

- **The 20<sup>th</sup> Anniversary of "Green Cross International"**, to which INBO was invited to present the experience of its members in the management of transboundary rivers, lakes and aquifers in different parts of the world;

- **The round table, as a "TV Talk Show", organized by the French Water Partnership (FWP) at the French Pavilion**, which had asked IOWater to act as a facilitator, presented the experiences of the Lake Chad, Mekong and Scheldt Basins, of Brazil, New Caledonia, Turkey and France (Artois-Picardy), and the viewpoint of large operators such as "EDF" or "IRD";
- **The "Water Dialogue"**, for which INBO representatives had been selected under the "Major Groups" and which finally passed a proposal calling on governments "to develop plans for integrated management and efficient use of water resources to guarantee their sustainable use, at all levels, as appropriate". Figure it why, in an International Conference, just writing "basin" is still taboo?!
- **The "Water Day" organized by UN Water "Recognizing Progress, Taking Action for the Future We Want"**, June 19, 2012, ... to which INBO was officially invited to present its experience in transboundary water management and its recommendations, during a round table chaired by the Directors General of **WMO**, **UNESCO** and **UNECE**, in the presence of the President of the Republic of **Tajikistan**, following the Preparatory Conference held in Dushanbe in November 2011;
- **The seminar of the elected representatives and partners of the PCJ Inter-municipal Consortium of the State of Sao Paulo in Brazil**, which together with REBOB takes care of the secretariat of the **Latin American Network of Basin Organizations (LANBO)**, which organized this official event on basin management under the Brazilian Federal Law of 1997 on the occasion of the Rio+20 Conference.

On Monday 16 June at the French Pavilion, representatives of "Green Cross International", LANBO, REBOB (Brazilian Network of Basin Organizations), Brazilian Basin Committees of the PCJ and São João Lagos officially signed **"the World Pact for better river basin management"**, initiated at the Marseilles Forum, in the presence of INBO Secretary General, thus increasing the number of signatories of the pact, which is to date over 128.

**Water is at the core of sustainable development. It is the common denominator of all major global challenges:** health, food, energy, inland navigation, peace, security, poverty eradication ... **RIO+20** has finally given it an official place in the strategies of the United Nations ... but still far too small, given the stakes!!!

[www.inbo-news.org](http://www.inbo-news.org)



The Water Dialogue © IOWater - C.Runel



**”Support to sustainable and integrated water resources management and desertification control”**



**Child using a hand-washer at school - Apidec project Kalifabougou - Mali - ©Nicolas Biron**

Launched in 2008 during the French Speaking World Summit in Quebec City, in partnership with Prince Albert II of Monaco Foundation, **the Water Initiative of the French Speaking World (I-Water)** aims to assist Governments in integrated water resources management (IWRM) for achieving the Millennium Development Goals (MDGs) and building the capacity of local stakeholders.

Based on a "Learning by doing" approach, I-WATER is financing projects in four countries of Sub-Saharan Africa (Burkina Faso, Mali, Niger, Senegal) and in Haiti.

I-Water is not a substitute to traditional development partners.

By working directly with recipient populations, local NGOs and technical partners, I-WATER relies on demonstration projects to build the capacities of local water and sanitation stakeholders and disseminate examples of good practice. It targets the rural and suburban areas.

A first pilot phase started in 2009, with the main following results:

- Several achievements of relevant projects;
- Strong involvement of local authorities in projects;
- Ownership of projects by the beneficiaries;

## Challenges and role of the French Speaking World

While the French-speaking population could increase from 220 to 700 million people by 2050, including 85% in Africa, the Kinshasa Summit in October 2012 has been an opportunity to recall the challenges facing the French Speaking World, one being the access to drinking water and sanitation.



**Borehole equipped with a manual pump - Dugan village Kalifabougou - Mali - ©Nicolas Biron**

- Strong mobilization of women, via health and management committees in particular;
- Focus on integrated water resources management at the local level.

In 2012, I-Water established new partnerships, including with private foundations and development agencies, allowing for leverage effects and duplication of its projects at the regional level.

This allows capitalizing on successful experiences based on the "learning by good practices" approach, by prioritizing training and capacity building.

In order to broaden its approach, the Water Initiative is committed in awareness activities and in the dissemination of targeted information, especially through **the "Médiaterre" Water portal**, the global information system on sustainable development of the French Speaking World, which disseminates relevant, diversified and upda-

ted information specifically addressed to water and sanitation stakeholders.

We find there an international diary of French Speaking events on water and current issues related to new technologies, integrated water resources management and the 6<sup>th</sup> World Water Forum in Marseilles, among others.

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**Children at a public standpipe Water Initiative - Carice - Haiti - ©Nicolas Biron**



## Sixth session of the Parties to the UNECE Water Convention: a key event towards the globalization of the Convention

The sixth session of the Meeting of the Parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), organized by the **United Nations Economic Commission for Europe (UNECE)** in Rome, from 28 to 30 November 2012, at the invitation of the Italian Government, was a key event in the evolution of the Water Convention into a global multilateral legal framework for transboundary water cooperation worldwide.

### The Water Convention: Driving the improvement of transboundary water cooperation

The status of transboundary water resources in the **UNECE** region has considerably progressed in the past decades, as shown in the Second Assessment of Transboundary Rivers, Lakes and Groundwaters.

However, transboundary water management still faces several challenges related to the increasing imbalance between water demand and availability, the deterioration of water quality and ecosystems and the impacts of climate change, as well as the lack of coherence between policies of different sectors competing for water use.

The large variety of activities carried out under the Convention over the past 3 years was discussed, including National Policy Dialogues under the European Union Water Initiative.

### A unique supporting mechanism

The Meeting of the Parties adopted a decision, establishing a unique mechanism enabling case-tailored assistance to prevent water-related disputes and to support countries in their efforts to implement the Convention.



### New activities to address new challenges

The work program for 2013-2015 aims to assist countries in managing transboundary waters sustainably, considering the evolving cooperation needs. It includes new areas of work, for example on the water-food-energy-ecosystems nexus, on the benefits of cooperation, as well as activities related to the opening of the Convention outside the **UNECE** region, on synergies with the 1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses and

a stronger cooperation with the Global Environment Facility.

INBO will be an important partner for many activities.

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### More information about the meeting:

[www.unece.org/env/water/mop6.html](http://www.unece.org/env/water/mop6.html)

## A platform on climate change adaptation in transboundary basins

Following the adoption of the Guidance on Water and Adaptation to Climate Change in November 2009, **Parties to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes** decided to foster the implementation of a program of pilot projects and a platform for the exchange of experience to support countries in their efforts to develop adaptation strategies by disseminating positive examples showing benefits of and mechanisms for transboundary cooperation.

The program includes pilot projects in Eastern Europe, Caucasus, Central Asia and South-Eastern Europe, which are directly supported by the **UNECE** Secretariat in cooperation with partner organizations under the Environment and Security Initiative (ENVSEC)- such as the projects on the Chu Talas, Dniester, Neman and Sava - as well as other ongoing projects on the Rhine, Danube, Meuse and Amur/ Argun.

The third workshop on water and adaptation to climate change in transboundary basins: **"Making adaptation work"**, which took place in Geneva on 25-26 April 2012, was the latest in a series of workshops organized within this framework.

The global workshop concluded that:

- **more severe water scarcity situations are expected**, even in regions previously considered as water-abundant.
- **vulnerability should be seen as an opportunity towards better organizing water management.**

- **ecosystem-based adaptation often has indirect benefits**, such as improving the livelihoods of people, and is therefore relatively cheap and cost-effective.

A study was presented in which **it was estimated that the benefits of adaptation can be 4 times higher than the costs.**

The full conclusions from the workshop are available on the web.

The Water Convention is expected to open up in 2013 for countries outside the UNECE region.

**UNECE and INBO aim to transform the program of pilot projects into a true global platform of basins**

**devoted to sharing experiences**, comparing different methodologies for adapting to climate change and fostering a shared vision between the participating basins, as a follow-up to the commitments made during the sixth World Water Forum.

Several transboundary basins from outside the UNECE region, such as the Mekong, the Senegal or the Congo, as well as national river basins, already expressed interest in joining the network.

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**5<sup>th</sup> European Conference  
on River Restoration  
11<sup>th</sup>-13<sup>th</sup> September 2013, Vienna**

Rivers are at the heart of the European landscape, but many have been damaged in the past. This Conference provides an opportunity to share and learn about the successes of river restoration in Europe.

The Conference will provide:

- Examples of practical measures to restore the natural status and functioning of rivers and how this has improved flood risk management and river ecology;
- Expert presentations and field trips to restoration sites;
- Networking opportunities and the establishment of a platform to meet and share ideas with professionals and practitioners involved in protection and restoration of Europe's rivers.

The Conference will highlight new thinking into achieving goals and will show examples of river restoration, evaluate the implementation of existing policies and the realization of new initiatives.

It aims to support river managers tasked with implementing policy of river restoration on the ground.

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**Water infrastructure  
for water security:  
options and management tools?**



**NEXUS DIALOGUE ON WATER  
INFRASTRUCTURE SOLUTIONS**

Building Partnerships for Innovation in Water,  
Energy and Food Security



The International Union for Conservation of Nature (IUCN) and the International Water Association (IWA) are launching the Nexus Dialogue on Water Infrastructure Solutions.

Recognition of the closely bound interaction between water, energy and food production and use – the nexus - has led to new demands for water infrastructure and innovative technology solutions.

We invite you to join us in building partnerships for action and innovation on water infrastructure solutions.

To find out more and get involved:

[www.waternexussolutions.org](http://www.waternexussolutions.org)

**Claire Warmenbol**

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[www.iucn.org/water](http://www.iucn.org/water)

**INBO Academy**

**E-learning  
on river restoration**

For the second year, **INBO Academy** and **CIREF (Iberian Center for River Restoration)**, in coordination with **ECRR (European Center for River Restoration)**, are joining forces to offer Spanish-speaking managers of Basin Organizations, consultants, technicians and students, e-training on river restoration.

Conducted in Spanish, this training course includes new features:

- River restoration as seen by the media, or how to talk to journalists, communicators and news agencies to enable them to acquire sufficient knowledge to properly inform on the actions on river ecosystems,
- Applications of LiDAR (laser remote sensing) to river restoration.



The training courses, which began in September 2012, will continue until July 2013.

The syllabus is available on the **CIREF website**:

[www.cirefluvial.com/formacion.php](http://www.cirefluvial.com/formacion.php)



**"AQUAMADRE" AQUAMADRE**

**Socioeconomic development  
around rivers**

Considering a river as a socioeconomic force on a territory is the core topic of **"AQUAMADRE"**.

River economics indeed integrates many aspects relating to human activities, products and services provided and requires the participation of all the stakeholders of the area.

Cost/benefit analysis, comparison between offer/demand, identification of financing sources, review of methods and means already used, e.g. payment for environmental services: **"AQUAMADRE"** aims to gather and share the socioeconomic benefits of the river on various scales (local and regional, national and international).

Through the establishment of a network of economic stakeholders and citizens living on large and small rivers worldwide, which are INBO partners, **"AQUAMADRE"** supports knowledge, exchange of experiences and best practices, dialogue and dissemination of practical programs and projects on specific topics shared between people of rivers, by giving voice to the stakeholders who live and operate in the river context.

Firstly, citizen involvement is sought through the organization of major periodic events and cultural exchanges.

**AQUAMADRE**

[www.aquamadre.org](http://www.aquamadre.org)



## Transboundary Waters

### Good practices in transboundary water resources management: publication of four guides based on practical experiences

The French Development Agency (AFD) is supporting a project for the exchange of best practices between Transboundary River Basin Organizations - Niger Basin Authority (NBA), Volta Basin Authority (VBA), Organization for the Development of the Senegal River (OMVS), International Commission of the Congo - Ubangi - Sangha Basin (CICOS), as well as the Water Resources Coordination Center (WRCC) of the Economic Community of West African States (ECOWAS).

IOWater, INBO Secretariat, is facilitating these exchanges in coordination with ANBO.

Transboundary Basin Organizations are the privileged framework for water resources management beyond national

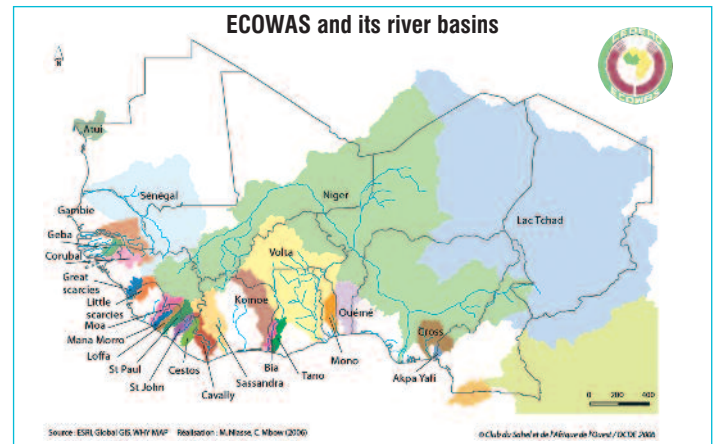
borders. They adopt diverse practices according to the context of their respective river basins.

Thus, each organization develops experience, special knowledge in specific fields.

OMVS for instance has a significant expertise in managing infrastructures shared between Member Countries, while CICOS is a reference in terms of promoting waterways navigation.

Therefore, this should lead to operational improvement of the activities of relevant institutions, through the sharing of knowledge and expertise.

Using these experiences, **four Good Practice Guides have been produced** on the topics of governance, opti-



mization of monitoring, strategic planning and search for autonomous and sustainable financing.

An electronic forum was also organized on monitoring.

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## Volta Basin Authority (VBA)

### Capacity Building for implementing its 2010-2014 Strategic Plan's priority actions

This VBA capacity building project started in January 2012 for a period of 40 months and received funding from the European Union (ACP-EU Water Facility), the Seine-Normandy Water Agency (AESN) and the French Development Agency (AFD).

The International Network of Basin Organizations (INBO) is supporting the Authority for the overall implementation of the project, which aims to:

- **Develop the ability of the Stakeholders Forum**, advisory body of the Volta Basin Authority (VBA), in basin development; this Forum is composed of about thirty members representing the different categories of water users, civil society and decentralized local authorities of each national portion of the basin as well as representatives of National Focal

Points, governmental bodies of the six VBA Member States sharing the basin;

- **Develop the ability of the Experts Committee**, VBA executive body consisting of at least two representatives of the six Member States of the Authority, including one belonging to the National Focal Point;
- **Build the capacity of the Executive Board**, VBA first executive body established in September 2006.

The activities carried out in 2012 enabled to support the organization and to implement: (i) training workshops during the meeting of the **Stakeholder Forum**, which was held from 18 to 19 January 2012 in Ouagadougou; (ii) the 6<sup>th</sup> meeting of the **Experts Committee** held from 9 to 11 May 2012; (iii) a training seminar in France for **5 representatives of the Stake-**

**holders Forum and the Executive Board** on 26 and 27 June 2012, followed by their attending a statutory meeting of the Seine-Normandy Basin Committee on 28 June 2012 in Paris.

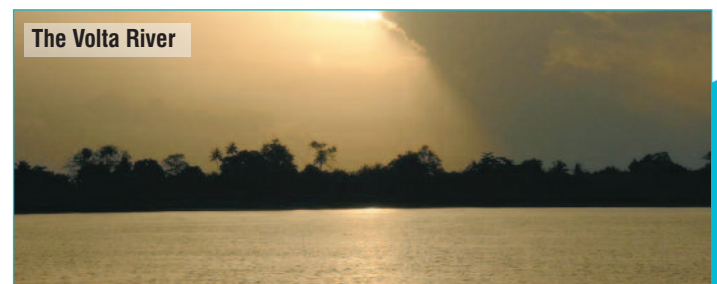
Meanwhile, exchanges with the Volta Basin Executive Board helped build its abilities by developing a monitoring tool for the implementation of the Strategic Plan, as well as discussions on the methods for developing a **Water Charter and the Basin's Master Plan**, which are two major pillars of future actions of the VBA Member States.

Activities will continue in 2013 along these lines with the involvement of experts from other French institutions, the Adour-Garonne Water Agency in particular.

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## Organization for the Development of the Senegal River (OMVS)

### "SDAGE" implementation

The Bakoye, a tributary of the Senegal River



The Master Plan for the Development and Management of the Senegal River (SDAGE) is establishing a comprehensive vision of the development of the Senegal River Basin and allows conducting multi-sectoral policies in a balanced and equitable way among the States.

The Organization for the Development of the Senegal River (OMVS) wishes to boost the "SDAGE" implementation, with the support of the French Development Agency (AFD) and the Canal de Provence Company (SCP).

The approach used is to:

- Mobilize local stakeholders by raising their awareness on the challenges of implementing the "SDAGE" through a communication brochure;
- Draw a table to monitor developments and projects in the basin, with a matrix of indicators, and to analyze their consistency with the strategic orientations of the "SDAGE";

- Foster the drafting of Water Development and Management Plans (SAGE) as local versions of the "SDAGE", by studying the feasibility and relevance of their implementation in three sub-sectors that are: the areas of influence of the great Diama and Manantali dams, as well as the headwaters of the river in the Fouta Djallon.

Meanwhile, the OMVS Experts will be trained on decision-making supporting tools, including the "SDAGE" hydrological model and economic model, allowing a technical and economic assessment of future development projects

This approach will ultimately allow the different economic sectors of the Basin to appropriate the Guidelines of the "SDAGE" and at OMVS to monitor the status of water resources and the pace of implementation of structuring infrastructure in the basin.

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### Establishment of "SOGENAV"

Donors' Round Table - SITRAM-OMVS



The Organization for the Development of the Senegal River (OMVS) is regrouping four Member States riparian of the Senegal River: Guinea, Mali, Mauritania and Senegal.

As a Development Agency, OMVS's long-term objective is especially to develop the river for permanent navigation between St. Louis at the mouth of the river and Ambidédi, located in the upper basin in Mali.

To achieve this development goal, an agreement was signed by the Member States on the establishment of a new OMVS agency, the Company for Management and Operation of Navigation on the Senegal River (SOGENAV), with the mission to "manage and administrate shipping and transport activities on the Senegal River and operate, maintain and renew the structures entrusted to it".

"SOGENAV" is an interstate Company between Mali, Mauritania and Senegal. It has developed legal instruments governing inland waterways between Member States namely the International Code of Navigation and Transport on the Senegal River and its twelve (12) Implementing Regulations.

These legal instruments have been widely publicized in the Member States (Public Administration, Local Governments, Media, Water Users, and Partners).

A wide dissemination will also be made to boatmen along the Senegal River.

The development of the river and port calls for navigation will be financed by IDB in a comprehensive program called "SITRAM" (Integrated Multimodal Transport System of the Senegal River), whose first stage goes from 2012 to 2018.

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The Senegal River in Mali



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## CICOS

### Hydrological monitoring and "SDAGE" in the Congo River Basin

The project to support the **International Commission of the Congo-Ubangi-Sangha Basin (CICOS)** started in early 2012 with funding from the **Water Facility of the European Union**.

The International Office for Water, INBO Secretariat, is coordinating the capacity building project focusing on hydrological monitoring on the one hand (**Congo-HYCOS project**) and, on the other, on transboundary planning for supporting the **drafting of the Master Plan for Water Development and Management (SDAGE) of the Congo River Basin**.

**CICOS** and the hydrological services of its four Member States (Hydrological Research Center in Cameroon, National Meteorological Directorate in the Central African Republic, Research Group in Natural Sciences in Congo and the Waterways Board in the Democratic Republic of Congo) thus benefited from three training courses organized in 2012 in the basin countries. A kick-off seminar for the **Congo-HYCOS** project was organized in Brazzaville in November 2012 with the collaboration of the **World Meteorological Organization** and support from the **French Global Environment Facility (FFEM)**.



First workshop of the project in Kinshasa

In 2013 to complement the training courses on operational hydrology, the Rhine-Meuse Water Agency, Solidarity Water Europe (SEE) and "Eau Vive" will intervene to support **CICOS** in developing its "SDAGE".

Aspects related to public participation will be especially developed, based on the experiments already completed in the Niger or Senegal Basins.

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## Burkina Faso



### Nakanbé River Basin



The project kick-off seminar in Ziniaré

#### Support from the Loire-Brittany Water Agency to the Nakanbé Water Agency (NWA)

The Cooperation Agreement between the two Agencies was signed in 2010 for developing joint actions in Integrated Water Resources Management and decentralized cooperation under a 2012-2013 Action Program developed in late 2011.

The project focuses on three essential pillars of IWRM on the Nakanbé basin scale:

- **Consolidating governance and planning of water resources management in the basin;**
- **Improving water data management at the basin and national levels;**

- **Studying sustainable financing mechanisms through the application of the user-pays and polluter-pays principles.**

The various activities undertaken in 2012 allowed:

- Participation of the NWA in the 6<sup>th</sup> World Water Forum in Marseille;
- A Kick-off Seminar and focus on the Nakanbé Master Plan for Water Development and Management;
- Participation in a meeting of NWA partners;
- Training on data management;
- Participation in the Forum of Local Water Committees of the NWA.

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## Lake Chad Basin Commission

### Lake Chad conservation

The **French Global Environment Facility (FFEM)** is funding the project "Preservation of Lake Chad: a contribution to the development strategy for the lake". The recipient is the **Lake Chad Basin Commission (LCBC)**, which gathers six countries: Cameroon, Central African Republic, Libya, Niger, Nigeria and Chad.

