

### Adaptation to climate change: "Integrated Basin Management is crucial to guarantee water resources sustainability"



The Ministers present at the 7<sup>th</sup> World Water Forum, through this official statement, acknowledged the paramount importance of a basin approach to address the pressures on freshwater resources that will be increased by population growth and the effects of climate change.

**In national or transboundary river basins, climate change will quickly lead, if not already the case, to a significant alteration of hydrographical cycles and intensification of extreme flood and drought events. We must act quickly before it is too late and urgently take adaptation measures to ensure sustainable water resources management around the world.**

In the context of preparing **COP21**, the major world Climate Conference to be held in Paris, France, at the end of this year, **INBO**, with its experience and expertise acquired over several years, wants to contribute through practical actions already undertaken by its member organizations.

In January 2010, the final declaration of our World General Assembly in Dakar gave the alert to **the risk that freshwater would be "one of the first victims of climate change"** and proposed emergency measures to be taken and to increase upstream-downstream solidarity in the basins of all the great rivers of the world.

**UNECE and INBO are developing a platform for pilot basins to test and promote effective measures to adapt to the climate change impacts on water resources**, including the **"Natural Water Retention Measures"**, inventoried with the support of the European Commission, which seem immediately applicable.

This work has recently led to the joint publication, by the United Nations and INBO, of **a collection of good practices and recommendations for adaptation to climate change in transboundary basins**, that was presented during an "Interregional Day on Adaptation to Climate Change in Basins" at the World Water Forum in Korea.

**INBO and LANBO** are developing with IOWater the **"ECO-CUENCAS"** project, funded by the European Union under the **"WaterClima"** program for Latin America and the Caribbean.

**INBO** also supports the creation of **Water Information Systems (WIS)**, which are essential to assess the situation in basins and follow up their evolution.

But we must go much further, and launch a general mobilization on freshwater, which is why **INBO proposes to its Members to commit themselves, as part of COP 21, to introduce quickly achievable measures in their "Basin Management Plans"**.

**Everybody's mobilization is essential!!**



Daegu - South Korea - April 2015



Fortaleza - Brazil - August 2013



Dakar - Senegal - January 2010



Morelia - Mexico - March 1996

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

[www.worldwaterforum7.org](http://www.worldwaterforum7.org)

## It is time to take stock of the situation...

### "Integrated river basin management is crucial to ensure water resources sustainability"



The 16 themes coordinators at the Closing Ceremony  
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The topics of river basin management and transboundary cooperation were widely discussed during the recent World Water Forum in Korea and tangible progress has been achieved!

The International Network of Basin Organizations (INBO), UNESCO, UNECE, OECD, the GEF, SIWI, IUCN, Green Cross, IOWater, ANBO were entrusted with the coordination, together with their many partners, of more than a dozen thematic or regional official sessions entirely devoted to this issue and that have required a wide preparatory mobilization for more than a year.

These sessions allowed addressing the topics of integrated management and governance in the basins of rivers, lakes and aquifers, whether national or transboundary, as well as the central issue of the now essential adaptation to the effects of climate change on water resources.

Issues, such as the statute and resources of transboundary basin organizations, planning procedures, implementation and financing of joint infrastructure, establishment of integrated water information systems and exchange of data and information among riparian countries, implementation of UN Conventions, better consideration of transboundary aquifers and joint management of surface and groundwater, users and citizens' participation in river basin management as well as education of the populations and improvement of professional training for the different stakeholders involved, were discussed in depth and illustrated by the presentation of many very practical case studies.

As part of the regional process, and this is an innovation, two "Inter-Regional Days" were organized in Gyeongju, firstly, by the Africa - Arab Countries - Europe Regions on "cooperation to reduce conflicts and improve transboundary water management" and, secondly, by the Africa - America - Asia - Europe - Mediterranean Regions on "adaptation to the impacts of climate change on water resources".

A regional session "Europe" showcased the implementation of the European Water Framework Directive and the preparation of the next Basin Management Plans by the 28 Member States of the European Union and associated neighboring countries.

Although there are still different sensitivities, particularly on transboundary water management, an overwhelming majority of participants converged on the relevance of national and transboundary basin approaches to address the major global challenges of water resources management.

The overall conclusions and recommendations of the debates were, for the first time in a World Water Forum, presented to the attending Ministers, who welcomed the many contributions and efforts made by the regional and thematic processes.

On the themes of basin management, these recommendations can be summarized as follows:

- It is important to maintain and recover sound water cycle through promoting relevant international cooperation as well as managing water cycle and river basins in integrated and comprehensive manner.