The project aims to develop operational proposals respecting the conservation of ecosystems and joint water resources management. It has four components:

- 1 Summary of knowledge and definition of management constraints and monitoring indicators;
- 2 Reliability / complementing of the existing model;
- 3 Support for the entry into force of the "Water Charter" and strengthening of relationships with the other Basin Organizations;
- 4 Assistance to Project Management.

Other projects underway at LCBC, the implementation of which will be coordinated with the FFEM project, are funded by the Global Environment Facility (GEF), the European Union and the African Water Facility.

This project is supplementing existing projects in the transboundary basins of the Niger, Senegal, Congo or Volta rivers and allows exchanging experiences between the Basin Organizations of sub-Saharan rivers for better management of Lake Chad Basin resources.

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### The necessary sustainability of the hydrometric monitoring system



Flooding on the campus of Niamey University

In August 2012, the Middle Niger experienced major floods due to several rainstorms which have occurred in the region, especially in the basin of the Burkina Faso tributaries since the end of July.

On 21 August 2012, the flood peak reached 617 cm at the Niamey hydrometric station, for a flow rate of 2,473 m<sup>3</sup>/s which led to a return period of about 125 years.



Collapse of many houses in the neighborhoods

The Niger River had previously a period of moderated high waters, which led riverside residents to forget about the magnitude of flooding resulting from its overflows.

Thus, human settlements located in flood prone areas are much more valuable than in the past and indeed their flooding generates much greater damage that can amount to several million Euros.

According to forecasts provided by climate models, changes in rainfall regimes both in intensity and duration could lead to an increased frequency of flash floods.

**It is therefore likely that events similar to those which occurred in August 2012, are multiplied in the future.**

Thanks to the AFD-financed "IWRM 2" project in particular, the Niger Basin Authority has the proper expertise and equipment to monitor the river and forecast flows at different points in its network.

Financial resources to ensure the maintenance of equipment and close monitoring of flows are unfortunately lacking to respond appropriately and timely to the expectations of the basin people in case of exceptional events.

**The feedback from these events encouraged to be more vigilant and should draw the attention of public Authorities and donors on the importance of the sustainability of the hydrometric monitoring system.**

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## Mono-Ahémé-Couffo Basin

### Determination of the sediment flow

The catchment area of the Mono-Ahémé-Couffo complex located in the Gulf of Guinea is shared between Benin and Togo.

A study aims to characterize the spatio-temporal variations of sediment fluxes in the lower valley by using data on suspended solids, sediment discharges, stormwater, flow rate and on the dynamics of land use to better

assess the impact of the vegetation cover degradation in the flow of terrigenous sediments.

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Lake Ahémé

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**1 Million visitors in 2012**

## Ethiopia - Blue Nile



Lake Tana in Ethiopia

### The Tana-Beles Basin Information System

With financial support from the World Bank, the Ministry of Water Resources and Energy and Abbay Basin Authority (ABA) are developing the Basin Information System for the Tana-Beles, tributaries of the Blue Nile, with technical help from the BRLi engineering company.

Since the early 2000s, the Ethiopian Government made substantial investment to develop water resources in the Blue Nile Basin, and more specifically in the high-growth-potential sub-basins of Lake Tana and Beles River.

Simultaneous development of hydro-power dams and irrigation schemes generates increased water demands that need to be properly managed to remain compatible with the other water uses around Lake Tana (navigation, low-water agriculture, etc).

This investment strategy was thus accompanied by the development of an institutional and legal framework promoting the integrated water resources management principles and providing for the establishment of the Abbay Basin Authority (ABA), Blue Nile.

Intending to address the gap between increasing water demand and the lack of adequate information about water resources in those sub-basins, ABA has initiated the development of a Basin Water Information System, to provide a sound base of knowledge to support decision-making and joint use of water resources.

The system is based on an innovative network of hydrological, meteorological and piezometric monitoring stations and environmental indicators fairly distributed all over Tana and Beles sub-basins.

Water levels in rivers, lakes and groundwater bodies as well as rainfalls will be automatically measured and transferred in real time to a centralized database.

In addition water quality parameters and environmental indicators will be manually measured at each and every stations of the network.

Once checked and validated, the data will be analyzed by integrated hydrological modeling tools - Hydrological Design Aids - in order to define the quantitative and qualitative features of water resources.

This information will feed decision-making supporting tools:

- A water allocation model, based on the Nile DSS (developed by the Nile Basin Initiative -NBI), aiming at supporting a coordinated and optimized management of existing and future water uses in both sub-basins;
- A flood early warning system to prevent damages for local populations.

Data will be made accessible for users through a web portal. Once operational, the system is intended to be extended to the whole Ethiopian Blue Nile Basin.

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## Free speech

### The Nile Water policy: From conflict to cooperation?

Water could become a source of conflict in the twenty-first century.

The current population burst leads in fact to increased competition for the resource whose availability is already limited locally and, moreover, made uncertain by climate change.

Some experts agree that in this case, the Nile is clearly to become the most likely epicenter of future "water wars".

Its particular configuration is explosive: the State of Egypt located downstream is both the riparian country most vulnerable regarding water and most powerful from a military viewpoint. It might therefore opt for confrontation against the upstream States which plan to expand their use of the river.

**The study of regional water policy yet reveals that instead there is a recent change from conflict to cooperation.**

It seems that it could get oriented towards integrated management of the resource thanks to other factors: development of international law, changes in power relationships and support of stakeholders external to the basin.

These levers could be usefully mobilized for solving water conflicts.

The integrated approach involves sensitive issues of national sovereignty (food security, national economic policies depending on regional planning), but it actually allows a more efficient management of resources.

All these issues are dealt with in a book whose author Edouard Boinet holds a Master Degree in Environmental Law and a Master in International Relations.

He worked for the United Nations Environment Program, at the French Institute of International Relations, then at the UNESCO's Division of Water Sciences (From Potential Conflict to Cooperation Potential - PCCP program).

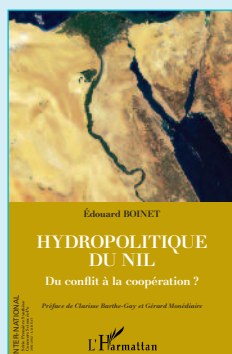
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# Indian Ocean

## Reunion Island

### "Water Days" on the Reunion Island

The Reunion General Council and Water Board organized on 27 September 2012 the 4<sup>th</sup> "Water Days", which included workshops for each micro-region dedicated to finding practical solutions to ensure water supply for all uses.

Many speeches in plenary session allowed reminding the institutional and regulatory context in which water stakeholders work and bringing out solutions to ensure a continuous supply of water for all uses (domestic, industrial and agricultural) and insist on the "challenges of integrated water resources management on the Reunion Island".

The problems and challenges of each micro-region of the island were discussed and possible courses of action, both technical (e.g. improvement of interconnections) and institutional, were identified during workshops.

These thoughts will also feed two major planning documents: **the Departmental Plan for Water and Hydraulic Facilities and the Departmental Drinking Water Supply Plan.**

The day ended with reports from various workshops and with speeches of experts, who underlined the quality of the "Water Days", due to the active participation of stakeholders.



There is a genuine "water culture" on the Reunion Island.

A large variability of hazards, increased by the impact of climate change, leads to a need for quantitative and qualitative regulation tools, for anticipating risks and managing water demand and supply.

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## 9<sup>th</sup> INBO World General Assembly Fortaleza - Brazil - 12 - 16 August 2013

### "For better river basin management over the World"

- |   |       |  |
|---|-------|--|
| ➤ <b>Tuesday 13 August 2013</b>   | 20:00 | <b>OFFICIAL OPENING CEREMONY</b>   |
| ➤ <b>Wednesday 14 August 2013</b>   |       | <b>FIRST OFFICIAL DAY</b>  |
|   | 09:30 | <b>Presentation of water issues and institutions in Brazil</b>   |
|   | 11:00 | <b>First statutory session of INBO General Assembly</b>  |
|  | 14:30 | <b>First topical round table:</b> Institutional frameworks for action of the Basin Organizations.  |
|  | 16:45 | <b>Second topical round table:</b> Adaptation to the effects of climate change and prevention of extreme phenomena of floods and droughts. |
|   | 20:30 | <b>Official dinner</b>   |
| ➤ <b>Thursday 15 August 2013</b>  |       | <b>SECOND OFFICIAL DAY</b>   |
|   | 08:45 | <b>Third topical round table:</b> Participation of local authorities, water users and the public, role of the basin committees.            |
|   | 11:00 | <b>Fourth topical round table:</b> Management of transboundary rivers, lakes and aquifers.   |
|  | 14:30 | <b>Fifth topical round table:</b> Financing of water management and of basin organizations.  |
|  | 16:30 | <b>Forum of International Cooperation Organizations</b>  |
|   | 17:30 | <b>Second statutory session of INBO General Assembly</b>   |
|   |       | ● <b>Fortaleza Declaration</b> ● <b>Final resolutions</b>  |
|   | 18:30 | <b>Closing of the General Assembly</b>   |
|   | 20:30 | <b>Evening of the Senegal River</b>  |
| ➤ <b>Friday 16 August 2013</b>  |       | <b>THIRD OFFICIAL DAY</b>  |
|   | 07:00 | <b>Technical Visit</b>   |

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# North America

## Canada - Quebec



### 1<sup>st</sup> Water Conference

#### Provincial challenges and international exchanges



On 23, 24 and 25 May 2012, the **Regrouping of the River Basin Organizations of Quebec (ROBVQ)** and its partners organized the first Water Conference. Some 160 representatives from River Basin Organizations (RBOs) and their partners attended the event addressing current issues related to water in Quebec and Integrated Water Resources Management (IWRM) worldwide.

#### International exchanges

The first day of the Water Conference was organized in collaboration with the **North American Network of Basin Organizations (NANBO)** and aimed to initiate international exchanges on water management. A first block of the day dealt with the topic "integrated management of the Great Lakes and St. Lawrence Basin", while the second part of the day explored different approaches to IWRM worldwide.

#### Signing of the World Pact for better basin management

About twenty River Basin Organizations of Quebec, Ontario, the United States and Mexico took advantage of this event to add themselves to the list of the seven Quebec organizations which had already **signed the World Pact for better basin management** during the World Water Forum in Marseilles in March 2012. This signing ceremony was attended by Mr. Jean-François Donzier, INBO Permanent Technical Secretary and Mr. Pierre Arcand, then Minister of Sustainable Development, Environment and Parks of Quebec.

#### Provincial challenges

The other two days of the Water Conference addressed major current water management challenges in Quebec.

Collaboration with "Nature Quebec" allowed dealing with water challenges in the Northern Territory, including hydropower development, the establishment of protected areas, ecological land planning and protection of wetlands.

The issues of oil and gas exploration and exploitation were discussed between representatives of the Quebec Government, industry and community groups.

The role of young people in water management and the tools available to mobilize them were discussed, together with the Dialogue Panel of the Regional Youth Forums of Quebec.

In addition, the topic of public health, and more specifically the problems of drinking water supply, cyanobacteria proliferation and contamination of recreational waters, were discussed, with the collaboration of the National Institute for Public Health of Quebec.

The issue of adaptation to climate change, particularly in terms of resilience, was discussed with the University-Community Research Alliance on the challenge of coastal communities.

Finally, the principles of sustainable forest and ecosystem development were dealt with in collaboration with the Hydro-Quebec Institute for Environment, Development and Society.

The **"RBOs' Meeting"** was made possible thanks to support from the Ministry of Sustainable Development, Environment and Parks (MDDEP), Desjardins, Bionest and the Quebec Metropolitan Community.

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# North America

## Canada - Quebec



### 7<sup>th</sup> Champlain-Montaigne Meetings

#### Crossed and multidisciplinary perspectives between Quebec and Bordeaux regions



EAU, VILLES ET TERRITOIRES :  
REGARDS CROISÉS ET MULTIDISCIPLINAIRES  
SUR QUÉBEC, BORDEAUX ET LEURS RÉGIONS

27-28 septembre 2012, Québec

#### Birth of a scientific network on water

Laval University signed on 28 September an agreement with the University of Bordeaux on the development of the Aquitaine-Quebec Scientific Network for Water (AQeau Network).

The "AQeau" Network will foster the implementation of research and education, including student mobility and transfer of knowledge. Its activities will focus on the management of inland waters through topics such as adaptation to climate change, water collection, treatment and distribution, resource protection and conservation, land use planning.

Although water management remains an international challenge, every city, region, country has its own problems due to its economy, climate, geographic location, etc. The Network will therefore allow pooling these complementary specialties, joining forces to share expertise.

This agreement was signed during the **7<sup>th</sup> Champlain-Montaigne Meetings** held on 27 and 28 September at the Alphonse-Desjardins Pavilion, whose topic was "water, cities and territories - crossed and multidisciplinary perspectives in Quebec, Bordeaux and their regions". Established within the twinning signed in 1962 between the cities of Quebec and Bordeaux, the Champlain-Montaigne Meetings are an international event, to which are associated the Laval University, University of Bordeaux, Quebec City, the City of Bordeaux, the Regional Conference of the National Capital's elected representatives and the Regional Conference of Aquitaine.

The idea of creating a scientific collaboration network was launched under the last Strategic Research Plan (2009-2012) by the Hydro-Quebec Institute for the Environment, Development and Society (EDS Institute) and Bordeaux Polytechnic Institute (IPB).

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[www.rencontreschamplainmontaigne.ca](http://www.rencontreschamplainmontaigne.ca)



### Revegetation on the Manicouagan river banks

In 2011, the **Manicouagan River Basin Agency (OBVM)** revegetated over 1,300 square meters of shoreline on the Manicouagan MRC territory.

This project was made possible thanks to the financial support of the Wildlife Foundation of Quebec (FFQ), Ministry of Natural Resources and Wildlife (MRNF), Manicouagan ID and of the Alcoa Foundation and Global ReLeaf under the program of 10 million Alcoa trees.

The selected lands, in addition to being consistent with the Regulation on the disposal and treatment of wastewater from isolated houses, were chosen according to their priority to be vegetated and the willingness of the riverside residents to comply with the basic principles of a model shoreline. Management plans were developed by the "OBVM" and approved by the residents. Also, some of the native plants, which allowed revegetation, were produced (cuttings) or collected (transplants) in the Comeau-Bay sector.

To share and disseminate the experience and knowledge gained during this project, the "OBVM" produced "a kit for education and training on the river bank" for riverside residents and lake associations, planners and municipal inspectors of the Manicouagan MRC municipalities.

This kit includes four volumes:

- Vol.1: Definition, concept and technical aspects,
- Vol.2: Suggestions of good practices
- Vol.3: Regulation,
- Vol.4: Shrubs to revegetate the river bank.

Booklets on invasive plants and useful leaflets complement this kit.

It is possible to obtain an electronic copy on "OBVM" Website.

For 2013 and 2014, the "OBVM" is planning other projects of riparian revegetation on recreational lakes.

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River bank at work + kit





### International Secretariat for Water

#### Great Lakes & St. Lawrence River and Gulf Symphony: Draft Action Plan 2013-2015



The St. Lawrence River



#### The Great Lakes & St. Lawrence River and Gulf Basin

The Great Lakes & St. Lawrence and Gulf Basin is containing 20% of the planet's freshwater reserves, of which only 1% is renewed every year.

Today, over 50 million people live in the basin who are primarily concentrated on the shores, although the hydrographical territory extends hundreds of kilometres away from them.

Spread over 3000 kilometres, it crosses 6 Canadian Provinces and 10 American States. This basin is vital for transport, commerce and communications. It is a hub for the North American economy.

#### The Great Lakes, St. Lawrence River and Gulf Symphony: the context

The 1<sup>st</sup> "Great Lakes & St. Lawrence River and Gulf Symphony" is an attempt to make everyone realize that we all live on the same territory: the basin.

On June 26 and 27, 2012, the International Secretariat for Water (ISW) and its partners gathered in Quebec about 40 participants from all over the basin.

This work seminar devised common guidelines, identified conditions for improved citizen participation within integrated water resource management, and created the **Citizen Engagement "From Solitudes to Rallying."**

On June 28, 2012, the ISW and the North America Network of Basin Organizations (NANBO) were invited to present their preliminary findings to the Mayors of the Great Lakes and St. Lawrence Cities Initiative, at their Annual Meeting.

The adopted recommendations are as follows:

- **Creating a shared and concerted vision**, held by all parties involved, by sharing knowledge and existing planning, management and awareness raising tools;
- **Strengthening the feeling of belonging within the basin**, regardless of political and administrative boundaries;
- **Sustainable water sharing**, by taking into account the ecosystems' vulnerability and human needs;

- **Land use planning and economic development** by taking into account their impact on the basin;
- **Developing the citizens' notion of "Sentinels for Water".**

#### The 2013-2015 Action Plan

An action plan for 2013-2015 was prepared to better mobilize citizens, experts, and elected representatives throughout the entire basin.

The five projects of the 2013-2015 action plan include:

- ① **The Basin's Web Portal**  
This tool's main purpose will be to provide information pertaining to the basin.
- ② **A "Water, at the heart of land-use planning" Photo Contest**

A traveling photo exhibition will be inaugurated during the Annual Meeting of the Great Lakes and St. Lawrence Cities Initiative, to be held in Marquette, Michigan, in June 2013.

#### ③ A Youth Parliament

The Youth Parliament will allow the creation of a network of young leaders eager to commit themselves for water.

#### ④ "The Great Lakes Century" Film

"The Great Lakes Century" film, produced by SOM (Skidmore, Owings and Merrill) presents a comprehensive look at the Great Lakes' ecosystem and the strategic principles needed for the two nations to initiate a conversation about the ecosystem as a whole.

The goal is to widen their scope to include the entire basin, with the St. Lawrence River and Gulf.

#### ⑤ An Hymn for the basin

The project's partners will work with music schools for the composition of the Great Lakes & St. Lawrence River and Gulf Hymn.

#### Marianne Strauss

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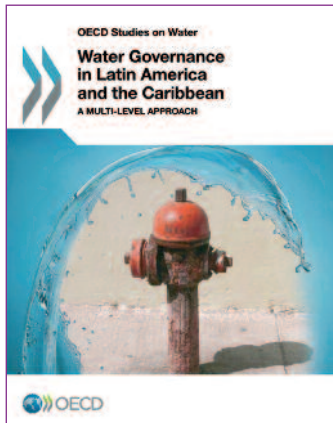


# Latin America and the Caribbean

OECD



## River Basin Governance in Latin America and the Caribbean (LAC)



In the report "Water Governance in Latin America and the Caribbean: a Multi-level Approach", the **Organisation for Economic Co-operation and Development (OECD)** calls for more integrated water policies through the adoption of context-specific and flexible multi-level governance mechanisms. The report reviews, amongst others, river basin governance in 13 countries of the region: Argentina, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, and Peru.

### Key findings on River Basin Governance

**Half of the surveyed LAC countries have set up river basin organizations (RBOs)**, whether long-established and integrated into national water resources strategies (Brazil, Argentina, Mexico), or more recent and still on a pilot scale (Peru); In all cases, governance "gaps" persist:

- **Administrative gap:** RBOs play an important role to bridge the mismatch between hydrological and administrative boundaries, but few of them are responsible for proper planning on a river basin scale;
- **Policy gap:** RBOs' tasks vary across the region. Most have coordination, planning, data gathering, monitoring and pollution prevention tasks, but none have regulatory powers to address cross-sectoral concerns (agriculture, energy, environment, etc.);
- **Funding gap:** RBOs' still largely rely on (decreasing) central government budget, though autonomous budget and grants from sub-national governments hold an important share;
- **Accountability gap:** RBOs' constituencies are mainly central government ministries and public agencies, though local/regional authorities and the civil society are gradually involved;
- **Objective gap:** RBOs still struggle to involve stakeholders such as agricultural users, and are often driven by top-down approaches which make it hard to align objectives;
- **Capacity gap:** RBOs' experience and capabilities vary across the region (knowledge, expertise, time, staff, facilities), which hinders their duties at basin and sub-basin levels;

- **Information gap:** scattered and fragmented water data and information hinder integrated water policies in LAC countries.

OECD is undertaking "water governance policy dialogues" with national and sub-national governments (including at river basin scale) to evaluate and compare the effectiveness of governance arrangements in place, and provide evidence-based policy recommendations.

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## "SERELAREFA"

### Establishment of a River Restoration Network in Latin America

In Latin America river restoration is a relatively undeveloped concept despite the quick and far reaching gains that can be achieved from regenerating river ecosystems in these regions.

River restoration has a key role to play in the future of Latin American countries, where the pace of economic

growth is outstripping that of Europe, and where some mistakes that Europe has made in the process of development, can still be avoided.

In order to fill this gap, a 3-year EU co-funded IRSES Marie-Curie project was launched in 2010.

"SERELAREFA" (**Semillas RED Latina Recuperación Ecosistemas Fluviales y Acuáticos**) is being coordinated by CIRF (Italy) in partnership with the Polytechnic University of Madrid, Spain, the University of Guadalajara, Mexico, the University of Concepción and the Ministry of Public Works (DOH), Chile, and the Federal University of Rio de Janeiro, Brazil.

It was designed to share river restoration knowledge and to encourage networking between practitioners, research institutions and public management bodies in Latin America.