- Cooperation and dialogues over transboundary waters among riparian countries offer significant prospects for their sustainable development, regional integration and enhancement of mutually beneficial relations in economic, social and environmental fields.
- In many regions, riparian countries of transboundary basins have created joint commissions, authorities or international organizations, improving dialogues, exchanges of useful information, conflict resolutions and benefit sharing.
- One of the keys to building trust could be facilitating data and information exchanges among riparian countries of transboundary basins and aquifers.
- Cooperative efforts in the field of transboundary waters are strongly encouraged.
- The recent entry into force of the UN Convention on the Law of the Non-Navigational Uses of International Watercourses in August 2014, as well as the amendments for the opening of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes to all United Nations Member States are useful in this context, noting that they can only apply when appropriate.



Closing Ceremony © IOWater - C.Runel





**Mr. Lupercio Zirolto Antonio INBO World President**  
**Opening of the session on transboundary cooperation**  
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- There is a need for reasonable and sustainable management of transboundary aquifers, and countries are encouraged to enter into effective dialogues to this end.
- Capacity building in terms of water governance is also crucial.

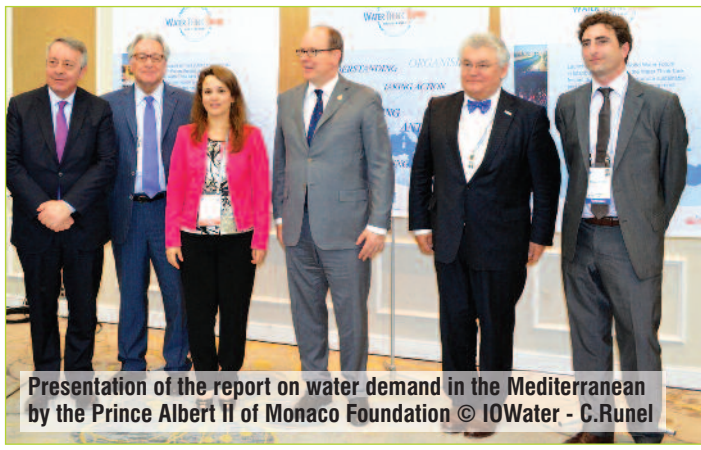
We will add a broad consensus to promote joint management of surface and groundwater in the same territory.

**These recommendations were the subject of the DGIC (Daegu Gyeongju Implementation Commitment),** officially signed at the closing ceremony of the Forum by the 16 themes coordinators, including the International Network of Basin Organizations (INBO) under theme T4.3 - "facilitating cooperation to avoid conflict and improve transboundary water management".

**The Forum Ministerial Declaration** stressed the need to promote good governance at all levels including basin level, based on, inter alia, water planning, public participation and the sound management of physical infrastructure and natural systems as a means to effectively tackle the water security related challenges.

**The Ministers** recognized the leading role that riparian countries have on advancing cooperation on transboundary waters. They recognized that transboundary water cooperation based on win-win solutions can contribute to sustainable development and sound management of the transboundary waters between riparian countries and peace and stability of the nations.

They noted the key role of the United Nations in promoting international water cooperation at the global level. Several of the principles of the relevant international Conventions on water can be useful in this regard.



**Presentation of the report on water demand in the Mediterranean by the Prince Albert II of Monaco Foundation**  
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**They emphasized that Integrated Water Resources Management supported by appropriate land management at the basin level is crucial to sustainable water management and planning.**

**... here is, finally, the official recognition that INBO has been waiting for too long!!**

In parallel to the official sessions of the Forum, several side events allowed presenting a broad range of field experiments and direct exchanges among managers of basin organizations, especially **the two sessions on examples of fruitful cooperation supported by the French Water Agencies,** in East and Southeast Asia, on the one hand, and in Africa, on the other, as well as a session on river basin management

organized at the French Pavilion, with the support of the French Water Partnership.

**Of course, all the problems will not be solved as by magic, but unquestionably basin management and transboundary cooperation have scored during the World Water Forum in Korea!**

All the papers and photographs of these events, organized during the last World Water Forum in Daegu and Gyeongju from 12 to 17 April 2015, are available and can be downloaded on INBO website.



**www.inbo-news.org**

## The 4<sup>th</sup> International "Water and Film" events (IWFE)



The IWFE, a project of the International Secretariat for Water (ISW), with headquarters in Montreal (Canada), aim to stimulate meetings among the general public, people from the artistic world and the medias and water managers.

The 4<sup>th</sup> edition of the IWFE was held in South Korea during the 7<sup>th</sup> World Water Forum in April 2015. The award ceremony was held on April, 15<sup>th</sup> 2015 in Gyeongju.

### The categories on competition

For this edition, three categories were open to competition:

- "Youth and VidÉeau",
- "Short-cuts",
- "Documentaries".

In all, 117 films have been received, 38 films were preselected for the official competition.

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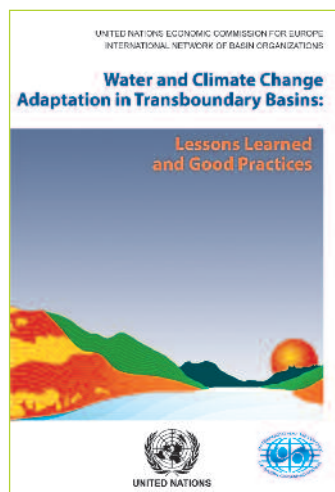
# Two new publications for better basin management



On the occasion of the last World Water Forum in Korea, the **International Network of Basin Organizations (INBO)**, the UN Economic Commission for Europe (UNECE), the Global Water Partnership (GWP), the National Agency for Water and Aquatic Environments (ONEMA) and the International Office for Water (IOWater) jointly published two books entitled:

- **"Water and Climate Change Adaptation in Transboundary Basins: Lessons Learned and Good Practices"**, in the UN collection (INBO, UNECE),
- **"Management and Restoration of Aquatic Ecosystems in River and Lake Basins"** (INBO, GWP, ONEMA, IOWater), in the collection of handbooks on Water Management.

## ADAPTATION TO CLIMATE CHANGE IN TRANSBOUNDARY BASINS



In spite of local uncertainties about the intensity and variability of climate change, the frequency of extreme events that result from it, and about its

impacts on water resources, **it is urgent to initiate now adaptation measures in river basin management, including transboundary basins.**

Thus, the drafting of multi-year Management Plans for the Basins of national and transboundary rivers, lakes and aquifers, is becoming a priority and should incorporate these adaptation measures.

In transboundary basins, strong cooperation between riparian countries is needed, and this requires attention to be paid at all levels and in all sectors.

For the adaptation plan to have solid bases, the participation of all stakeholders is essential, crossing the multiple physical, political and institutional borders, and opening it up to all sectors with water-related activities.

Some basin organizations around the world have already taken action to adapt to climate change. It is now crucial to be able to benefit from their experience and to promote exchanges among all institutions concerned by climate change adaptation.

To facilitate this exchange, this publication mobilized about sixty experts from international organizations (WMO, GWP, AGWA, ...) and transboundary and national basin organizations worldwide.

This publication identifies the field experiments made and aims to provide practical advice through 58 case studies and 63 "lessons learned" about how to prepare and implement a strong, realistic and operational medium-to-long-term plan for adapting to climate change in the basins.

## MANAGEMENT AND RESTORATION OF AQUATIC ECOSYSTEMS IN RIVER AND LAKE BASINS

Freshwater resources are increasingly used, wasted and polluted, aquatic ecosystems are threatened and sometimes destroyed. In addition to their great heritage value for landscapes and biodiversity, aquatic ecosystems provide significant services in regulating water resources and flows and in the self-purification of pollution. Wetlands improve water quality by trapping sediment, filtering pollutants and absorbing nutrients. They also play a key role in flood control and drought prevention.

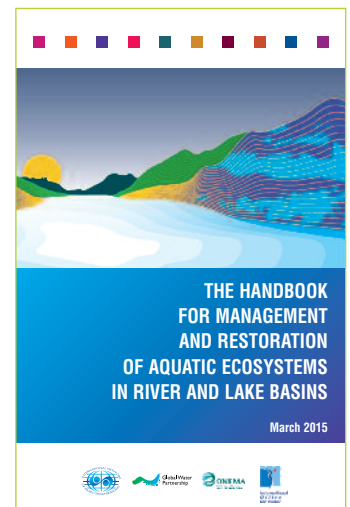
However, human activities, where they do not merely destroy these environments, often disrupt biotopes, cause pollution and fragment the longitudinal flow of many rivers over the world.

It is now recognized that aquatic environments play the role of **"green infrastructure"**, which is as essential to proper water resources management as a traditional artificial infrastructure.

Examples of good practice and effective natural developments can be identified in many countries.

Today, significant progress is needed more than ever to move from theory to practice and take practical measures to preserve and restore aquatic ecosystems, by using, in particular, these successful examples coming from the field and identified in various national or transboundary basins.

This handbook identifies 45 examples of field achievements and aims to give practical advice through 25 "lessons learned" about how to use a realistic,



effective and operational "green infrastructure", to restore, protect and develop aquatic ecosystems, especially in the context of Basin Management Plans including measures for adaptation to the climate change impacts on water resources.

**Both publications, distributed free of charge and initially published in English for the World Water Forum in Korea, will be translated into French before summer 2015 and then in other languages.**

They continue previous publications of the various partners involved, including the "Handbook on Integrated Water Resources Management in Basins" (2009), the "Handbook for Integrated Water Resources Management in Transboundary Basins of Rivers, Lakes and Aquifers" (2012), the "Guidance on Water and Adaptation to Climate Change" (2010) or the "Report on experiences of Transboundary Basin Organizations in Africa" (2014).