For three years experts have visited problem sites for getting a closer view of new policy trends and experiences. Relevant case studies were identified.

The EU partners are also gaining important knowledge and tools from "SERELAREFA".

One of these is a quasi-3D, cellular simulation model of urban flooding - designed to re-think urban setting in order to better bear the burden of harsher floods events; another is a participatory organization for river basin management.

A case study has been also carried out in Italy to take advantage of these experiences.

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The Ibañez River, after a recent volcanic eruption in Chile

## Argentina



### Free speech

#### The Tunuyán River Basin (Mendoza, Argentina): Surface Water Salinity Increase

The "El Carrizal" dam divides the Tunuyán River Basin into:

- the Upper Basin, in which 54,000 hectares are irrigated and of great economic importance derived from wine exports in constant expansion,
- the Lower Basin, the Eastern Oasis, with 80,000 hectares under traditional irrigation and major agribusiness and urban development.

Expansion of the irrigated area in the upper sub-basin affected the lower one.

The increase in salinity could worsen with extractions for non-agricultural uses and/or increasing pollutant discharges.

Possible solutions to limit these problems - within the framework of the current law - should come from effective integrated basin management (single administrative unit, participation of all users, and incentive water-saving policies), the use of quality indicators (based on continuous monitoring of different parameter levels and comparing them against the standards required by law) and finally, the organization of awareness campaigns addressed to all social stakeholders involved and based on strict law enforcement (water police).

All of the above will help reduce the negative impacts of anthropogenic water pollution and will contribute to the sustainability of the provincial production model.

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## Colombia



### A new decree on River Basin Management



Mapping of macro-river basins in Colombia

River Basin management exercises began in Colombia in the 80s. Unfortunately, the lack of homogeneous governance structures prevented the generalization of these experiments and achieving their long-term sustainability.

According to the reform of the constitution in 1991, the Ministry of the Environment is in charge of **the National Environmental System (SINA)** still in force today.

**The Regional Autonomous Corporations (CARs)** were established.

Nevertheless, the management of natural resources in river basins did not begin until ten years later in 2002, when the Colombian Government published two decrees that govern the development, implementation and monitoring by the CARs of the first **river basin management plans, the "POMCA"s (Planes de Ordenación y Manejo de Cuencas)**.

Although this new planning tool is a real breakthrough, some problems remain, such as the heterogeneity of the "POMCAs", planning inconsistencies between two neighboring "POMCAs" and limited community participation.

In 2007, the supervising Ministry initiated a reform of the "POMCAs".

A consultation of the stakeholders at the national level underlined the need for Macro-basin Management Plans, for structuring River Basin Councils and finally prioritizing planning tools.

The Ministry of the Environment then began to develop **a National Policy on Integrated Water Resources Management**.

Finally, after a 5-year process, a new decree was signed on 2 August 2012, amending the regulations on river basin and water resources management.

In such a context, **the Colombian Ministry of Environment and Sustainable Development (MADS)** wishes to benefit from the 50 years of practical experience of the French and now European system both at the technical and economic levels, through an institutional support project, funded by **the French Adour-Garonne Water Agency**.

The three areas of work of this project are:

- Implementation of the National Policy on Integrated Water Resources Management (IWRM);
- Consolidation of the National Water Information System;
- Prevention of industrial pollution.

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## Chile



### Second International Summit on Water

Chile is encountering serious problems in water resources management: increased water shortages in the North due to climate change, high loss of freshwater to the sea, lack of river basin management and of long-term planning tools for infrastructure development, limitation of rights of use, etc.

Faced with these challenges, **the National Irrigation Commission (CNR) of the Ministry of Agriculture and the Latin American Association for Hydrogeology Development (ALHSUD)**, in collaboration with GWP-Chile, the Center for Research and Water Resources Development (CIDERH), the Coquimbo mining corporation (Corporación Minera de

Coquimbo - CORMINCO), the Association for Irrigation and Drainage (AGRYD) and the Water Center for Agriculture (CAA) organized on 27 October 2012, **the "Second International Summit on Water" (2<sup>nda</sup> cumbre internacional del agua)**, with conferences held simultaneously in five cities of the country and transmitted by videoconference.

IOWater, INBO Secretariat, made an opening speech in Santiago, Chile, on the topic **"How to improve data management to strengthen water resources management"**.

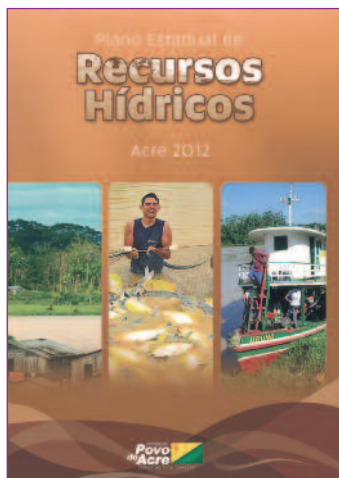


# Latin America

## Brazil



### The "WRP" of the Acre State



The Water Resources Plan of the Acre State (northern Brazil) includes 244 pages and five chapters; it provides guidelines for water use in this State which thus became the first in the Amazon region to institutionalize the management of its water resources.

In each of the six Acre sub-basins, support to municipal management will be implemented with the modernization and development of the hydrometeorological network for monitoring extreme phenomena such as droughts and floods, as well as the establishment of a network for monitoring water quality.

These actions will be complemented by awareness and training on water resources management and the adoption of conservation and restoration programs for rivers and riparian areas.

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### The first River Basin Agency celebrates its 10 years

In Brazil, the laws of 1997 and 2000 introduced new stakeholders for Water Resources Management: **Basin Committees and Agencies**, and, at the federal level, **the National Water Agency (ANA)**.

Established on 20 June 2002, **the Association for Water Management of the Paraíba do Sul Basin (AGEVAP)** is taking care of the Executive Secretariat of the Paraíba do Sul Basin Committee (**CEIVAP**). At the 14<sup>th</sup> Meeting of Brazilian Basin Organizations (ENCOB) in November 2012, AGEVAP presented the results of its 10 years of activity, including:

- The publication in 2005 of a handbook on criteria for awarding subsidies;
- Training activities for water stakeholders;
- The creation of Sub-basin Committees (Médio Paraíba do Sul, Piabanha, Rio Dois Rios, Baixo Paraíba do Sul and Guandu);
- Recognition of public utility in 2009;
- The development of Municipal Sanitation Plans in 2011;
- The construction of many sanitation systems and protection of the resource.

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### A Water Integration Debate at Rio+20

The State of São Paulo was the pioneer with a water resources management policy in 1991, inspired from the French water management model. In the Piracicaba, Capivari and Jundiá River Basins (PCJ Basins), all the instruments set forth in the São Paulo

State and Federal Government laws of 1997 have been applied: Water Resources Management Plan, water bodies classification, Water Information System, concessions for the use of water resources and taxes for the use of water.

The implementation of taxes achieved several positive results, including the reduction by 40% of water abstractions.

The PCJ Basins are responsible for supplying water to 14.5 million inhabitants, including nine million from São Paulo Capital City and the main industrial complexes of Brazil.

As the PCJ Basins Rivers cross more than one State of the Federation, **three basin committees had to be created, operating by integrated means, with joint deliberations and shared actions.**

During low-water periods, supply is provided thanks to efficient water resources management, by reserving back-up volumes in regulating reservoirs (Cantareira System) which also work as a flood mitigation system.

During Rio+20, the UN Conference on Sustainable Development, a special panel named **"International Cooperation as a tool for searching water solutions"** was organized by the PCJ Consortium and was attended by several Brazilian States.

The Secretary of **the International Network of Basin Organizations (INBO)**, Jean-François Donzier, presented the experience and good practices of INBO members.

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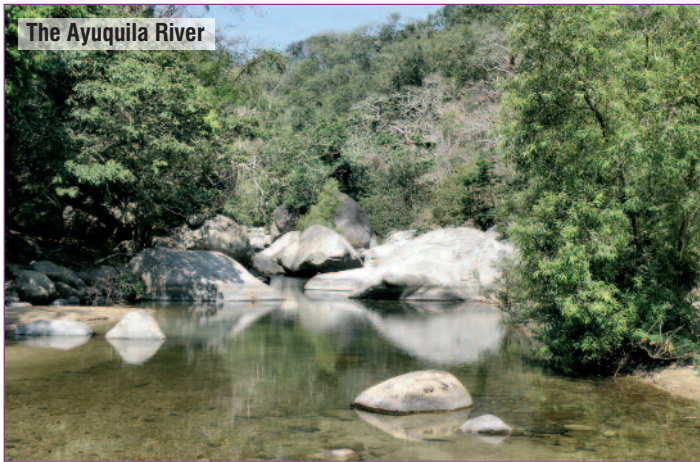


Participants to the panel "International Cooperation as a tool for searching water solutions"

## Mexico



### The Ayuquila-Armería pilot River Basin



The Ayuquila River

The French Adour-Garonne and Seine-Normandy Water Agencies, which have interesting similarities with the Mexican Basin Organizations, started, with the Mexican National Water Commission (CONAGUA), a cooperation project to improve the river

basin management process undertaken in the Country.

These exchanges would allow CONAGUA and Mexican Local Authorities to benefit from advice on the strengthening of IWRM and on improving their wastewater treatment systems.

#### Ayuquila-Armería, a pilot River Basin for cooperation

The Ayuquila Armeria River Basin was chosen because of its size, ideal for experimentation, the importance of the challenges it faces, but also its lead in terms of participation and initiatives for the conservation of the environment.

IOWater, INBO Secretariat, is the operator of this cooperation program working with local structures in order to:

- Contribute to the improvement of federal and state policies, especially regarding participatory approach;
- Ensure sustainable water resources management in the experimental Ayuquila Armeria Basin.

Focus is on participation, planning and management of data and information systems.

**The achievements would then be capitalized at the national level, to be disseminated to other basins of the Country.**

French experts' assignments, specific studies, workshops and field visits in France and Mexico, will allow presenting the French know-how in the basin management sector and studying its adaptability to the local situation.





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## 9<sup>th</sup> INBO World General Assembly Fortaleza - Brazil - 12 - 16 August 2013

### "For better river basin management over the World"

<p>➤ <b>Tuesday 13 August 2013</b></p>	<p>20:00</p>	<p><b>OFFICIAL OPENING CEREMONY</b></p>
<p>➤ <b>Wednesday 14 August 2013</b></p>	<p>09:30</p>	<p><b>FIRST OFFICIAL DAY</b></p>
<p> </p>	<p>11:00</p>	<p><b>Presentation of water issues and institutions in Brazil</b></p>
	<p>14:30</p>	<p><b>First statutory session of INBO General Assembly</b></p>
	<p>16:45</p>	<p><b>First topical round table:</b> Institutional frameworks for action of the Basin Organizations.</p>
	<p>20:30</p>	<p><b>Second topical round table:</b> Adaptation to the effects of climate change and prevention of extreme phenomena of floods and droughts.</p>
<p>➤ <b>Thursday 15 August 2013</b></p>	<p>20:30</p>	<p><b>Official dinner</b></p>
<p>➤ <b>Friday 16 August 2013</b></p>	<p>08:45</p>	<p><b>SECOND OFFICIAL DAY</b></p>
<p> </p>	<p>11:00</p>	<p><b>Third topical round table:</b> Participation of local authorities, water users and the public, role of the basin committees.</p>
	<p>14:30</p>	<p><b>Fourth topical round table:</b> Management of transboundary rivers, lakes and aquifers.</p>
	<p>16:30</p>	<p><b>Fifth topical round table:</b> Financing of water management and of basin organizations.</p>
	<p>17:30</p>	<p><b>Forum of International Cooperation Organizations</b></p>
	<p>18:30</p>	<p><b>Second statutory session of INBO General Assembly</b></p>
	<p>20:30</p>	<p>● <b>Fortaleza Declaration</b> ● <b>Final resolutions</b></p>
	<p>07:00</p>	<p><b>Closing of the General Assembly</b></p>
		<p><b>Evening of the Senegal River</b></p>
		<p><b>THIRD OFFICIAL DAY</b></p>
		<p><b>Technical Visit</b></p>

To participate,  
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# Latin America

## Panama



### Preservation of the Panama Canal Basin



The Panama Canal Basin was divided into eight districts. This organization allowed integrating social, economic and environmental aspects into the environmental strategy, based on better inter-ministerial coordination and stra-

tegic alliances to strengthen relationships and continuity in the community associations and in production activities in this region of the country.

To ensure water quantity and quality, it is necessary to preserve and increase the vegetation cover in the basin. The deforestation rate is an indicator of the man pressure on the renewable natural resources of its forests.

This example of successful management in just 11 years of Panamanian administration has allowed preserving six protected areas which occupy 38.5% of the basin territory (1,309 km<sup>2</sup>).

It was observed that, for the 1985-2008 period, the deforestation rate had decreased and tends towards equilibrium. The natural regeneration projects and reforestation programs implemented by the institutions of the State, the Communities and private firms are indeed higher than the destruction of forests by traditional clearing and burning.

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### Water governance and inter-institutional coordination

**The Inter-institutional Commission of the Panama Canal Basin (CICH)** is responsible for the implementation of the socio-environmental strategy.

A planning process continuously guides conservation and protection initiatives in coordination with all stakeholders involved in the integrated management of the territory.

This process includes the participation of all interested stakeholders in a Mas-

ter Plan with a vision for 25 years, the **Sustainable Development and Integrated Water Resources Management Plan for the Canal Basin (DSGIRH Plan)**, which will facilitate a series of orderly and coordinated actions.

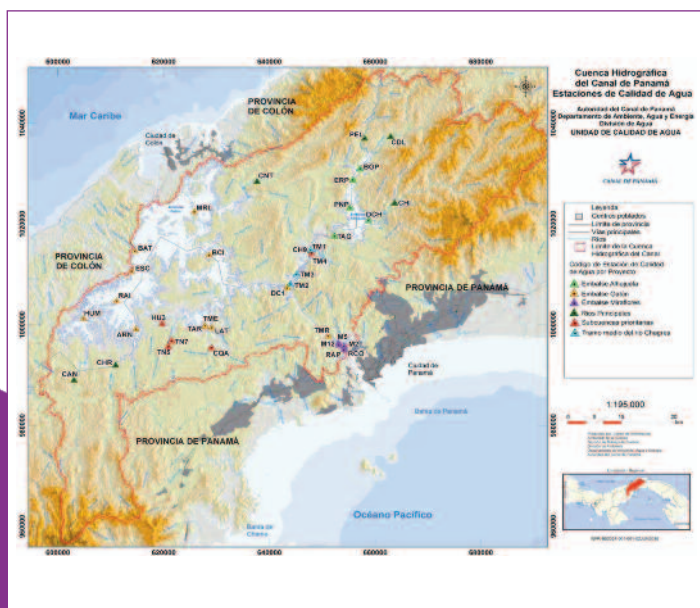
The results of the implementation of this plan have been satisfactory since its formulation in 2007, because in 2011 it had already facilitated the

implementation of projects with the participation of various governmental, non-governmental and community organizations for which the largest investment focused on community infrastructure projects that significantly improve the quality of life of the Basin population.

The goal is to continue strengthening this social participatory community process, by helping to build capacities and improve water governance.

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## Panama



### Canal Basin and education on sustainability

The education of children and youth is the best guarantee for a sustainable future. The Panama Canal allowed 263 teachers and 5,593 students from 110 schools of the basin to participate in environmental education days.

On the other hand, the "Basin Guardians" Program has addressed 106 school centers, 10,000 students, 1,200 teachers and 47 representatives of local committees. In addition, four regional meetings of student leaders were held in which 200 students and 20 teachers participated.

All these activities are training on conservation values and promoting a culture of sustainability: the school being a center of knowledge sharing, generating endogenous dynamics in the Community to which it belongs.

An Adult Education Program is implemented by the Panama Canal Authority, the Ministry of Education (MEDUCA) and the Training Institute for Human Development (INADEH).

The Environmental Conservation and Training for Work Program is carried out in strategic collaboration with the National Institute for Human Development and the Ministry of Education.

It facilitates the insertion of the basin population into the national labor market and develops modules of good environmental practices and community awareness.

It takes place in more than 60 educational and community centers.



For six years, more than 4,721 young people have benefited from it, including 72% of women.

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The Panama Canal

### Economic and Environmental Incentives Program

The Economic and Environmental Incentives Program (PIEA) will allow recovering and preserving 20,000 ha in the Panama Canal Basin over a period of five years, by promoting good and sustainable production practices.

For example, more than 600 farmers have already benefited from this program, increasing their production yield by planning their animal husbandry and agricultural activities.

During three years, the "PIEA" has benefited 2,180 people in 50 communities.

The program also provides the beneficiaries with titles to property and creates the conditions for legal ownership of the land, which improve the well-being of the residents in the area: 1,490 property titles have been issued to date.

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### Sustainable economy and green development

Since its construction, the Panama all water route has contributed to lower fuel use per unit of load carried by ships that use it, thereby reducing CO2 emissions from the global shipping industry. Expanding the Panama Canal will help to reduce more than 160 million additional tons of CO2 during its first 10 years of operation between 2015 and 2025.

The Third Locks Project will allow carrying larger loads using fewer ships, thus reducing fuel consumption and preventing emissions of carbon dioxide (CO2).

The goal is also to carry out compensation activities to balance the emissions of greenhouse gases linked to the functioning of the Canal through the implementation of reforestation and rehabilitation of degraded areas that generate carbon credits, combined with the actions taken to improve the quality of life of communities.

We hope to manage and sell emission reduction certificates (carbon credits) on the secondary market, which would provide additional resources to replicate the model in other areas of the basin.

More than 5% of the world's maritime trade will pass through the new all water route.

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CANAL DE PANAMÁ

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# Latin America

## Peru - Bolivia



### Analysis of the situation of Lake Titicaca Basin



9 March 2013 the "Second International Symposium on Lake Titicaca - a shared responsibility".

This event aimed to bring together all the experts concerned to enrich the scientific and technical debate and propose to government Authorities alternatives for integrated management of water resources shared by the two countries, as well as generate proposals for management tools for sustainable use of Lake Titicaca and its basin, fed by five tributaries: Ramis, Huanacán Coata, Ilave and Suche and the Desaguadero River.

The Symposium took place in Puno, on the shores of Lake Titicaca in Peru, at the National University of Altiplano, and brought together more than three hundred participants.



The organizers aim to institutionalize the Symposium as a Forum for technical and scientific treatment of the problems and potentialities of Lake Titicaca, in order to build environmental responsibility between public and private stakeholders; with a participatory approach.

INBO Secretary, Jean-François Donzier, was invited to make the introductory speech to the conference on the topic of the best experiments of basin management worldwide.

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The Binational Autonomous Authority of the Water System (TDPS – ALT), in coordination with the various institutions involved in the preservation and conservation of the basin in Peru and Bolivia, organized on 7, 8 and

## Peru



### New economic fees for water use?

Peru is a country globally rich with water. Unfortunately, the areas where needs are the most important are the least well endowed in terms of rainfall or groundwater resources.

To cope with this challenge of more effective water management, the National Water Agency (ANA) is

developing an ambitious policy to establish river basin management and a system of economic fees for water use and wastewater discharge.

IOWater and experts from French Water Agencies have intervened in a World Bank-financed project, whose aim is to provide pragmatic elements for

establishing these economic fees: how to calculate them, what economic basis to justify them to future taxpayers, what use of the collected sums?

The Peruvian context is rather enabling: the GDP growth rate reaches 4 to 5% per year with low inflation; mining companies seem willing to make an effort because they are regularly stigmatized by the Medias for their poor environmental practices.

However, the successful implementation of an economic fee system depends on solid arguments for those who will actually pay these fees.

An economic justification is required. It should not be theoretical but based on the acceptability of these taxes as compared to the added value generated by different economic activities and to the households' budgets.

The use of the collected fees is also a fundamental element; their use for financing facilities (wastewater treatment plants, protections of water intakes, etc.) on the basin scale is obviously an argument favoring their acceptance.

French experts have therefore provided very practical support to the development of calculation formulas depending on water uses and wastewater discharges.

Simulations of the amounts that could be collected were carried out as well as the preparation of arguments towards the various economic sectors.

The results of this project were presented to the "ANA" Board of Directors on 19 July 2012.

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Symposium on the Value of Water ANA - November 2012





## UNESCO-IHP - Asia-Pacific Region



### Fourth Regional Consultation of the project "Groundwater Governance: A Global Framework for Action"



The fourth regional consultation workshop  
December. 2012 - China

Groundwater is the only source of water for the daily needs of 2.5 billion people; its governance is still in its infancy: pollution and overexploitation of aquifers are often the result of inefficient management and badly prepared decision making.

The International Hydrological Program of UNESCO (IHP), jointly with the Global Environment Facility (GEF), the United Nations Food and Agriculture Organization (FAO), the International

Association of Hydrogeologists (IAH) and the World Bank launched a new project "Groundwater Governance: a comprehensive framework for local action", in January 2011.

This 3-year initiative is based on an analysis of the scientific literature as well as on a series of regional consultations to establish a comprehensive assessment of groundwater governance.

Based on this assessment, a "Framework for Action" (FA) will propose to the decision-makers a set of effective tools for governance (policies, laws, regulations and customary practices).

**Dedicated to the Asia-Pacific region, the fourth regional consultation workshop was organized from 3 to 5 December 2012 in Shijiazhuang (Hebei Province, China).**

Seventy experts from seventeen countries participated in plenary sessions and thematic working groups to identify the challenges facing the region in terms of groundwater governance.

A regional report will summarize the results of this consultation including six topics: Agriculture and increasing demand for food; Climate change and major natural hazards; Governance of boreholes; Governance and national and regional legal frameworks; Integrated management of groundwater and

surface water; Groundwater governance in the Small Island Developing States (SIDS).

Latin America and the Caribbean (Montevideo, 18-20 April 2012), Sub-Saharan Africa (Nairobi, 29-31 May 2012) and the Arab States region (Amman, 8-10 October 2012) have already organized regional consultations and their reports have been published on the project website

[groundwatergovernance.org](http://groundwatergovernance.org)

The fifth and last workshop for the Pan-European region was held from 18 to 21 March 2013 in The Hague.

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## New Caledonia



### Water Safety Plans

In New Caledonia, except for the capital Nouméa and its suburbs, water supply has often no disinfection treatment, and monitoring of water quality is rare.

The municipalities are legally liable for the quality of the water supplied, while public health is the responsibility of the Government of New Caledonia.

#### Water Safety Plans

**Water Safety Plans (WSP) have been implemented in 13 municipalities since 2008.**

A municipal WSP includes risk assessment from water catchments to consumers.

It is expected that all 33 municipalities will eventually implement their own WSP, with the technical help of the Public Health Department, at a rate of 5 municipalities per year.

The approach for WSP begins with creating a team, which includes elected people from the municipality, representatives of the customary authorities, technicians of the municipality, Department and Provincial Government, and local medical and rural police staffs. The team has a meeting every two weeks on the average.

The results are better knowledge about water resources and health risk factors, the improvement in information and records (plans, maps, etc.), an improved management of the municipal budget, expenditures planning and consumers' awareness.

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Hienghène - New Caledonia





### Hydrological monitoring of the Mekong River Basin: Final evaluation of the Mekong-HYCOS project

The final evaluation of the **Mekong-HYCOS** project, which has been developing since 2006 with support from French Cooperation, was conducted jointly by ISL Engineering and IOWater on request from **the Mekong River Commission (MRC)**.

This project is part of the **WHYCOS** (World Hydrological Cycle Observing System) program, developed by **the World Meteorological Organization (WMO)** in response to the inadequacy or lack of accurate data and information accessible in real time on freshwater resources in many parts of the World.

The main target of Mekong-HYCOS is to ensure the availability of hydrometeorological data on the basin, both at the MRC Secretariat and in the four Member States (Cambodia, Laos, Thailand and Vietnam).

Each country is responsible for the maintenance of its measurement stations with the support of the MRC Secretariat, provides flood forecasts on its territory and shares information under Mekong-HYCOS.

**49 hydrometric stations are now complying with HYCOS standards** and a data management system is operational and accessible through the MRC portal.

However, MRC human resources should be increased to ensure sustainability of the services. The links between national hydrological services and data users can also be improved.

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Hydrometric stations downstream of the Mekong River Basin

[www.mrcmekong.org](http://www.mrcmekong.org)

## Laos



### The Nam Ngum pilot Basin project at midterm

Laos still has a unique biodiversity and abundant water resources of good quality. But the recent economic and industrial development of the country has been accompanied by the emergence of conflicts between the various water users, including hydropower,

mining and agriculture. Environmental and socioeconomic hazards mainly related to the construction of hydropower dams, an important source of growth and foreign exchange for the country, remain difficult to understand by local institutions.

The Lao Government is pursuing a proactive action in this area, as evidenced by the adoption of a national policy for water resources management, the development of pilot River Basin Committees and establishment of **a new Ministry of Water Resources and Environment (MoNRE)** in 2011.

The pilot Nam Ngum River Basin project, launched last year, aims to support the Lao Government in this process.

Seven assignments have already been carried out by experts from **the French Loire-Brittany and Rhine-Meuse Water Agencies** in close relation with **the Secretariat of the Nam**

**Ngum Basin Committee and the Department of Water Resources of MoNRE.**

Efforts are focused on the definition of actions to be implemented, their location and cost estimate and on the study of potential sources of funding.

At the same time, thinking on the functioning of **the Nam Ngum Basin Committee**, created late 2012 by decree of the Prime Minister, was completed.

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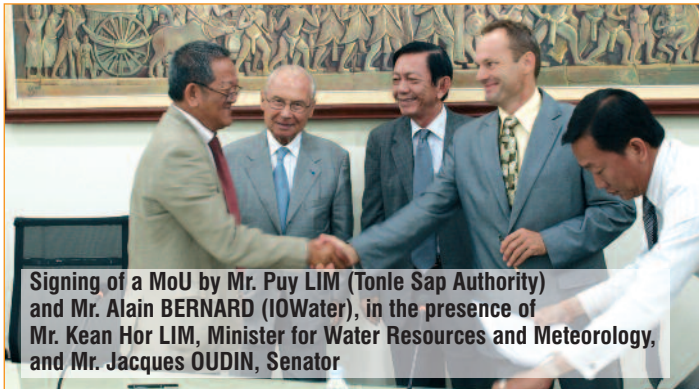


Working groups for the establishment of the program of measures



## Cambodia

### Launching of the Stung Sen pilot Basin Project



Signing of a MoU by Mr. Puy LIM (Tonle Sap Authority) and Mr. Alain BERNARD (IOWater), in the presence of Mr. Kean Hor LIM, Minister for Water Resources and Meteorology, and Mr. Jacques OUDIN, Senator

A pilot project, supported by the French Loire-Brittany, Seine-Normandy and Rhine-Meuse Water Agencies, was launched in 2012 in the Stung Sen River Basin, main tributary of the Tonle Sap Lake in Cambodia, where studies are currently being carried out to build two dams for agriculture and hydropower.

**The Tonle Sap Authority (TSA)**, partner in this project, has the main

task of coordinating the management, conservation and sustainable development of the Tonle Sap Lake Basin, which is a unique water system.

The Tonle Sap is the largest freshwater lake in Asia.

Its hydrology depends on the Mekong: during the rainy season, the river flows into the lake which absorbs 20% of its flow rate, while during the dry season,

the flow reverses and the lake inputs the flow rate of the Mekong. The remaining supply of the lake comes from its catchment area through 11 tributaries, including the Stung Sen.

**In the medium term, the TSA wants to develop a Master Plan for Water Development and Management of the entire Tonle Sap Lake Basin.**

This will be necessary to build a real action plan. But this assumes firstly to gather and prioritize the existing information, establish forums for dialogue at national and provincial level, and to organize a monitoring and follow-up system.

**In the short term, the goal of the cooperation project is to test new governance in the Stung Sen sub-basin.**

This project, whose kick-off seminar was held in October 2012, will allow building the capacities of the TSA, the Ministry of Water Resources and Meteorology (MOWRAM) and of its representations in the Provinces and Districts to make possible and to support:

- The technical and methodological strengthening of the Cambodian institutions and stakeholders involved in water resources management;
- The drafting of a sustainable water resources Management Plan for the Stung Sen River Basin.

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## Vietnam



### Success of the Dong Nai Basin pilot project

**The Dong Nai Basin pilot project, funded by the French Loire-Brittany and Seine-Normandy Water Agencies, as well as by "FASEP", was structured under the Cooperation Agreement signed on 6 June 2007 by the French and Vietnamese Ministers in charge of the Environment.**

It aimed to provide the Vietnamese Authorities with "Technical Assistance to the implementation of an Integrated Water Resources Management (IWRM) policy through a pilot application in the Dong Nai River Basin".

The official closing of the project with a final seminar took place on 17 April in Ho Chi Minh City in which the results of the project were presented.

IOWater, **INBO** secretariat, coordinated the project and followed up the institutional component.

In this context, nearly 200 men/days of training on the integrated water management process, with the establishment and operation of Basin Organizations, were given by experts from the French Agencies and IOWater to the Vietnamese executives.

Methodological support to water data management and to the strengthening of measurement networks was also provided.

Finally, **a first Management Plan covering an entire river basin has been prefigured.**

The different steps used for planning were inspired from the principles of the European Water Framework Directive (WFD) and the French experience in its implementation.

Thanks to this project, **the practice of integrated water resources management in Vietnam has undoubtedly progressed** as evidenced by:

- The updating of the Vietnamese Law on water resources approved on 21 June 2012 by the Parliament.
- The solemn commitment made by Vietnam during the last World Water Forum in Marseille to start the integrated management of its rivers and streams.
- The preparation by the Vietnamese Ministry of Natural Resources of **the decree for establishing a pilot Basin Organization in the Dong Nai Basin.**

The implementation of that last decision is the key to the development of institutional and operational measures for the conservation of water resources and aquatic environments in Vietnamese river basins, facing strong anthropogenic pressure and high demand for hydropower production.

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Dr. Lai, Vice-Minister for the Environment, at the closing seminar of the project





### A pilot project for Hai River Basin and Zhou sub-basin



Signing of the second phase agreement in Marseilles on 12 March 2012 - © IOWater - C.Runel

China is facing many challenges in water management. In terms of quantity, it has only 7% of the planet's resources, unevenly distributed, for a fifth of the world population.

In terms of quality, pollution from industrial, urban and agricultural discharges has reached alarming levels in many rivers.

To cope with these challenges, the Chinese Government developed many kinds of international cooperation, especially with the European Union.

An agreement was signed on 21 December 2009 by the **Chinese Ministry of Water Resources and the French Ministry of Ecology and Sustainable Development**. Its aim is the exchange of experience and capacity building in areas of common interest of Integrated Water Resources Management and Protection.

**As part of this agreement, the Hai River Basin, which covers 318,000 km<sup>2</sup> and four provinces (Hebei, Shanxi, Henan, Inner Mongolia) and two large municipalities (Beijing and Tianjin), was selected to develop a pilot 4-year project.**

It especially aims to test the application in China of some mechanisms for basin management, water pollution control and ecosystem protection, used in France since the 1964 Act, which created the Water Agencies.

The project partners are, on the Chinese side, **the Ministry of Water Resources, the Hai River Conservancy Commission and the Water Boards of Tianjin Municipality and Hebei Province**, and, on the French side, **the Ministry of Ecology, Sustainable Development and Energy (MEDDE), the Seine-Normandy Water Agency (AESN), the Interdepartmental Sanitation Syndicate of Greater Paris (SIAAP), the Interdepartmental Institution of Great Lakes of the Seine River and the International Office for Water**, which is taking care of the project technical coordination.

The first phase of the project (April 2011/March 2012) contributed to the development of a mutual understanding of the functioning of basin institutions and of the procedures and means they use in France and China.

Four French experts' missions were organized in China as well as three training courses for 70 Chinese officials on management tools used in France and Europe. Three Chinese delegations were also received in France.

The second phase of the project (October 2012/ October 2015) follows the agreement amendment signed at the World Water Forum in Marseilles, in the presence of the Chinese Minister of Water Resources, Mr. Chen Lei.

It will mainly focus on the Zhou River sub-basin, where an assessment of the resource, an in-depth legal and institutional analysis of water management, the establishment of an operational coordinating group will be tested, as well as the drafting of a Management Plan for the sub-basin.

Late November 2012, a training course was organized in Tianjin on the topic of basin governance.

In Mid-December 2012, a second mission of French experts allowed making a first assessment of the sub-basin status.

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### Towards Better Water Governance in the Li River Basin

An assessment explores the concept and principles of Integrated Water Resources Management (IWRM) and their applicability to the Li River Basin. Based on a contextual analysis framework which includes three key interrelated components - the physical system, socioeconomic situation and existing institutional framework - studies are made in the Li River Basin to develop an effective institutional framework for sustainable development.

The water governance reform in the Li River Basin should fit in with its physical dimension and social and cultural context as well as with historical aspects.

Several recommendations are provided and expected to be a departure point towards better water governance in the Basin.

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Signing of the Action Plan for the project second phase in Tianjin on 23 November 2012 - © IOWater

## China



### 5<sup>th</sup> International Yellow River Forum

From 25 to 28 September 2012 - Zhengzhou

The main topic of this event which was held in Zhengzhou (China) at the invitation of **the Yellow River Conservancy Commission (YRCC)** was: "Ensuring Water Right of the River's Demand and Healthy River Basin Maintenance".

This topic was addressed as follows:

- Efficient management of river basins and water resources in relation to social and economic development;
- Access to water through a strategy and measures to maintain the "Good Status" of the river;
- Sound and effective water resources management in the basin;
- Measures for adaptation and water resources management in river basins in the context of global climate change;
- Ecological protection and sustainable use of water in river basins;
- Structural and non-structural measures related to new technologies to ensure access to the river;
- Advanced technologies for safety, transfer and water saving, and for monitoring equipment;
- Culture and civilization throughout the history of exploitation of the river;
- Management of sediment and reservoirs with high silt content;
- Experience and new technologies for water resource management.



**The International Network of Basin Organizations - INBO was invited to organize two special events at the Forum** dealing with:

- Integrated Basin Management;
- Organization of a dialogue and users' participation.

**Yellow River Conservancy Commission**

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## India



### Free speech

#### Endangered farming: dispute on groundwater withdrawals for Boro Paddy

In 2009, the World Bank informed the Government of West Bengal that it would get an allocated fund for minor irrigation projects only if groundwater was not used. A NASA satellite image has also shown rapid reduction of groundwater storage in India, West Bengal included.

This report estimates that 3,417 villages are threatened by arsenic contamination of groundwater.

Many tubewells that were safe earlier are now contaminated.

Fluorosis is the most prevalent groundwater-related disease in India, which is the most severely affected country worldwide.

A total of 20 out of 28 Indian States have varying degrees of groundwater fluoride contamination.

In 2007, a research carried out by the Center for Studies in Social Sciences on boro paddy cultivation in West Bengal shows that a large number of farmers are encountering ecological problems.

Considerable amount of work has also been done to establish the arsenic burden in cooked rice from the arsenic affected areas in West Bengal. It was observed, by a 2009 study by the School of Environmental Studies at Jadavpur University, that 47.3 per cent of the samples exceeded the maximum tolerable daily intake.



After nearly a decade of negative experience, the State Agriculture Department has decided to replace boro cultivation by other crops.

Maize cultivation, which is replacing paddy, is gaining ground in West Bengal.

Finding alternative cropping pattern is not easy for the boro farmer and needs support from research, political decisions, regulatory and functional support, rural financial institutions and market creation.

**Dr. Dhrubajyoti Ghosh**

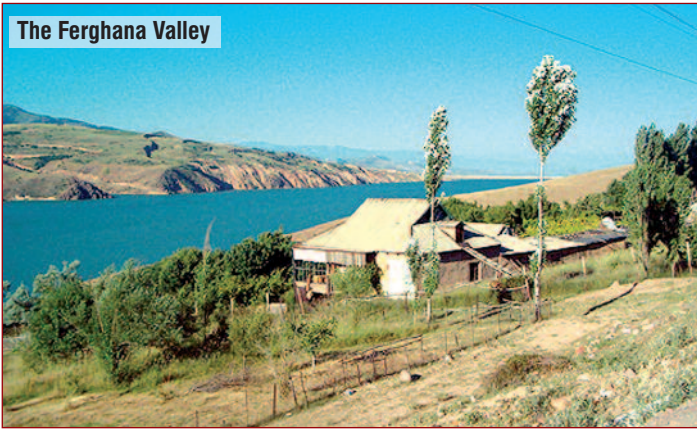
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### Integrated Water Resources Management in the Ferghana Valley (IWRM-Ferghana)

The Ferghana Valley



The sixth phase of the Project "Integrated Water Resources Management in the Ferghana Valley" (IWRM-Ferghana) was completed in December 2012.

IWRM-Ferghana is implemented by SIC ICWC (Scientific-Information Center of the Interstate Coordination Water Commission) and IWMI (International Water Management Institute), with financial support from the Swiss Agency for

Development and Cooperation (SDC), in the three Central Asian Republics (Osh province in Kyrgyzstan, Sogd province in Tajikistan, and Andizhan and Ferghana provinces in Uzbekistan).

The overall project objective is improved effectiveness of water resources management in the Valley by implementing institutional reforms and looking for irrigation water productivity improvement at plot level.

Since the beginning of project activities:

- Current state of water management was studied in pilot sites - initial phase (2001-2002);
- Main proposed approaches and methodologies were tested in pilot sites in the Ferghana Valley and approved - second phase (2002-2005);
- The tested methods were disseminated for wider application through training and capacity building - third phase (2005-2008);
- Institutional, managerial, and financial reforms were developed and tested along pilot canals, their command areas, and small trans-boundary rivers - fourth phase (2008-February 2011);

The fifth phase (March 2011 - February 2012) aimed to enhance financial-economic sustainability of institutions at canal level and to carry out a comprehensive hydrographical study in the Ferghana Valley, in order to assess changes which had occurred in the water sector and irrigated agriculture since 2001.

This study allowed developing for each participating country a National Vision of ways and means to incorporate Water User Associations (WUA) and Water User Groups (WUG) to Canal Administrations (CA).

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## Capacity Building for Integrated Water Resources Management and Planning

The Institute for Water Education (IWE) UNESCO-IHE and the Scientific-Information Center (SIC) of Interstate Coordination Water Commission (ICWC) are completing the Project "Capacity Building for Integrated Water Resources Planning and Management in Central Asia" (2009-2012), whose main objective is the development of the training system in the water sector.

Regional workshops for the training of national trainers were organized in 2010-2011.

They were delivered in four educational Blocks:

- **Block 1:** Integrated Water Resources Management (IWRM);
- **Block 2:** Perfection of Irrigated Agriculture (PIA);
- **Block 3:** International Water Law and Policy (IWLPP);
- **Block 4:** Regional Cooperation on Transboundary Rivers (RCTR).

The next stage in project activity included the organization of national workshops, which were held from September 2011 to February 2012.

In total, 8 national workshops took place, 212 specialists were trained and 31 specialists were chosen as potential trainers.

A final regional workshop was held in Tashkent (6-10 July 2012) in which a Capacity Building Strategy for Central Asian countries for a mid-term (4-5 years) period was presented.



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UNESCO-IHE  
Institute for Water Education



Regional workshop of July 2012

# Central Asia

## Kyrgyzstan - Tajikistan



### Transboundary Cooperation in Isfara Basin



Meeting of the Kyrgyz-Tajik Inter-Ministerial Working Group

The transboundary Isfara River Basin in the Ferghana Valley is shared between Kyrgyzstan, Tajikistan and Uzbekistan.

**In 2008, a Kyrgyz-Tajik Working Group (IMWG) was established to deal with water issues in the border areas.** It consists of representatives of national, provincial and district authorities of both countries.

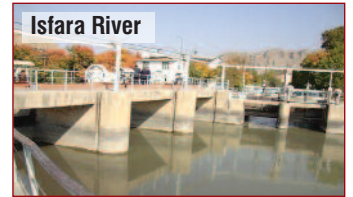
The Transboundary Water Management in Central Asia (TWMCA) Program, funded by GIZ GmbH, has supported Kyrgyz and Tajik Water Authorities to develop institutional and technological tools for water resources management in small transboundary river basins.

The main goal is to enable Water Management Organizations (WMOs) of riparian States to make joint long-term water management plans for their respective basins.

The project in the Isfara River Basin includes the preparation of a framework agreement and the establishment of an organizational structure for joint water management in the basin, data management to implement a basin assessment and activity follow-up and finally a public awareness action.

A framework agreement has been submitted to National Water Agencies of Kyrgyzstan and Tajikistan for official submission to their respective Parliaments.

A concept for Data Management in transboundary basins was presented. The IMWG meeting in Dushanbe, early 2010, underlined the importance to equip future basin's water management



organizations with proper planning and data management tools. Data management also has been a starting point for cooperation between riparian States when they have comparable and compatible databases.

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**giz** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

## Kyrgyzstan



### Towards an integrated Water Information System

**The Swiss Agency for Cooperation and Development (SDC) entrusted the International Office for Water with a study on data management and information needs concerning water supply and demand for irrigation in Kyrgyzstan.**

Kyrgyzstan is located far upstream of the Syrdarya, which has been the subject of inter-state agreements setting the downstream reserved water share at more than half of its internal renewable water resources. Agriculture remains an important economic sector (20% of GDP) and accounts for over 90% of water withdrawals in the country.

The study analyzed the processes of data management and use: a survey on tools (databases, forms, files, archives, software, etc.) and on the mechanisms for data collection, transmission and

validation was conducted with the support of the Directorate of Water Resources and its regional services on three topics: water demand, water supply and structural data on hydraulic structures.

Two field assignments and a national seminar organized with PKTI (Institute of Metrology and Automation) validated these results which are available on the dedicated website.

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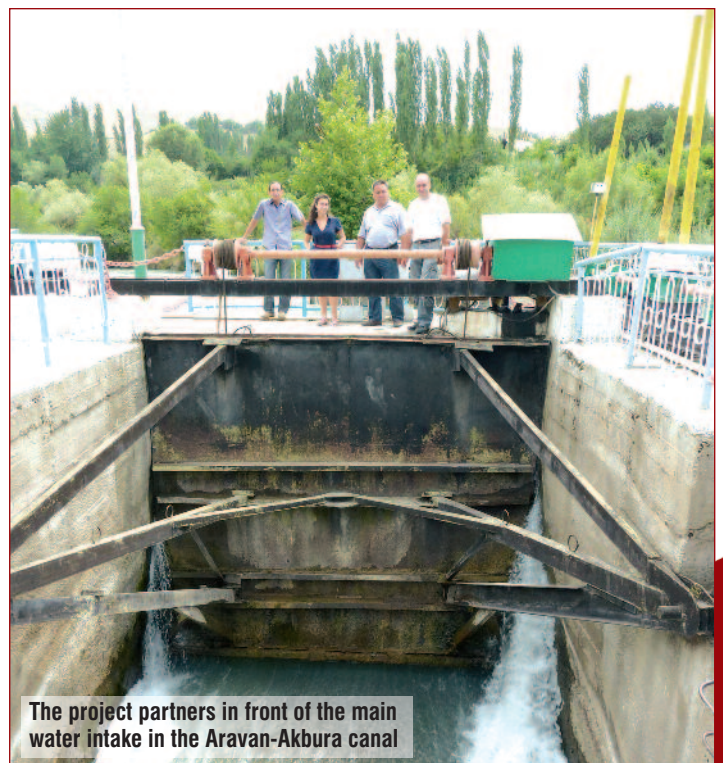
[www.swiss-cooperation.admin.ch/centralasia](http://www.swiss-cooperation.admin.ch/centralasia)

[www.aquacoop.org/sdc-ca](http://www.aquacoop.org/sdc-ca)



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Direction du développement  
et de la coopération DDC



The project partners in front of the main water intake in the Aravan-Akbura canal



# Central Asia

## Ground water resources management on the Lower Amu Darya River

In the Lower Amu Darya, water-supply to populations has used groundwater for a long time.

Developing new lands for irrigated agriculture, flow diversion from the river and discharge of high mineralization

drainage water into the river resulted in decrease in the water flow in the Lower Amu Darya, increase in mineralization of surface water and degradation of groundwater.

By the end of the eighties, groundwater mineralization increased higher than admissible for drinking water in the most part of the explored aquifers.

Water-pipes for drinking water-supply from the Tuyamuyun reservoir did not solve the problem as the quality of surface water does not meet the quality requirements in the low-flow periods.

In the current situation, artificial groundwater recharge seems to be the sole solution. This method is expensive. An analysis of the groundwater status was realized.

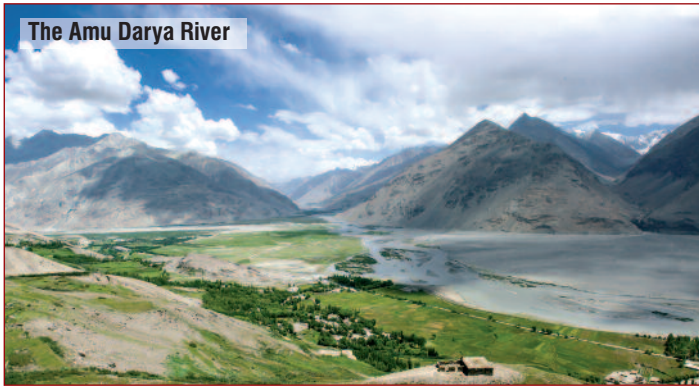
The studied 64 water tables are located in Horezm and Karakalpakstan region.

The artificial recharge used for 16 water tables enabled to rehabilitate groundwater quality.

The reconstruction of water supply points was realized in 2005 - 2007 in accordance with the **"Uzbekistan - Pure water, sanitation and health"** program for the Biruni, Turtkuli, Chim-bay and Kegeyli cities.

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The Amu Darya River

## Eastern Europe - Caucasus - Central Asia

### Transboundary water data administration



UNEP



Fonds Français pour l'Environnement Mondial

Countries of Eastern Europe, Caucasus and Central Asia are highly dependent on transboundary water resources.

To develop an effective Integrated Water Resources Management

(IWRM) policy, it is necessary to have a comprehensive assessment of water resources and uses, which is based on consistent and coherent information.

This project funded by the **French Global Environment Facility** and developed under the **"Convention on the Protection and Use of Transboundary Watercourses and International Lakes"**, aims to improve

water data administration in order to facilitate the production of the information needed.

**IWAC (International Water Assessment Center), the main recipient of the funding, entrusted the International Office for Water with the technical coordination of the project activities.**

Activities were launched in early 2011 in two pilot transboundary basins:

- **The Dniester River Basin** in Ukraine and Moldova;
- **The Aral Sea Basin** (Amudarya and Syrdarya river basins) which concerns Kyrgyzstan, Kazakhstan, Uzbekistan, Tajikistan, Turkmenistan and Afghanistan.

The assessment of water data administration carried out in each country includes:

- A legislative and institutional analysis (database of the stakeholders);
- Organization of national workshops gathering the key stakeholders involved in data production and management;
- Support to the presentation of data sources by the producers (meta-data catalogue);
- Production of data flow charts (who exchanges what with whom?);
- An initial needs analysis related to data management.

The developed actions provided the following results:

#### In the Dniester River Basin

- ❖ Procedures and tools for the calculation of indices of surface water quality, with online publication of dynamic maps updated by the partners;
- ❖ The "Web Processing Services" allowing the production of useful geographic data;

#### In the Aral Sea Basin

- ◆ A prototype of hydrological bulletin on the Syrdarya, within an action initiated by the **UNRCCA** and **EC-IFAS**;
- ◆ Conceptual analysis of the National Water Information System in Tajikistan;
- ◆ An online interactive diagram of the Syrdarya hydrology in Kazakhstan.

The final phase of the project (2nd quarter of 2013) will allow the transfer of the project's feedback to the national and regional beneficiaries, and the production of guides highlighting the lessons learned for transfer to other transboundary basins of the region.

The main results are available on the website (in English and Russian) and were officially presented at the **6th Meeting of the Parties of the Water Convention** in Rome on 28 November 2012 on UNECE initiative.

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[www.aquacoope.org/ffem-ecca](http://www.aquacoope.org/ffem-ecca)



6th Meeting of the Parties to the International Water Convention - © IOWater - C.Runel



## The Alps: a "Mountain Water Observation System"



The idea of a **permanent Mountain Water Observation System** is the outcome of Meetings on water in mountains organized in Megève in September 2010, **with the assistance of the "EUROPE-INBO" Group.**

The Observation System gathers scientists, elected representatives and water managers to discuss about the fundamental issue of the role of mountains in water resource conservation.

Its vocation is to improve knowledge on the functioning of watersheds, wetlands and aquatic environments in high altitude, to develop mountain system models and allow the development of management and decision-making

supporting tools for elected representatives and managers.

In relation with water management authorities, the Observation System fosters innovation and action on application sites around three topics:

- Resource sharing
- Conservation of wetlands, mountain streams and lakes
- Evolution of water bodies and risks

**The Endowment Fund "Living Mountain, Alpine grasslands, Water and Forests"**, contracting authority of the Observation System, entrusted Asters, Upper-Savoy Natural Space Conservancy, with the coordination and facilitation of this project.

The sharing of water resources has been studied since 2009 in the Megève area in France under the European **Alp Water Scarce** program. Since March 2011, this component has benefited from the sponsoring of the National Rhone Company.

The second component, relating to the conservation of wetlands was initiated in 2012 in the "Les Gets" ski resort area in Upper Savoy.

The first meetings of the Mountain Water Observation System took place on 15 and 16 October 2012.

This event, now annual, allows drafting a progress report of the project, and building a network with other ongoing alpine initiatives and especially with Austrian and Swiss specialists.

New **"Meetings on water in mountains"** are planned for September 2014 in Megève.

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## International River Basin of the Meuse

### Adaptation to the impacts of climate change



**"EPAMA", Public Development Authority for the Meuse and its Tributaries**, has the mission to improve knowledge of flood risk, inform the populations and coordinate protection activities against floods by local authorities.

Since 2009, it has led the **"AMICE" project to adapt the international river basin of the Meuse to the impacts of climate change.**

This project gathers 17 French, Belgian, Dutch and German partners and is financed by the European Interreg IV B.

The closing conference of the "AMICE" project was held in Sedan from 13 to 15 March 2013.

A first hydraulic simulation of the entire river with homogenization at the borders was performed. This helped produce risk maps and identify geographical areas and water uses most vulnerable to floods and future low water levels.

Adaptation measures can be taken now, including:

- Restoration of wetlands in the Ardennes and Brabant;
- Installation of pumps on the Albert Canal;
- Reservation of retention areas for centennial floods;
- And new management rules for dam management on the Rur tributary (Germany).

An exercise on flood crisis management, based on an extreme scenario, involved more than 330 participants in France and Belgium over 8 days to test the interaction and exchange of information between the different decision-making levels.

Communication activities aim to involve the population and public authorities.

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### The "Blueprint"

#### An action plan to safeguard Europe's water resources

This plan to safeguard Europe's water resources was presented in November 2012 at the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

Launched by the European Commission early 2010, this draft **Blueprint** is intended to give an EU policy response to the challenges related to water resources management with a long term objective of ensuring that enough good quality water is available for sustainable and equitable use.

The time horizon of the **Blueprint** is 2020. Nevertheless, the analysis will actually cover a period up to 2050.

It sets out key actions to be undertaken by water managers and decision makers to deal with problems facing the aquatic environment: vulnerability of water resources to face climate changes, evolution in land use and socio-economy.

The **Blueprint** is not intended to create a new regulatory instrument, but to clarify institutional aspects and cover the shortcomings of the integration of water policy with sectoral policies (especially agriculture).

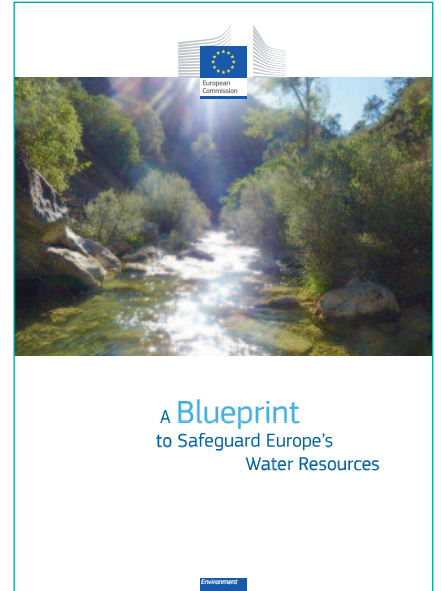
It has three main objectives:

- Improving implementation of the European water policy, making full use of the opportunities provided by current laws;
- Integrating water into other policies;
- And, if necessary, filling the gaps of the current policy framework, particularly in relation to the effectiveness of water and adaptation to climate change.

The **Blueprint** is based on an assessment of water resources management in Europe: **the "fitness check"** that reviews all European instruments related to water policy (i.e. the Water Framework Directive, both associated Directives on Priority Substances and Groundwater, the Floods Directive, the Directive on Nitrates and Waste Water Treatment).

**The "fitness check"** identifies any deficiencies of these instruments, their consistency and effectiveness, and whether there are barriers to their implementation or excessive administrative burdens.

**The "fitness check"** thus leads to an assessment of the functioning of water policy at the European level.



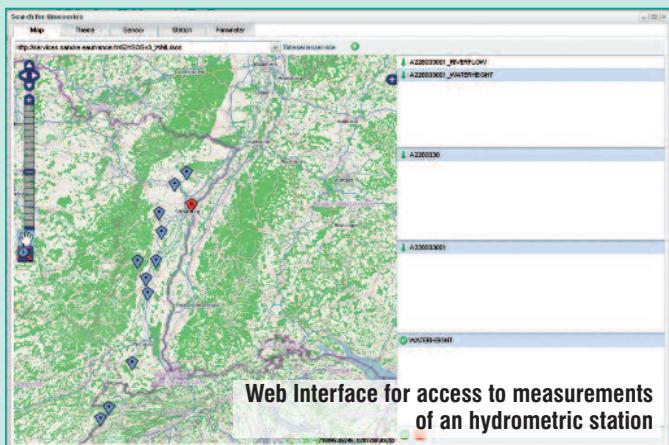
#### A new international standard for the exchange of information on water

Since last September, the Open Geospatial Consortium (OGC) has adopted **the Water ML 2.0 Part 1 standard**, a coding standard for time series in the water sector.

The International Office for Water, INBO Secretariat, is one of 12 partners involved in the development of this standard.

The Hydrology Working Group is co-chaired by the OGC and the World Meteorological Organization.

The new OGC standard is based on XML language for encoding and exchanging data describing the status and location of surface and ground water resources.



Web Interface for access to measurements of a hydrometric station

An impact assessment will identify different policy scenarios for guaranteeing availability and use of water resources and target indicators for the protection of aquatic resources. It will estimate the costs and impacts of policy measures to manage demand, increase freshwater availability and protect ecosystems.

Finally, this plan should allow water managers and political decision makers defining key actions to improve water resources governance: improvement of land use, water pollution control, more efficient use of water and increase in its resilience.

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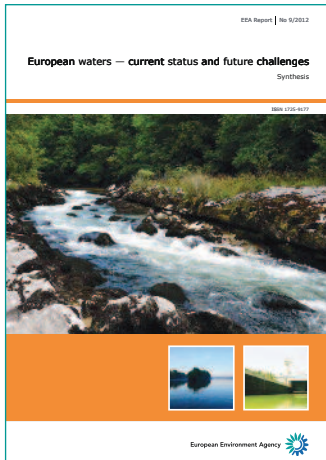
<http://water.europa.eu>

## European Union



### Still strong pressures on the resource and growing challenges for water management

European Environment Agency 



It appears that less than half (48%) of European surface Water Bodies are likely to reach "Good Ecological Status" by 2015, as specified by the Water Framework Directive (WFD).

To achieve the goal of "Good Status", the Water Bodies should receive fewer nutrients and the restoration of their natural characteristics should be emphasized:

- Agriculture is one of the greatest pressures on water resources, and therefore, agriculture and the food industry are the main targets for future improvements. In particular, subsidies to farmers under the Common Agricultural Policy should take into account their overall impact on water resources.

- Energy production is another sector with strong impact on water in Europe, especially intensive production of biofuels and Hydro-power Plants. Unconventional extraction of oil and gas (shale gas, for example) can also lead to water pollution. Careful planning can reconcile these requirements with those of ecosystems.
- Changes affecting Water Bodies threaten ecosystems. The magnitude of these changes - the "hydro-morphological status" - is a problem for 52% of surface waters. Artificial changes, weirs, dams or reservoirs can prevent the migration of fish and their breeding as well as the flow of sediments.

- Droughts and floods are becoming more frequent, and projected climate change would exacerbate these phenomena.

The report also indicates that the river basin is the best geographic scale for "water accounts" and allows balanced management between resources and abstractions.

The proposed measures are also a reconsideration of the structure of water prices and domestic metering.

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While the European Commission presented, on last 15 November, the Blueprint for Water in Europe, the European Environment Agency (EEA) published:

- A compilation of chemical data related to the status of Water Bodies,
- An assessment of the status of surface waters.

### For a better use of resources



The "Roadmap for Europe's effective use of resources", published in late 2011, shows the steps to get there.

On 6 May 2012, a report by the European Parliament is defining Priority Actions for planning for future growth, taking into account the natural capital and ecosystem services in particular.

On 5 June 2012, the **European Online Resource Efficiency Platform (OREP)** has been launched.

The platform consists of 34 members, including five European Commissioners, four Members of the European Parliament, nine CEOs from various sectors, four environment Ministers and members of international organizations, civil society and academia.

Its purpose is to provide guidance and high-level advice on measures that aim to transform the European economy to move towards a more sustainable growth.

Efficient use of natural resources is a pillar of "the **Europe 2020 Strategy**".

Anyone wishing to contribute to the debate is invited to participate via an Internet connection (OREP), which will host a series of discussions and consultations in the coming months.

For the general public, the European Commission has launched a public awareness campaign on the efficient use of resources.

Called "**Generation Awake**", its purpose is to raise people awareness on the environmental, economic, social and personal consequences that non-sustainable use may have and foster change in behavior and consumption.

In a video clip, "Leo - the water maniac" (represented by a neurotic bucket) deals with the topic of excessive water consumption.

**A consumption guide is also available on the website:**

[www.generationawake.eu](http://www.generationawake.eu)

In the European Union, air and water quality has improved for 10 years.

The EU is now committed to making European economy more efficient in terms of natural resource use through new policies involving business, industry and individual consumers.

354 participants coming from 47 Countries  
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**T**he 10<sup>th</sup> conference of the "EUROPE-INBO" group was held in Istanbul, Turkey, from 17 to 19 October 2012, at the invitation of the Turkish Water Institute (SUEN).

It gathered 354 participants, representatives of national administrations and basin organizations as well as Research Centres, Universities, NGOs and companies from **47 Countries**.

The conference was organized around six major issues:

- Water, food and energy nexus;
- Cooperation with EECCA and Mediterranean Partner Countries on the implementation of the WFD principles and methods;
- Improvement of water governance in transboundary river basins;
- Adaptation to challenges linked to climate change and to the prevention of extreme phenomena: with the implementation of the Floods Directive and the reduction of drought risk in particular;

- Development of new approaches to river restoration and protection of water ecosystems;
- Economic analysis, cost recovery under the WFD, value of ecosystems services, water resources use efficiency, involvement and solidarity of the stakeholders.

The experience gained in the European Union with the implementation of **the Water Framework Directive (WFD)** and other EU directives on water and tools developed for this concern are interesting not only the Candidate Countries, but also other Partner Countries of the Balkans, EECCA and the Mediterranean, which could consider adjustments in their own institutional, geo-climatic and socioeconomic situation, through enhanced cooperation.

**The EUROPE-INBO group members made recommendations to further improve water resources management in the European Union and in the Partner Countries, relying in particular on their WFD field experience.**

River basin management is truly the most appropriate way to manage water resources, allowing more consistency between the different sectors, including between water, energy, agriculture, and food and inland navigation and better integration between land management and water resources management to cope with present and future challenges, including those related to global change.

Despite progress made, the WFD which resolutely adopts this approach in the European Union, as well as its "Daughter Directives" or the basic measures of its annex A, must improve their articulation with the "Floods", "Marine Waters", "Renewable Energy" Directives, with the Common Agricultural Policy (CAP) and the official aid system.

Similarly, coordination is needed between different administrative services, sometimes located in different ministries, which implement them, e.g. between the services that manage floods and drought plans and those which are directly in charge of implementing the WFD.

The evaluation policy (**fitness check**) implemented by **the European Commission** (which resulted in the publication of a "**Blueprint**" at the end of November 2012), already shows several areas for improvement: the need to reduce water demand by integrating efficiency requirements in the various water uses especially in buildings (public and private, apartment blocks or houses, industry) and agriculture, better regulations on drought and flood control, by strengthening the link between water planning and land use planning in particular, the clear definition of the cost recovery principle and the wider use of economic instruments, improving availability of quality information on water resources, especially when uncertainty increases.

**The participants in the "EUROPE-INBO 2012" Conference consider that, at this stage, it is advisable to make efforts primarily on the application of the current water legislation and not to produce a new legislation.**

**Better cross-sectoral integration must necessarily be sought for to achieve sustainable water resources management in the future,** especially with the Common Agricultural Policy, regional policy, renewable energy and inland navigation policies, and with land use, while also taking into account the need to adapt to climate change.

It seems necessary to find a balance that allows both effective implementation of the Water Framework Directive and compliance with the objectives of renewable energy production that Europe has set and the objectives of the CAP.

**"FOR FACILITATING THE IMPLEMENTATION OF THE EUROPEAN WATER FRAMEWORK DIRECTIVE"**

## implementation of the Water Framework Directive

**Discussions on adaptation to global changes, especially climate change, should be introduced as soon as possible for preparing the second phase of River Basin Management Plans (RBMPs) 2015-2021** especially for analyzing their effects and vulnerability and for defining adaptation measures to be recommended in a context of uncertainty. Within such a framework, the choice of appropriate indicators to assess the "water Footprint" of the different uses and improve efficiency in relation to water scarcity is fundamental.

**It is also necessary to develop new approaches to river restoration and protection of water ecosystems**, by passing from a point approach to large-scale restoration projects, articulated with different multi-purpose planning mechanisms on appropriate scales. To do this, we need to promote the sharing of information, expertise and best practices, as well as improving knowledge through appropriate actions in R&D, hydromorphology and restoration of rivers and wetlands.

**Water governance in transboundary basins should be improved** especially in the "International Districts" created for the EU-WFD implementation, which requires cooperation agreements signed by riparian countries to establish the conditions for appropriate governance, based on mutual confidence, common understanding of the basin problems, on available and shared accurate data and analysis and with the involvement of stakeholders.

**The role and means of the International Commissions for transboundary rivers, either existing or being established, should be strengthened** to enable effective WFD implementation in the concerned EU countries.

To cope with the challenges related to global change (climate and socio-economy) and to the prevention of extreme phenomena, it is necessary to integrate adaptation to these changes in the key steps of the drafting of River Basin Management Plans, taking care to introduce an uncertainty logic to define sufficiently flexible measures. Policies should be adaptive enough to allow progressive adaptation and basin experiments involved in such a process should encourage the building of new institutional and individual capacities that are required.

The WFD can be used as a toolbox for addressing adaptation to climate change in areas at risk, to reduce the impacts of droughts and flood risks.

Regarding the economic analysis, it is necessary to improve knowledge on how subsidies were considered in the RBMPs and to clearly define cost recovery.

**The assessment of Environmental and Resource costs requires better methodology and data availability while the economic approach to ecosystem services is to be strengthened.**

**Monitoring and information systems should be strengthened** and adapted to the objectives to be achieved and better compared between Member States, but the issue of their investment and operation costs arises in many situations.

**The high cost of implementing the WFD and "daughter" directives raises a problem, in the context of an economic and budgetary crisis, to achieve the set-out ambitious goals on schedule.**

The goals of controlling non-point pollution and restoring degraded water ecosystems may not be achieved for many Water Bodies in any case for the 2015 or even later deadlines.

**New measures will be required implying additional means which are not currently planned or have been pushed back to the end of the 2021 - 2027 period.**

Finally, the involvement of stakeholders and the public is crucial to improve water resources management, their early information and participation in the decision-making processes should be further increased.

**Appropriation by all decision-makers and users of the water-related policies and of the resulting measures is essential for progress and effectiveness of undertaken actions.**

Recognizing, on the one hand, the interest of the WFD principles and methods for other regions of the world, and on the other, the sharing of some transboundary water bodies with neighbouring countries of the EU, **community cooperation with Partner Countries from the Mediterranean, the Balkans and Eastern Europe, Caucasus and Central Asia is to be pursued and increased.**

In particular, this cooperation should primarily focus on topics for **dialogue and transboundary surface and groundwater management** with the support of regional institutions, for **strengthening national information systems** and their harmonization with international reporting mechanisms, for **training** managers or planners of water resources and for **the participation** of users, local authorities and associations.



Opening ceremony on 17 October 20  
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### Transfer of research on water



3<sup>rd</sup> "CIS SPI" event - 14 - 15 November 2012 - Brussels

#### How to make sure that research results reach the water managers in charge of implementing the Water Framework Directive?

Conversely, how to facilitate the expression and account taking of research needs from the different levels (local, regional, national, transboundary and European) to implement the European Directives related to water?

These two questions allow simplifying the understanding and defining of the **Science and Policy Interface (SPI)**.

They also reveal the challenges.

For this interface to work, it is necessary to:

- **Capitalize scientific knowledge;**
- **Ensure that research needs are expressed in an understandable manner to researchers;**

- **Make research results approachable by the water stakeholders that are supposed to use them;**
- **Raise awareness of all water stakeholders to initiate changes in practices.**

Within the European "IWRM-Net" project, supported by the DG Research and Development, it meant organizing from 2010 to 2013 participatory workshops inviting researchers and decision-makers to work together to identify research needs, to orientate the new bids for projects by requiring researchers to integrate the practical uses of their work, to launch new research programs in badly covered fields in the implementation of the Water Directives and to present the results in a format that allow easy reading by field practitioners.

To continue this project, the French Ministry of the Environment has initiated a **Scientific Coordination of Projects (SCP)** funded under IWRM-Net:

[www.iwrn-net.eu](http://www.iwrn-net.eu)

One of the major challenges is to allow exchanges between donors, researchers, and water managers through forums, workshops and new online learning platforms.

Once research projects are initiated, the phase promoting their results should start.

#### WaterRtoM and WaterDiss:

These two projects share the goal of capitalizing on existing knowledge and supporting researchers in their efforts to make their research results valuable to be used:

- **Water RtoM**, focusing on projects financed by the Life and Interreg Programs, aims to support the commercialization of research products and is resolutely addressing market stakeholders.

- **WaterDiss** is addressing European FP6 and FP7 projects and aims to accelerate the transfer of research results to the institutional stakeholders of the public sector.

**A virtual platform to facilitate exchanges between stakeholders: the "European Water Community" has now more than 400 members.**

Finally, SPI concerns different geographical and administrative levels: under the **Common Implementation Strategy (CIS)**, a specific group, coordinated by the French **ONEMA** and the **EU DG Environment**, was established.

The "EUROPE-INBO" Group is assisting these activities to compare the state-of-the-art of research with identified needs in the field and to reveal new research needs.

**Working and experts groups are organized around seven topics:** ecological status, groundwater, chemical aspects, floods, climate change and water, water scarcity and drought, agriculture.

Activities and their results were presented at the Conference "**Water science meets policy: How to streamline knowledge to address WFD policy challenges?**" that took place on 14-15 November in Brussels.

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European Water Community

[www.europeanwatercommunity.eu](http://www.europeanwatercommunity.eu)

## Water Research to Market



**Water RtoM, funded by the LIFE+ Program (2010-2013) aims to accelerate the transfer of research results (3 to 5 years) to end users.**

**150 innovative research products in the field of water** have already been identified in LIFE and INTERREG information bases, and at national level in French, Polish, Romanian and Spanish programs.

**Out of these 150 research projects about fifty have undergone a detailed analysis to identify innovative results and evaluate their distance to the market.**

This analysis also describes additional steps to be implemented to make the selected innovations "ready for use".

It aims to assist field practitioners (River Basin District Authorities, Water Administrations, Municipal Services and developers) by giving them

instructions for use needed to make operational these research products.

The promotion of these innovations is one of the pillars of the project.

This is why they are made available to the public in the form of a non-technical summary on the [waterrtom.eu](http://waterrtom.eu) website under the heading "e-fair".

Many presentations are also organized during national or European conferences, at professional meetings in collaboration with Enterprise Europe Network.

Ultimately, the **Water RtoM** consortium wishes to prove the value of such a service, firstly for researchers by facilitating the dissemination and promotion of their innovative results, and secondly for water



managers so that they can comply on schedule with the objectives of the European Water Directives.

**Water RtoM**  
contact@waterrtom.eu

[www.waterrtom.eu](http://www.waterrtom.eu)



### Climate change and its impact on water resources in France

"Explore 2070" is a project of the French Ministry of Ecology, which aims to identify possible scenarios for the impact of climate change by 2070.

It especially takes into account the topics related to biodiversity, groundwater and surface water, coastal areas and to the socioeconomic prospects and their interactions.

**The ultimate goal is to plan for the necessary adaptations to cope with climate and anthropogenic changes in France.**

A Website will allow consulting these data, regrouped according to four key issues: water supply and demand, biodiversity, coastal risks and extreme events, on different geographical

scales (national, river basin, shoreline, wetlands, large cities).

On certain aspects of the water supply and demand, the model calculates the risks and costs of climate change and adaptation to cope with it.

The final project meeting took place on 18 and 19 October 2012.

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## EUROSTAT

### Water statistics for beginners

**Eurostat, the statistical service of the European Commission**, proposes each year a training program to the staffs of National Statistical Services.

These training courses are conducted by specialists on each topic.

IOWater, in France, and UBA, in Austria, were retained for the 2012-2016 period for training on Water Statistics and Water Accounts.

From 4 to 6 June 2012, the first training session on water statistics for beginners took place in Vienna in Austria.

The training course, which was attended by 18 participants, addressed the entire water cycle, and combined theoretical training, practical exercises, exchanges between participants and visit of the Vienna Waste Water Treatment Plant (4 million population equivalents, one of the largest in Europe).

[ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)





### Two twinning arrangements with Croatia on advanced IWRM topics!

#### Water Framework Directive and pollution by hazardous substances discharged into aquatic environments

The objective of the EU-funded twinning is to harmonize Croatian legislation and its implementation with the EU "acquis" in this area.

The European Directive on hazardous substances requires that these are:

- Prohibited for the most dangerous of them,
- Subject to protection measures and to reduction of discharges for the other substances.

Many activities produce or use hazardous substances and are at the origin of discharges into the environment: industry, agriculture, but also infrastructure, urban facilities, hospitals and medical activities, craftsmanship and even domestic activities.

France and Austria are associated for this European twinning with Croatia.

The immediate challenges of this twinning are knowledge of these products uses, the pollution they create in the country and the implementation of measures planned in the Directive on Hazardous Substances and Water Framework Directive:

- Inventory of substances used and discharged, and their presence in surface waters, groundwater and marine waters,

- Establishment of monitoring networks,
- Implementation of new performing analysis equipment,
- Development of tools and quality procedures to ensure the reliability and representativeness of the results,
- Exploitation of data and exchanges between the different partners.

**A substantive action on data management was undertaken with the drafting of a catalogue of data sources of the Water Information System and harmonization of production formats between the Croatian interested parties.**

The Croatian institutions, beneficiaries of this project are the Ministry of Agriculture and Croatian Water Company. The Ministry of Environment and Nature Protection, Ministry of Health, Croatian Environment Agency, National Institute for Public Health, State Institute for Nature Protection, Institute of Oceanography and Fisheries, Meteorological and Hydrological Service, Croatian Water Pollution Control Society are also associated.

On the French and Austrian side, the twinning partners are: the French Ministry of Ecology, Sustainable Development and Energy (MEDDE), the International Office for Water, the National Institute of Environment and Industrial Risks (INERIS), the National

Environment Laboratory (LNE), the Office of Geological and Mining Research (BRGM), the French Water Agencies as well as the Austrian Environment Agency (UBA) and the Austrian Ministry of Agriculture, Environment, Forestry and Water.

In total, about forty French and Austrian experts are involved, in collaboration with their Croatian colleagues to carry out the activities of this project, which receives funding from the European Union for a period of 12 months until mid-2013.

#### Floods Directive

Adopted in 2007, the Floods Directive imposes its timetable that will eventually be synchronized with that of the Water Framework Directive.

Austria, France and the Netherlands won the European twinning agreement with Croatia on the implementation of the Floods Directive.

The 15-month project will especially focus on the mapping of flood risk in priority areas.

The pilot areas are spread over the Black Sea Basin and the Adriatic coastal rivers with specific flood characteristics.



Kick-off Meeting of the twinning on "hazardous substances" Head office of the European Delegation - Zagreb - Croatia September 2012



## Spain



### Júcar River Basin Authority

#### Twinning between the Júcar and Arno Basin Authorities

The **Júcar River Basin Authority (JRBA)** has been since 1934 an autonomous organization with a wide experience regarding integrated water resources management gained in several decades.

In past years, the JRBA realized twinning agreements with other river basin organizations from countries in Europe (Greece, Romania and Bulgaria), Central Asia (Uzbekistan) and Africa (Morocco); some of those in the context of **the Twinbasin Project** (2007), with the support of the Mediterranean Network of Basin Organizations (MENBO).

Following first contacts during the 8<sup>th</sup> EUROPE-INBO Conference in Mégève (2010), the JRBA has signed a twinning agreement with **the Authority of the Arno River Basin (Italy)**.

The hydrological characteristics of the Arno and Júcar River Basins are similar.

Both river basin organizations collaborated during one year (2011-12), working on the technical aspects of the implementation of the Water Framework and Flood Directives. During the World Water Forum, the JRBA presented a comparative analysis on the state of compliance with the Good Status goals for Water Bodies to be fulfilled by 2015 in several Euro-Mediterranean river basins: Júcar, Duero (Spain), Arno (Italy) and all the French basins.

The experience of the twinning has been satisfying and interesting for the involved parties. Both organizations depending on the national central administration, count on similar management organs and instruments.



Júcar / Arno twinning meeting

However, the methodology used by each country to implement the European directives depends on the internal administrative structure of each Member State, which sometimes made difficult a real comparison of the proposed

works during the twinning, especially regarding the economic analysis, cost recovery, program of measures and its financing.

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#### Environmental restoration in an urban environment

The Turia River Park project in Valencia was developed on a length of 27 km along the river bed and on an area of 2,540 ha that belongs to seven municipalities with more than 1.5 million inhabitants.

The aim has been the improvement of the environmental status of the Turia River by reinforcing riparian vegetation and developing activities that promote public participation to the benefit of the environment.

The works consisted in conditioning and cleaning of riversides, restoration of woodlands, creation of trails, installation of gateways, construction of viewpoints and bird observatories, creation of nature interpretation centers, signposting, information boards, adaptation of recreational areas, creation of fishing sites and of an ecological garden.

It is important to underline the achievement of combining traditional uses, such as fishing, small agricultural farms, etc., with new uses, like areas for environmental awareness raising and knowledge building, recreational and sportive uses, hospitality services in the surrounding villages, etc.

The park has more than 800,000 visitors per year.

This demonstrates the wish of the adjacent village residents to rediscover a natural space they had mostly considered as hostile and inaccessible.

Nowadays it has become a linking axis for the area allowing the connection between municipalities by foot or bicycle and is a space of recreational activities.

**Emilio Carrilero Aroca**

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The Turia River Park

[www.chj.es](http://www.chj.es)





### "SANDRE"

The French National Water Data Plan was officialized by the joint order of 26 July 2010 of the French Ministries of the Environment, Local and Overseas Authorities, Health, Agriculture and Food.

The Technical Secretariat of the National Service for Water Data and Common Reference Frames Management (SANDRE) improves the exchange of data between all the public and private water stakeholders by producing specification documents and lists of codes, the "SANDRE" reference frames.

"SANDRE" produces and disseminates these reference frames (specification documents and data sets) free of use rights.

The "SANDRE" website has a search engine which now focuses on all the disseminated reference frames. The current events of this site are also available on Twitter and FaceBook.

It is possible to simply search and download maps and their metadata. Traditional cartography software can thus recover the various cartographic layers disseminated by the "SANDRE" Website.

Year 2012 was marked by:

- **Obtaining the ISO 9001 certification** covering the specification documents of the "SANDRE" exchange scenarios. The long-term goal is to cover all the activities of the technical secretariat of "SANDRE".
- **Publication of specification documents** on various topics such as surface and inland water quality, groundwater and Programs of Measures.
- **Over 47,000 codes were created for all reference frames.** The "SANDRE" is working to establish a new service for the dissemination of data sets including history management.

- **More than 800 certifications of exchange files were achieved according to "SANDRE" formalism** including exchanges between water suppliers and the Regional Agencies of the Ministry for Health. The "SANDRE" has now a new certification for Web services

Furthermore, "SANDRE" improved the exchange scenario for enhancing the information system of the French National Hydro-meteorology and Support to Flood Forecasting Center (SCHAPI).

As part of the INSPIRE Directive, of the Open Geospatial Consortium (OGC) and of the work of COVADIS, "SANDRE" is a contributing member of the drafting of specifications on data exchange on water: WaterML 2.0 specification (working group hydrology of the OGC).

## www.glossaire.eaufrance.fr

### Glossary on water and aquatic environments

Under the French National Water Data Plan, which organizes the collection, banking and dissemination of water data in France, common tools to assist water users in enhancing their information are being gradually established.

In particular, a glossary specific to the field of water has been available on the Web since September 2011.

The glossary has about 1,000 words, coming from the harmonization of glossaries originally developed by

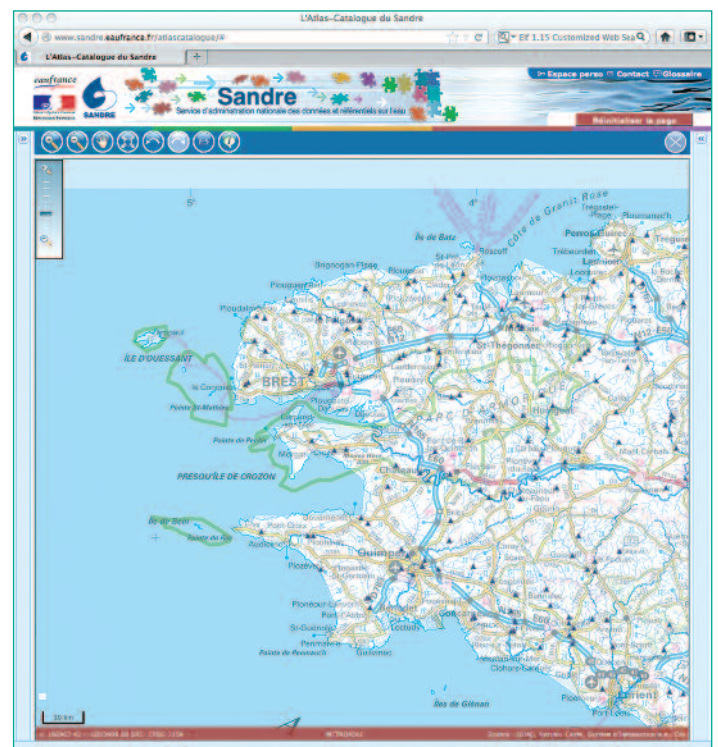
each of the Water Information System partners (Ministry of Ecology, Water Agencies, research organizations, etc.).

Everyone is involved and may contribute to enrich the glossary by adding, modifying or deleting terms.

Regular changes are also planned for the development of new functionalities: diagrams and illustrations accompanying definitions, mentions of reference texts and regulations...



## http://sandre.eaufrance.fr



## France



### Water and aquatic environments: Panorama of French stakeholders in Research and Development

The "CARTEAU" website is the first site dedicated to stakeholders in Research and Development in the field of water and aquatic environments in France.

It aims to facilitate the building of partnerships with scientists and managers to improve the visibility of French Research and Development in the field of water and aquatic environments.

With a few clicks, you will discover:

- What are the regional, national and European research programs and their projects;
- What private or public research units are working in the field of water and aquatic environments;

- What types of community structures (research federations, clusters, public interest groups, etc.) exist.

The site also has a "news" section that allows:

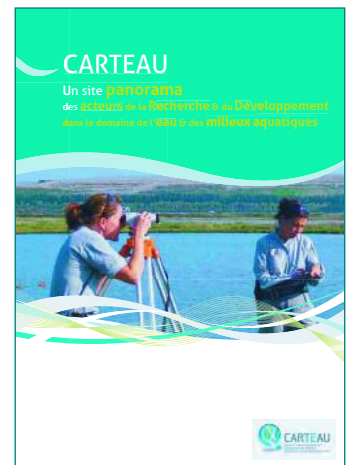
- Finding announcements of events (conferences, seminars, etc.), calls for papers, calls for project proposals;
- Being informed of the latest publications of documents;
- Learning about university training courses;
- Learning about the stakeholders' lives (name change, merger, etc.).

A "Documents and Links" section provides executive summaries (annual Carteau synthesis, etc.), reports, articles and links to partner websites.

Your "personal" space is accessible via a login and password to access sections such as statistics (number of FTEs per regions, thematic search topics per river basin, etc.).

"CARTEAU" also offers a search engine to perform four types of request:

- A simple search: a keyword, an acronym, etc.;
- A detailed and more accurate search (free text, choice in a category, etc.);
- Search with topics and keywords (pre-defined);



- A targeted search via categories (research units, projects, etc.).

<http://carteau.onema.fr>

## "Naiades"

### National database on the quality of rivers and water bodies



"Naiades" is the national database on the quality of watercourses and water bodies for metropolitan France and overseas departments.

The creation of "Naiades" involved the French National Agency for Water and Aquatic Environments (ONEMA), Water Agencies and Offices, the Regional and Departmental Services of the Ministries concerned, IRSTEA and IOWater.

The project has been led by "ONEMA" and the Seine-Normandy and Rhone-Mediterranean and Corsica Water Agencies since 2010.

The first version of the database has been available since autumn 2012: at the moment it collects biological data on macro-invertebrates of small streams and diatoms of rivers.

Other biological data (fish, macrophytes, phytoplankton, etc.) and other physico-chemical and hydro-morphological data will be gradually gathered.

"Naiades" allows programming and monitoring abstractions, registering documents or entering results, qualifying results, importing and exporting data.

To support future users of the database, two sets of training courses were carried out between June and December 2012, for about 70 public agents.

In 2013, training courses will also address "ONEMA's" staff and service providers, as and when other biological materials will be developed.

[www.reseau.eaufrance.fr/sujet/naiades](http://www.reseau.eaufrance.fr/sujet/naiades)

## "GEST'EAU"

### The "SDAGE" and "SAGE" website

"Gest'eau", the national website dedicated to Masterplans for Water Development and Management (SDAGE), Water Development and Management Plans (SAGE) and Environments Contracts, is getting richer every day with information on the progress of these procedures, but also with reference documents related to local water management:

- Documents produced by the "SAGE" and Environments Contracts, including projects submitted to Local Authorities' consultation and to public inquiry;
- Methodological guidance documents, such as the guide for the development and implementation of the "SAGE", enriched by changes in regulations and including factsheets answering the most frequently asked questions
- Regulatory texts.

To disseminate these documents with maximum responsiveness, tools for watching the various websites dedicated to water management have been developed.

And, since the site redesign completed in 2010 following a satisfaction survey conducted among users, the "Documentation" section offers a search engine to target demands, with specific criteria (type of document, date of publication, location).

[www.gesteau.eaufrance.fr](http://www.gesteau.eaufrance.fr)

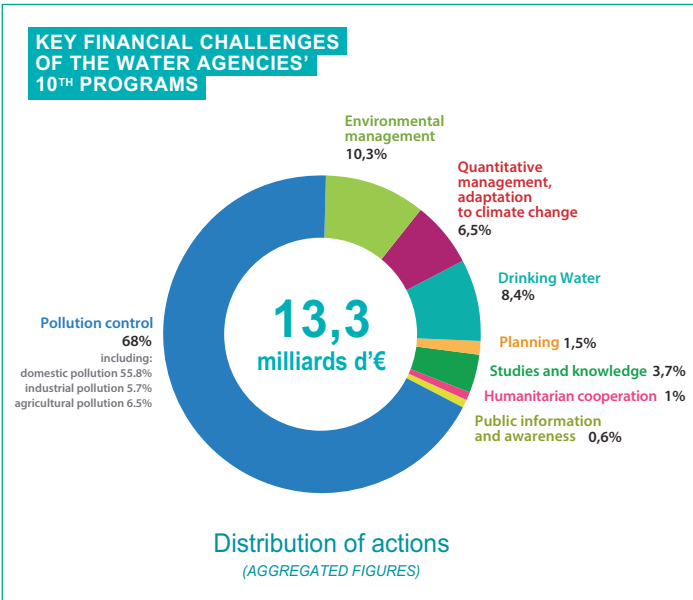




### 2013-2018: 10<sup>th</sup> Action Plan of the French Water Agencies



13.3 billion Euros for water and aquatic environments



The six French Water Agencies have just presented their 10<sup>th</sup> Action Plan for the next six years, 2013-2018.

These plans, resulting from a broad dialogue with the different categories of users represented in the Basin Committees, meet national guidelines set by the Ministry of Ecology.

During those six years, they will mobilize €13.3 billion for the preservation of water and aquatic environments.

In the context of public expenditure control, the Water Agencies will carry

out better targeted actions for achieving Good Status of French Water Bodies, in accordance with the challenges identified in Masterplans for Water Development and Management for large River Basins (SDAGE) for applying the European Water Framework Directive.

This 10<sup>th</sup> Plan is oriented towards logics of results for the recovery of Good Status of rivers, groundwater, lakes and coastal waters. The traditional action (i.e. sanitation and drinking water supply) is, in this context, widely increased in areas of non-point pollution control and restoration of natural environments.

#### Key priorities of the 10<sup>th</sup> Plan

The topics to be developed in the local action of the Water Agencies are:

- **Non-point pollution control, including agriculture** (nitrates and pesticides), with a focus on the protection of the catchment areas of water intakes for drinking water supply,
- **Restoration of aquatic environments, ecological continuity and wetlands as well as restoration of environments and alluvial areas** (flood prone areas) for protection against the risks of floods and sea flooding (Flood Directive).

For these two priorities, overall financing capacities are highly increased, even doubled in the most affected river basins.

- **Water resources management and the sharing of resources in anticipation to climate change** (water saving, leak control, abstraction control) especially in the basins most affected by potential water conflicts and shortages due to the expected climate changes (West, South, South-West);
- **Regulation of the water regime of rivers** to cope with lower flows due to climate changes that are already observed across the

country, particularly due to the decrease in snowfall.

- **Actions for coastal areas**, which contribute to the implementation of the Water Framework Directive "Strategy for the marine environment".

Traditional actions of the Water Agencies (sanitation and drinking water supply) are maintained, but with increased selection and will cover:

- On-site sanitation, which now appears as an alternative to the strategy of community sewerage for smaller municipalities;
- Improvement of the security of supply and of the quality of water intended for human consumption;
- Urban-rural solidarity to support the investments of rural communities;
- The treatment of toxic industrial pollution and discharges of hazardous substances.

**These programs will generate a potential of more than €25 billion of work, including €15 billion in water and sanitation, and about 60,000 to 80,000 direct and indirect jobs.**

[www.lesagencesdeleau.fr](http://www.lesagencesdeleau.fr)

## Seine-Normandie Water Agency

### Hazardous substances discharged by individuals



The Seine-Normandie Water Agency has commissioned an assessment of discharges of hazardous substances by the use of cleaning products in the Seine Normandy Basin.

The first step of this work has allowed establishing a **database of more than 740 substances used in household products and their dangerousness.**

The list of types of household products has been studied in detail to determine the quantities used in the Basin.

Using this quantification of uses and the dangerousness of the identified hazardous substances, products were selected and a **first attempt at quantifying 58 hazardous substances** was performed using standard coefficients and a simplified approach to describe the magnitude of the problem.

The analysis of the results led to propose possible improvements regarding the information system, the reference frames to develop and possible future actions of the Agency in this area.

[www.eau-seine-normandie.fr](http://www.eau-seine-normandie.fr)

## France



### Adour-Garonne River Basin

#### Monitoring Program for Water Bodies: training for water samplers



AGENCE DE L'EAU  
ADOUR-GARONNE



Students during on-site sampling

Performing analyzes has become a controlled and automated action, the risk of error being very limited. However, taking a representative sample and keeping it in good conditions for recording the collected information require

good use and very good knowledge of materials, methods, risks of degradation, etc.

**Staff competence is linked to the know-how acquired in real working situation on sampling sites.**

**AQUAREF**, National Reference Laboratory for monitoring aquatic environments (BRGM, IFREMER, ISTREA, INRIS and LNE consortium, with the support of ONEMA) proposes technical references that technicians will use in their actions to make sampling practices reliable and standardized.

To provide the samplers of the Adour-Garonne Basin with theoretical and practical skills for proper exercise of their profession, a pilot training course was carried out at the initiative of the Water Agency.

This first training of 10 trainees was held over 3 days at the French National Water Training Center and was a great success.

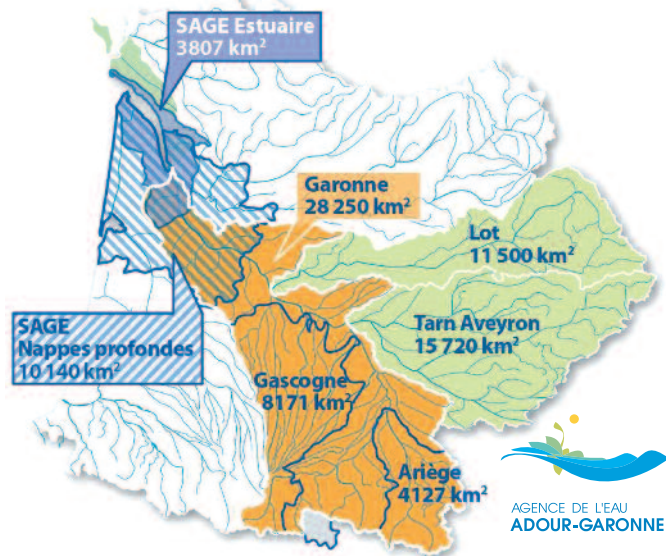
Building on this success and given the significant demand, the Adour-Garonne Water Agency is scheduling several courses during year 2013.



Consortium scientifique et technique  
BRGM IFREMER  
INRIS Istrea et LNE

#### Anticipating global changes by 2050

Garonne River Basin, South-west of France (study area of 65.000 km<sup>2</sup>)



A strategic mission of the Adour-Garonne Water Agency is to improve the understanding and awareness of decision-makers to face global change.

In the Garonne River Basin, the first results of hydrological simulations of

future climate show that in the 2050s natural water inputs to the river and low-water flows would be reduced, with increased evapotranspiration and earlier snowmelt.

These are not marginal adjustments.

The Water Agency is then organizing debates to define priorities for action and a collective strategy. It is carrying out a prospective study widely involving local stakeholders.

The "Garonne 2050" prospective aims to answer two questions: what can occur and what can the stakeholders do?. The methodological approach involves the elaboration of scenarios and their assessment through indicators and graphic illustrations.

At this stage, **the basins stakeholders have 5 scenarios:** ongoing discussions should provide a consensus picture of the future and lead to a socially accepted adaptation strategy meeting the challenges.

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#### Classification by UNESCO of the Dordogne River Basin

Since 11 July 2012, the Dordogne River Basin has been part of the World Biosphere Reserves Network of UNESCO.

This is the result of methodical and collective work led by "EPIDOR" and of the broad support given to this project by the population, socio-professional stakeholders, users of the river and communities (regions, departments, municipalities, Regional Natural Reserve Parks, etc.).

The 2012 General Meetings of the Dordogne River Basin, held in Bergerac on 8 and 9 November 2012, were the opportunity to communicate widely on this classification and to review 20 years of action focusing on rivers, based on a wide public consultation.

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[www.eptb-dordogne.fr](http://www.eptb-dordogne.fr)

[www.eau-adour-garonne.fr](http://www.eau-adour-garonne.fr)



### Rhone-Mediterranean and Corsica Basin

#### "SOURCE" in Provence-Alps-Riviera

In 2009, the Provence-Alps-Riviera Region, with all the regional stakeholders, organized **the first Regional Water Days** and launched **the Orientation Plan for rational and joint use of Water Resources (SOURCE)**.

#### A prospective approach

Following the assessment phase, Phase 2 was to establish contrasting and plausible prospective scenarios. About ten key variables, including demography, land, climate change or environmental protection, were selected,

and then adapted according to two series of assumptions which led to a set of **four scenarios**, after a series of meetings and working groups with elected representatives, user representatives and concerned institutions of the Region.

These global scenarios were then adapted to six territories in order to highlight local challenges, through a series of public meetings.

Phase 3, currently in progress, should help define the quantitative targets and the means to mobilize.

### Regional water management decrypted for the World Bank



The Delegation's visit in Provence-Alps-Riviera

On request of **the World Bank**, a visit to study the multi-purpose water management model used in Provence was organized on the sidelines of the World Water Forum in Marseilles from 12 to 17 March 2012.

This meant organizing a program for twenty specialists of the Latin American and Caribbean water sector that allowed understanding the origin of the French water management system, its recent developments and the factors that have influenced it.

#### A region exemplary for its diversity and complexity

Over three days, with the participation of the Rhone-Mediterranean and Corsica and Adour-Garonne Water Agencies, the Canal de Provence Company, the Marseilles Water Company, Electricity of France and IOWater, the Delegation studied, during many visits, the diversity and complexity of the Provence-Alps-Riviera region through the legal framework of institutional management, the main tools for planning, management and regulation, urban management of water and sanitation services, including monitoring and warning systems, customer man-

agement and quality service, public-private partnerships, management of hydraulic infrastructure (channels, hydropower structures), water demand management and water allocation rules and regional planning for multiple and balanced uses.



Région  
Provence  
Alpes  
Côte d'Azur



WORLD BANK

[www.regionpaca.fr](http://www.regionpaca.fr)

### Drôme River Basin

#### Geomorphological study of the basin

Achieving Good Ecological Status of surface waters, as planned by the Water Framework Directive, depends on the correct geomorphological functioning of rivers, amongst other things. Hydromorphology indeed affects both the biological status and physicochemical status of Water Bodies.

This issue has been identified for a long time as an important challenge in the Drôme River Basin.

While it is one of the rare French rivers not to have had its hydrology and sediment transport disturbed by major development works, its natural dynamics were nevertheless severely affected by human activities in the past century, especially by massive extractions from the low-water bed.

**The local Drôme River Basin Management Organization (SMRD)**, supported by the Rhone-Mediterranean-Corsica Water Agency and Rhone-

Alps Regional Council, commissioned a study of the geomorphological conditions in the River Basin.

The aim of the study is to provide a clear, comprehensive view of the current functioning of the various rivers in the basin by studying their morphology, explaining their dynamics and evaluating future changes, as well as their implications in human activities and natural environments.

These analyses, shared with local stakeholders, will be able to draw up a joint river management strategy that will be as consistent and as effective as possible over the entire area.

#### Claire Manus

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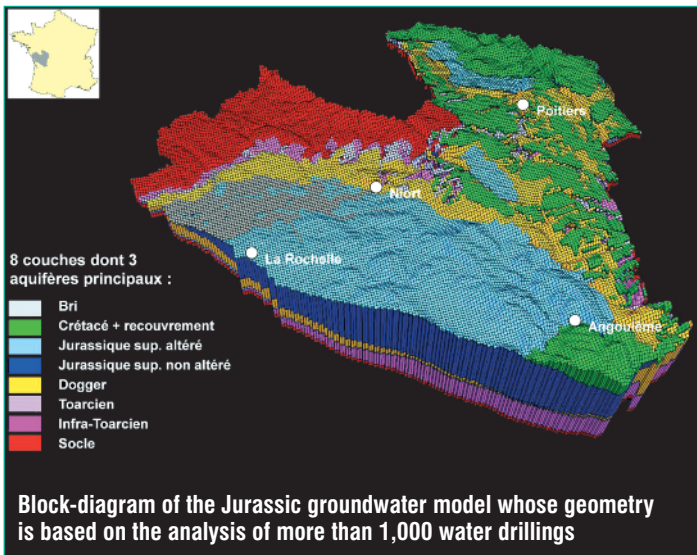
[www.riviere-drome.fr](http://www.riviere-drome.fr)



## France



### Groundwater management in Poitou-Charentes



In hydrogeology, the decisions about resource management must be made by knowing or anticipating groundwater behavior. In Poitou-Charentes groundwater abstraction cannot usually be separated from the flow rate of the river. The use of digital models allows a better understanding of the complexity of aquifers and making predictions.

For example, rainfalls allow predicting groundwater level at a given point and the flow rate of a river.

Two hydrodynamic models were developed, using the MARTHA software [Modeling aquifers by Rectangular mesh in Transitional regime for the Hydrodynamic calculation of Flows], which cover a large part of the regional

territory for Jurassic and Cretaceous aquifers.

These 2 models have 8 hydrogeological layers each and are mileage meshed and monthly time stepped from 2000 to 2007 for the Jurassic or from 2000 to 2008 for the Cretaceous. Their specificity is to incorporate a large part of the drainage areas and spread runoff / infiltration.

The model on the Poitevin Marsh was used to calculate the volumes available for irrigation to meet the levels targeted in the Loire-Brittany Master Plan (SDAGE).

These figures were used to guide water saving policies and calibrate alternatives (water reservoirs).

Both models give the impact of withdrawals, especially for agriculture, on the average monthly flow of rivers.

The model was used to test the impact of projects for alternative reservoirs filled by drilling during winter. It allows assessing the overall impact on the

river flow and groundwater level, negative during winter in the recharge period and positive in summer due to substitutions of withdrawals.

The models were also used to see the impact of climate change on groundwater levels and river flows in 2050, the impact of sea level rise due to global warming and to quantify the nitrogen inputs to the coastline or to map wetlands.

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### The "Neste-Gascony System"

Since 1960, the **Gascony Regional Planning Company (CACG)**, has managed multiple hydraulic works (irrigation systems, storage tanks, transfer channels) whose concession allows coordinated management of water resources to the benefit of all uses and the environment in the region. The Company intervenes according to three main principles:

- **Advanced technology**

Search for water savings led to improve the efficiency of the recharge of streams, especially from the Neste Canal. A management tool guides technical management decision-making for both meeting needs in the short-term and sustaining flows beyond the irrigation period.

The real-time dissemination of indicators allows associating the partners to ensure the agreed sharing of the available resource.

- **A contractual mobilization**

Private law contracts govern the relationship between the CACG and individual or collective water withdrawers.

They establish the rights and obligations of the parties: setting individual quotas, limiting authorizations to volumes of available resources by managing a waiting list, monitoring water meters, controlling facilities and payment of a tax. **The revenues of the taxes allow covering, without resorting to any operating subsidy, the cost of management (operation, maintenance and repairs) of the entire "system".**

- **A constructive dialogue**

The **"Neste Commission"**, a true "local water parliament", made of forty members (government services, local authorities, chambers of agriculture, irrigators, other withdrawers and users, fishermen, representatives of associations and the CACG), meet one to five times per year, as required.

This Commission allows upgrading management methods, the critical analysis of past management methods and future improvements, especially under a **Low Water Flow Management Plan** specific to the basin, and the anticipation of crisis.

**Daniel Boubée**

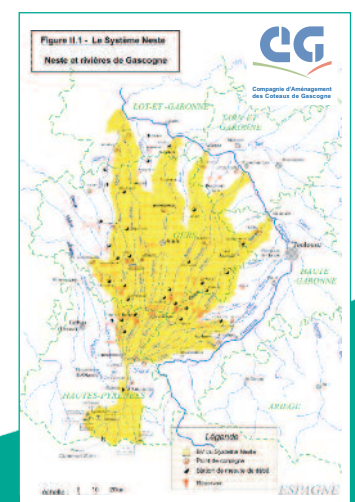
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### Loire Region

#### The Regional Economic, Social and Environmental Council (CESER) sets priorities for water



In June 2012, the "CESER" of the Loire Region adopted a report on "Public water service in the Loire Region: between regional development and environmental challenge".

The regional population should increase by 900,000 inhabitants before 2040.

Quantitative preservation of resources is a collective responsibility that requires savings in all uses. Leak control and increased performance in water supply systems must be priori-

ties for the contracting authorities and managers.

Recovery of water resources quality should continue with the control of all kinds of pollution.

The establishment of strategic water intake protection areas should be done as fast as possible.

This approach should be accompanied by a systematic implementation of Water Master Plans in each Department.

Access to water is a vital need. It is essential to establish a "right to water" and to increase the transparency of bills and prices.

The full report is available on the "CESER" website.

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### Syndicate for the Development of the Vienne River Basin

The "Syndicate for the Development of the Vienne River Basin" is now regrouping about fifty municipalities.

Since 2010, it has been leading an action plan which tends to restore the ecological balance of the 314 km<sup>2</sup> of the catchment area of the Glane stream, a tributary of the Vienne in Limousin, held up by more than 60 weirs.

Dialogue with the riparian populations has been long.

A development plan finally proposed the removal of 41 dams and weirs.

The completion of this four-year program should allow reducing by more than 60% the terracing rate of the river and contribute to the return to good ecological status in 2013 with the financial support of Europe, the Loire-Brittany Water Agency and the Limousin Region.

The final goal is to maintain access to the works for fish migration and the transport of sediments.



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### Integrated Hydropower in Alpine Rivers

In the Alps, hydropower is the most important source of renewable energy.



But this energy production is facing a contradiction:

- On the one hand, **the European Directive on Renewable Energy** requires that EU Member States increase their share of renewable energy production,
- On the other, **the Water Framework Directive** obliges EU Member States to reach and maintain a "Good ecological Status" of their water bodies by 2015.

**How make these requirements consistent?**

**SHARE (Sustainable Hydropower in Alpine Rivers Ecosystems)** is part of the European Territorial Cooperation Program "Alpine Space". From 2009 to 2012, it brought together 13 partners from Italy, Slovenia, Austria, Germany and France (universities, local authorities, NGOs), with the ambition to provide means to strike a balance between the hydropower needs and the health of water bodies.

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## CEENBO



### 10<sup>th</sup> anniversary of CEENBO

The Central and Eastern European Network of Basin Organizations (CEENBO) was created in February 2002 in Sinaia, Romania, as a Regional Network of INBO. The general objective of CEENBO is to promote integrated water resources management at the level of river basins, as an essential tool for sustainable development.

The Presidency of the Network was assured between 2002 and 2004 by Romania, through the National Administration "Apele Romane" (Romanian Waters). The countries which took the Presidency were, chronologically: Poland, Czech Republic and, beginning in 2011, Bulgaria.

**CEENBO Permanent Secretariat** was assured for the whole period by Romania, respectively by the National Administration "Apele Romane", and since the beginning of 2007, by N. A. "Apele Romane" through the National Institute of Hydrology and Water Management (NIHWM), Mrs. Daniela Radulescu being the Permanent Secretary of the Network.

The 10 years of activity of the Central and Eastern European Network of Basin Organizations were celebrated with the outstanding event

which took place in Sofia, Bulgaria from 20 to 22 May 2012, at the invitation of the Bulgarian Authorities.

The International Conference on "Water Management in Central and Eastern Europe: Problems and Challenges", was organized within the "Green Week", which, this year, had "Water" as a theme with the motto "Every drop counts".

This event emphasized the actions and activities developed by CEENBO during this 10-year period, the most important being:

- Warsaw, Poland, July 2002 - Workshop on "Impact and pressures";
- Calimanesti, Romania, November 2002 - Workshop on "Delineation of surface Water Bodies - Designation of Heavily Modified Water Bodies";
- Tulcea, Romania, September 2003 - Workshop on "Characterization of river basin districts: steps and procedures, case studies. Specific aspects of wetlands";
- Bucharest, Romania, June 2006; Workshop on "Good Ecological Status";



[www.ceenbo.org](http://www.ceenbo.org)



- Sibiu, Romania, October 2008 - CEENBO Liaison Bureau jointly with the plenary meeting of EUROPE-INBO, 195 participants;
- Paris, France, European Water Directors Meeting, November 2008: INBO paper on WFD contribution in transboundary basins ;
- Plovdiv, Bulgaria, March 2011 - CEENBO Liaison Bureau meeting jointly convened with the Conference on Integrated Water Management in the Balkans and Eastern Europe, 120 participants;
- Ljubljana, Slovenia, November 2011, participation in the International Seminar "Forging Targets and Solutions for Rivers and Water Ecosystem Restoration", organized by the European Center for River Restoration (ECRR) and the Water Institute from Slovenia (IzVRS).

**INBO Regional Networks are a bridge for dialogue, cooperative action and exchange of know-how and experience in the water management field.**

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**1 Million visitors in 2012**

## Free speech

### World Wildlife Fund - WWF: Making hydropower sustainable in the Western Balkans - the DASHI project



Grabovica dam  
on Neretva river,  
Bosnia and Herzegovina



South-Eastern Europe hosts outstanding biodiversity sites. However, a growing number of hydropower developments could seriously threaten key ecosystems, rivers and lakes, and local economies which rely on these natural resources.

**In order to ensure that development is in harmony with nature and people, WWF-Mediterranean started the Dinaric Arc Sustainable Hydropower Initiative - DASHI.**

Stretching over 100,000 km<sup>2</sup> approximately between Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro and Albania, the Dinaric Arc region is home to natural treasures that make it a biodiversity hotspot of Europe. Still pristine rivers and lakes surrounded by rich forests and spectacular canyons and a complex network of underground rivers, marshes and wetlands, create the perfect conditions for life to blossom.

The Dinaric Arc, however, is facing an unprecedented hydropower boom. Abundant water resources and increase in the local demand for energy, combined with troubled economies, have fostered the development of new hydropower projects throughout the region.

If not well planned, hydropower developments can irreversibly damage pristine freshwater ecosystems, as well as create significant economic, social and environmental impacts for the local population.

The region is also increasingly facing climate change that has a negative impact on hydropower production.

Outstanding freshwater ecosystems such as Skadar Lake in Montenegro and Albania, Hutovo Blato and Livanjsko Polje in Bosnia and Herzegovina - all Ramsar sites - are threatened.

Through the DASHI project, WWF aims to safeguard these priority areas and to ensure that planned hydropower projects are conceived in a sustainable way.

In cooperation with local NGOs (farmers, fishermen, etc.) and international organizations such as Transparency International, WWF is providing scientific arguments for mobilizing civil society to foster dialogue with all sectors involved in hydropower.

A vast array of actors are targeted, from international finance institutions to government and electricity utilities, through capacity building, discussion and communication, pushing for a common understanding and the application of sustainable approaches to hydropower in the region.

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## Kosovo



### European twinning for environmental capacity building



The Lumbardhi i Peja River

Kosovo is still facing environmental problems, concerning water, waste and land management in particular.

Kosovo has made progress on adopting a new legislation but more work is needed to create an administrative environment that will ensure further approximation to European standards.

To this end, a 2-year European twinning project was launched in December 2011 in order to build the capacity of the **Kosovo Ministry of Environment and Spatial Planning (MESP)**, which is the competent Authority for waste, water management, nature protection and planning, and of other stakeholders in the environmental sector.

Italy and France are participating in this twinning.

Regarding the water component, experts from the French Ministry of Ecology, Rhine-Meuse Water Agency and International Office for Water are being working jointly with their Kosovo counterparts to exchange on experiences and to develop recommendations on **WFD implementation and elaboration of River Basin Management Plans, pollution control, and to strengthen the Water Information System in Kosovo.**

## Russian Federation



### The "Pure Water" program for 2011-2017

#### The Government of the Russian Federation approved the "Pure Water" Program for 2011-2017.

This program is aimed at the implementation of regional projects in the field of water supply, wastewater discharge and treatment.

RUR 9 billion will be allocated out of the federal budget and RUR 9 billion out of the regional budgets in 2011-2013.

By 2017, as a result of the program implementation, drinking water supply will be increased from current 77% up to 85%.

Access to centralized sanitation services will reach 84% versus current 73%.

In 2017, the investments into water supply and sanitation systems along with wastewater treatment facilities taken as a share of the total industry revenue will be increased from current 10% to 31%.

Wastewaters treated according to the standards will be increased from 46% in 2009 to 53% by 2017.

The Law on Water Supply and Sanitation has been drafted.

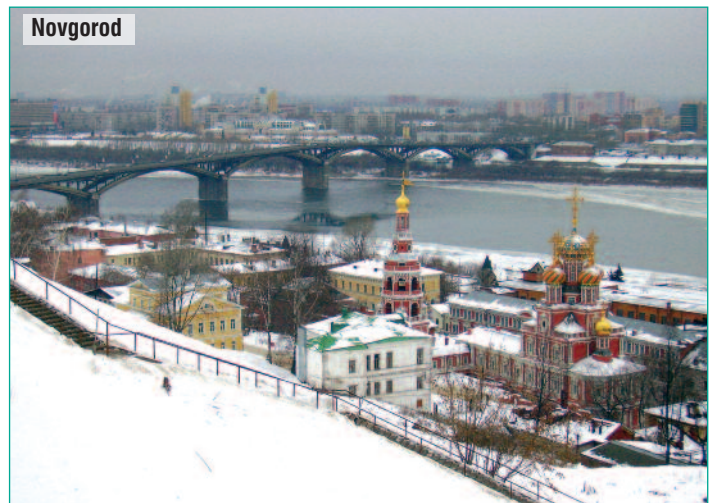
Its main provisions set out the procedure for water quality control along with defining rates for connections, and improvements for effluent discharge regulation.

Regional target programs have been already adopted in 40 regions; funding has already started for 17 of them.

As of November 2010, 73 regions have submitted their Pure Water regional programs to the Russian Water Association.

The Pure Water program is also aimed at promoting innovations in the water supply industry. It encourages local manufacture of water supply and sanitation accessories such as pipes, blinds, filters, on-site treatment facilities and consumables.

According to the Deputy Chair of the Council of the Federal Assembly of the Russian Federation, Svetlana Orlova, the water projects have been already launched at the initiatives and expense of private investors under public-private partnership arrangements in a number of regions and among them the Bashkortostan Republic, the Volgograd, Novgorod, Orenburg, Penza and Yaroslavl Regions.



These are large-scale programs. The plans cover the construction of over 1,100 km of water pipelines in Ulyanovsk Region for instance.

She also pointed out that "the proposed arrangements have an institutional nature and are based on the public-private partnership approach, while the program itself is aimed at the provision

of business environments to attract private investors into the water supply and sanitation sector".

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The Volga River

### "WPI-RQC"

#### Model for assessing water quality

The model "WPI-RQC - Water Problems Institute - River Quality Control" developed at the Water Problems Institute of the Russian Academy of Sciences, allows assessing water quality and the effectiveness of protection measures in a river basin.

The model was designed for the Volga River Basin, but it can be used for any river basin and has already been tested in the Amur River Basin, Upper Ob River Basin and the Urals River Basin.

The model allows calculating water quality and the flow of pollutants coming from the whole basin, including tributaries, but also identifying protection measures in the basin.

In addition to simulations, the WPI-RQC model allows determining non-point sources of pollutants and calculating the amount of pollutants that the riverbed can assimilate. The model can also determine places in the river basin, where protection measures are necessary.

Moreover, for each point source pollutant with discharges exceeding the local self-purification capacity, it calculates the necessary capacity of the treatment plant, its type and cost.

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# The Mediterranean

## MENBO



### Tools for integrated water resources management

The workshop "Tools to support and improve Integrated Water Resources Management: STRATEAU and AQUATOOL - A Mediterranean Perspective" was organized on the 20<sup>th</sup> of September 2012 in Valencia (Spain) by the **Mediterranean Network of Basin Organizations (MENBO)** and the **Technical University of Valencia (UPV)** in collaboration with the Water Embassy and support from the Global Water Partnership Mediterranean (GWP-Med).

This event brought together more than 50 experts from the Mediterranean

region and it mainly focused on two tools that support integrated water resources management: AQUATOOL and STRATEAU, developed respectively by the Technical University of Valencia (Spain) and the Water Embassy (France).

- **STRATEAU** is a decision making supporting tool which proposes water management scenarios.
- **AQUATOOL** is a decision-making supporting tool for planning. It allows quantitative, qualitative, economic and environmental analyses on the river basin scale.

Both tools may be used in a complementary way.

Three round tables have been organized on:

- Perspectives for the application of the decision-making supporting tools;
- Integrated water resources management in education;
- Integrated water management tools in the Mediterranean region.

As a final result, the participants underlined that the implementation of simulation tools like AQUATOOL and STRATEAU is an important support for water managers.

All papers and results of the workshop can be found on the MENBO website.

**Katharina Kober**

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MENBO Workshop

### A new Permanent Technical Secretary for MENBO

**Messrs. Javier Ferrer and Teodoro Estrela Monreal**



**Dr. Teodoro Estrela Monreal**, Head of the Hydrological Planning Office of the **Júcar River Basin Authority (JRBA)** in Valencia (Spain), is the new Permanent Technical Secretary of the **Mediterranean Network of Basin Organizations (MENBO)**.

The JRBA has hosted the head office of MENBO Secretariat since the creation of the network in 2002.

The former Permanent Technical Secretary, **Dr. Javier Ferrer Polo**, was appointed Water Commissioner of the JRBA. The MENBO Members thank him for his successful work in the last years.

## NOVIWAM

### Southern European regions: a new water cluster approach

The **NOVIWAM project (Novel Integrated Water Management Systems for Southern Europe)** aims to promote interregional cooperation on tools and methods for water management at river basin level.

**NOVIWAM** facilitates long-term relationship between participating groups, mutual learning activities and cooperation on these topics.

Funded by the European Union under the **7<sup>th</sup> Framework Program for**

**Research and Technological Development**, it addresses regional clusters regrouped in consortiums (Albania, Cyprus, French Poitou-Charentes Region, Northern Hydrological Region in Portugal and Andalusia in Spain).

One of the objectives is to expand these partnerships to neighboring European countries facing similar problems in water management.

The project especially aimed to analyze gaps, weaknesses and opportunities of

decision-making supporting tools and to draft a guide for Regional Authorities to promote internationalization of research and innovation,

**The NOVIWAM original approach is to involve Research Centers, companies and Regional Authorities.**

A survey was conducted early in the project involving 500 people to identify gaps and opportunities.

The project also allowed:

- **Accelerating the use of research results**, their practical application in the partner regions,
- **Producing data on water and its uses** that are compatible with the INSPIRE and OGC (Open Geospatial Consortium) standards.

The **NOVIWAM** project partners aim to involve other Mediterranean regions. Dissemination of the project conclusions at the regional and international levels has been achieved notably through an abstract presented at a conference in Brussels at the Committee of the Regions.

The dissemination of the **NOVIWAM** results took place during the final conference in Seville from 21 to 23 January 2013.

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[www.noviwam.eu](http://www.noviwam.eu)

**NOVIWAM**  
Novel Integrated Water  
Management Systems  
Southern European Regions



Noviwam European Conference on "Research for Integrated Water Resources Management"



### Better management of water knowledge in the Mediterranean

#### Towards a certification by the Union for the Mediterranean (UfM)

One of the commitments made at the last World Water Forum organized in Marseilles in March 2012 was to build shared Water Information Systems to support cooperation and peace in the Mediterranean.

Under the impulse of the **UfM Secretariat**, the promoters of three regional informative projects gathered to prepare a unifying and ambitious project: **the Lebanese Ministry of Energy and Water, the Arab League and EMWIS, the Euro-Mediterranean Water Information System.**

This new project is made of 4 components:

- **Regional coordination**, especially with the European Union (SEIS, WISE, INSPIRE) and the United Nations for exchange of experiences, drafting of guides, recommendations, tools and standard documents, etc.;
- **Strengthening of National Water Information Systems (NWIS)**, in 4-5 pilot countries (Morocco, Tunisia, Jordan, Lebanon and under conditions Bosnia and Herzegovina);
- **Regional training programs on water data management** (reference frames, data dictionaries, quality, legal aspects, etc.);
- **Demonstration of data automation and reporting** for international initiatives such as the Water Strategy of Arab countries or the Action Plan for the Mediterranean of UNEP.

All interested parties met in Barcelona on 5 and 6 November 2012 to finalize the technical and financial proposal for certification by the 43 Member Countries of the Union for the Mediterranean (UfM).

In particular, they reiterated the urgent need to support countries in the implementation of their National Water Information Systems (NWIS).

All Mediterranean countries will participate in regional activities and may reinforce their own NWIS at a later stage on the basis of the feedbacks of this project.

#### Optimizing measures against water scarcity

One possible application of the System of Environmental-Economic Accounting for Water (SEEA) in river basins is to optimize the choice of measures to be applied within a Drought Management Plan.

**EVREN** and **EMWIS**, in association with the Jucar River Basin Authority in Spain, are analyzing the advantage and feasibility of this approach in a project funded by **the DG Environment of the European Commission.**

This work is based on the exercise carried out by the European Environment Agency for systematic calculation of "water accounts" at the level of elementary river basins (ECRINS base).

#### First steps towards a knowledge hub on water in the Mediterranean

**Impulsed by the International Union for Conservation of Nature (IUCN), EMWIS, CEDARE and national NGOs in Morocco, Egypt, Jordan and Palestine, a project for a Regional Water Knowledge Hub Network will be initiated with funding from the European Commission.**

The objectives are firstly to collect, analyze and assemble the knowledge generated locally on water resources management, and secondly to make this knowledge available to NGOs, decision-makers and managers, in local authorities in particular.

#### Earth Observation for better water management

**EMWIS is continuing its collaboration with the European Space Agency (ESA)** with a training workshop for the countries of the southern Mediterranean held from 3 to 5 December in Frascati near Rome.

The topics chosen for this training were: access to data from the observation of the Earth, processing of these

data for identifying water bodies, floods, land use, assessment of evapotranspiration, and changes in groundwater bodies.

Synergies with the regional project of the World Bank and NASA in this field have also been identified to prepare the first proposal made by **ESA** and **EMWIS** on capacity building of remote sensing centers.



Meeting at the European Space Agency from 3 to 5 December 2012

[www.emwis.net](http://www.emwis.net)

### Free speech

#### IPEMED : "Opportunity of a Mediterranean Committee of Water Stakeholders"

As part of the preparation of the 6<sup>th</sup> World Water Forum, **the Institute of Economic Prospective in the Mediterranean World (IPEMED)** made proposals for greater cooperation between all water stakeholders and users in the Mediterranean Basin.

Keeping this in mind, "IPEMED" proposed the establishment of a **"Mediterranean Committee of Water Stakeholders"** which, by incorporating interesting features of the basin organizations existing in some Mediterranean countries, would gather on a voluntary basis "interested parties" in water governance: local and regional Authorities, representatives of States, water users, operators, civil society stakeholders, as well as river basin organizations.

This assembly of water professionals would be responsible for proposing and initiating, on relevant scales in the Mediterranean Basin, the priority guidelines that would contribute to better water management in the region, stimulate the implementation of practical projects and identify priorities for action in terms of planning, financing, capacity building of the water sector.

To start, such a project requires the support and involvement of the water stakeholders in the area. It has the advantage of encouraging a regional dialogue beneficial to each river basin of the Mediterranean Region.

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**IPEMED**

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# The Mediterranean

## Turkey



### Three European twinning arrangements on water management



Mr. Veysel Eroglu, Turkish Minister for Forestry and Water at the Kick-Off Meeting on Floods in Turkey on 2 October 2012 in Ankara

As part of the accession process, the European Union is financing twinning arrangements with Member States to facilitate the implementation of the European Water Directives in Turkey.

#### Capacity building on water quality monitoring

This twinning on the implementation of the Framework Directive has been carried out by the Netherlands, France and Spain since September 2011.

It aims to support the Turkish Ministry of Forestry and Water in **drafting monitoring plans for six pilot river basins and a national monitoring plan.**

During the first year of the project, the activities focused on assessing the institutional and methodological gaps that Turkey is still facing on monitoring.

In addition, many training courses were carried out in spring/summer 2012 on the various biological quality elements that have to be followed in order to assess the ecological status of rivers and lakes.

#### Implementation of the Floods Directive

The institutional twinning project on capacity building of the new Water Directorate of the Turkish Ministry of Forestry and Water for implementing the Floods Directive is carried out by France and Romania.

Activities started in August 2012 for two years on the following issues:

- **Transposition of the Floods Directive in Turkey** and adaptation of the institutional organization;
- Methodological support to the practical implementation of the 3 steps of preparing a **Flood Risk Management Plan in the pilot "Bati Karadeniz" river basin** flowing into the Black Sea.

Then, dissemination of the experience gained in this pilot basin to the 25 other Turkish river basins is planned;

- **Preparation of the National Plan for Implementation of the Floods Directive** integrating economic analysis.

#### Transposition of the Bathing Water Directive

The Turkish Ministry for Health and its new Public Health Agency are the contracting authorities of this twinning agreement awarded to France and Italy.

The activities that started in January 2013 will be carried out in three pilot regions and results will be disseminated to all Turkish regions.

## Iraqi Kurdistan



### Towards sustainable water management: Establishment of a High-level Water Committee

Since August 2010, the French Ministry of Finance has supported the Kurdish Ministry of Water Resources by financing a pilot project in the Greater Zab River Basin entrusted to a group of companies led by the Canal de Provence Company, associating BRGM, IOWater and G2C IT.

A High-level Water Committee ("Lejna Balla Aw" in Kurdish) was created. It is chaired by the General Director of Water Resources and brings together the General Directors of the other Ministries involved in water resources management: Ministry of Electricity, Ministry of Natural Resources, Ministry of Local Authorities, Ministry of Planning and Environmental Board. It invites when needed representatives of the civil society and local Authorities.

The first meeting of "Lejna Balla Aw" was held in October 2012.



The Directorate of River Basin Management, which is being officialized, is taking care of its Secretariat and keeps links with Local Authorities and the civil society.

On this occasion, the **"World Pact for better basin management"**, initiated by INBO, has been signed by the

General Director of Water Resources of Kurdistan.

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# The Mediterranean

## Allocating the waters of the Orontes River Basin



The Orontes River

**The Orontes (El-Assi) River Basin is shared among Lebanon, Syria, and Turkey.** Its waters are a critical resource for these co-riparians and are heavily developed in Syria and Turkey for irrigation and industrial water uses. To this date there is no basin-wide agreement between all the co-riparians.

Between Syria and Lebanon, negotiations restarted in 1999 and were concluded with an agreement signed in 2001. The UN Convention of 1997 on the Law of the Non-navigational Uses of International Watercourses served as a guide to the negotiation process of this agreement and generated a "win-win" situation. Lebanon, the upstream country, was given the right to build two dams on the Orontes with total storage of 65 Million cubic meters.

The University of Texas at Austin proposed a mathematical optimization method to allocate water of the Orontes River among the three riparian countries using the factors relevant to equi-

table and reasonable utilization mentioned in article 6 of the UN convention such as:

- Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
- The social and economic needs of the watercourse States concerned;
- The population dependent on the watercourse in each State;
- The effects of the river uses in one State on other riparian States;
- Existing and potential uses of the watercourse;
- Conservation, protection, development and economy of use of the

water resources of the watercourse and the costs of measures taken to that effect;

- The availability of alternatives, of comparable value, to a particular planned or existing use.

This method was optimized using obtained data from the Lebanese share of the basin and current precipitation information.

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## North-Western Sahara Aquifer System (NWSAS)



NWSAS covers an area of approximately 1,000,000 km<sup>2</sup>; **it is shared by Algeria, Libya and Tunisia.** It is located in a very arid area with small recharge but with a large stored volume, estimated at between 20,000 and 31,000 km<sup>3</sup>.

Since 1970, the abstracted water volumes have been multiplied by four, leading to major risks of water salinization, reduction of the artesian condition, depletion of natural outlets, reduced piezometry, increased drawdowns or interferences between intake areas of

the different countries, etc. This will ultimately threaten the sustainability of the socioeconomic development undertaken throughout the area.

**A collaborative process was initiated in 1998 under the auspices of the Sahara and Sahel Observatory (OSS) in partnership with the institutions in charge of water resources in the three countries.**

This led to an agreement on a study in several phases: hydrogeological characterization of the aquifer system and its modeling, identification of the envi-

ronmental risks and inclusion of the socioeconomic aspect in development scenarios.

The modeling of the system should allow considering different scenarios for the exploitation of the resource, while taking into account the development prospects of each of the 3 countries.

The risk index of conflict over transboundary waters is digitally assessed, based on the combination of several indicators (degree of dependence on transboundary waters, of meeting

needs, geopolitical background, geographical context and water governance, etc.).

The conflict risk index obtained for NWSAS seems to properly reflect current situation. Comparing this result with those obtained for transboundary waters in the Jordan River Basin (high risk) and in the Guarani Aquifer System (low risk) reinforces the value scale adopted in this method.

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## Algeria



### Algiers-Hodna-Soummam River Basin Agency

**The new Algiers-Hodna-Soummam River Basin Committee (ABH-AHS)** was installed on 27 February 2012 at the Ministry of Water Resources and chaired by Mr. Messaoud Terra, in the presence of Mr. Mekki Abrouk, Director General of the River Basin Agency (ABH) and Mr. Maouche Lounis, ABH's Chairman of the Board of Directors.

Regarding the tasks assigned to the Basin Committee, the main innovation concerns the examination of the draft **Master Plan for Water Resources Development** which is the instrument

for the long-term planning of water resources development in the basin, an essential part of **the National Water Plan.**

Among its other missions, the Basin Committee is expected to decide on the programs initiated by the ABH, regarding information and awareness of the water users, which are of strategic importance in the context of scarcity of resources and with the continued growth of the water demand in Algeria.

**The composition of the Basin Committee was expanded from 24 to 29 members representing the central Government, local Authorities, water management bodies and the civil society respectively.**

This expansion especially concerns professional organizations and associations working on issues related to water uses and water resources protection.

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## The website of 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 Handbook for Integrated Transboundary Basin Management**
- **The 6<sup>th</sup> World Water Forum of Marseilles 2012**
- **"The World Pact for better River Basin Management"**



**Privileged links with websites:**  
[worldwaterforum6.org](http://worldwaterforum6.org) / [worldwatercouncil.org](http://worldwatercouncil.org)  
[gwp.org](http://gwp.org) / [iowater.org](http://iowater.org) / [emwis.net](http://emwis.net)  
[unesco.org](http://unesco.org) / [water.europa.eu](http://water.europa.eu)  
[european-region-wwf2012.eu](http://european-region-wwf2012.eu)  
[unece.org/env/water](http://unece.org/env/water)

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