The English version of these documents is available on:

[www.basins-management-publications.org](http://www.basins-management-publications.org)



# International Events

## UNEP



### First International Environment Forum for Basin Organizations 26 - 28 November 2014 - Nairobi - Kenya



The 1<sup>st</sup> International Environment Forum for Basin Organizations was co-convened by the United Nations Environment Program (UNEP) and the International Network of Basin Organizations (INBO) in Nairobi, Kenya, from 26 to 28 November 2014.

The primary objective was to strengthen basin organizations as key building blocks for effective water environmental governance.

During a Technical Segment, on 26 and 27 November, participants shared their perspectives and presented

their experience related to four main themes:

- Water Quality and Ecosystem Health,
- Water-Energy-Food Nexus and Adaptation to Climate Change,
- Environmental Laws and Regulations,
- Institutional Challenges.

A High-Level Segment took place on 28 November 2014, during which representatives of the countries and basin organizations deliberated on the way forward based on the conclusions of the Technical Segment.

Participants underscored the importance of sustainable freshwater governance under the UN post-2015 Sustainable Development Goals, in light of the current worrying state of the global resources.

**They highlighted that basin management has taken a positive development in many countries and that there are many experiences worldwide which show that integrated and sound water resources management organized at the basin level is essential today.**

They stressed that sustainable basin management needs ambitious and long-term commitments from Governments, regional, national and local stakeholders, as well as the international community, to deal with the great many environmental economic and social challenges ahead:

- Basin organizations are custodians of vital resources for humanity.
- The protection and the restoration of freshwater ecosystems for security should be prioritized.

- Establishing or strengthening capacities to assess and monitor freshwater resources and related ecosystems is essential.
- Cooperation between all relevant stakeholders, at the international, regional, national and local levels, and riparian countries needs to be reinforced.

#### Strengthening Basin Organizations

Basin organizations are in a unique position to coordinate the work of riparian countries, international development partners, local authorities, private companies and other stakeholders at the basin level to develop coherent actions for the achievement of shared environmental targets and to promote sustainable use of the world's freshwater.

**More information on the Forum:**

[www.unep.org/delc/forumbasinorganizations](http://www.unep.org/delc/forumbasinorganizations)

### TWAP River Basins Assessment Concludes

The Global Environment Facility's Transboundary Water Assessment Program (GEF TWAP) is concluding the first global comparative assessment of all transboundary waters across five water system categories: aquifers, lakes, rivers and large marine ecosystems, and a thematic evaluation of the open ocean. The project results are to assist the GEF in setting priorities for supporting the conservation of transboundary waters.

The TWAP River Basins component is conducting an assessment of 286 transboundary river basins, for a total of 17 indicators.

Projected transboundary stress has been assessed for 5 indicators, for years 2030 and 2050.

Selected indicators focus on assessing the risk to transboundary river basins across thematic groups of water quantity (Environmental, Human and Agricultural Water Stresses), water quality (Nutrient and Wastewater Pollution), ecosystems (Wetland Connectivity, Impacts from Dams, Threat to Fish, Extinction Risk), governance (Legal Framework, Hydropolitical Tension, Enabling Environment) and socioeconomics (Economic Dependence on Water, Societal Well-being, Exposure to Climate-related Natural Disasters) as well as interlinkages with other water systems via deltas and lake influence.

Outputs include global maps of risk for all indicators and sub-indicators, river basin factsheets, with TWAP results scorecards.

TWAP RB consortium partners include: UNEP-DHI, SIWI, IUCN, the City University of New York, the International Geosphere-Biosphere Program, Columbia University, Oregon State University, University of Kassel and Delta Alliance.

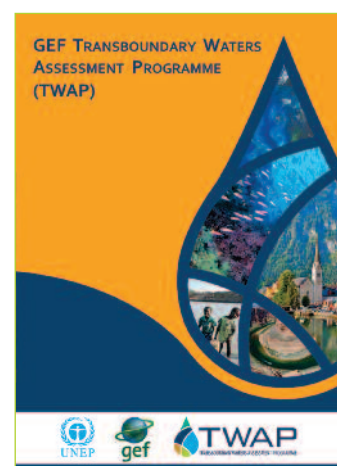
**TWAP RB indicator results and information on TWAP assessment are available on:**

<http://twap-rivers.org>

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

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# International Events

OECD



## Water Governance Initiative



3<sup>rd</sup> Plenary Meeting of the Initiative  
28-29 April 2014 - Madrid - Spain

The Water Governance Initiative (WGI), coordinated by the Organization for Economic Cooperation and Development (OECD), follows the commitments made during the 6<sup>th</sup> World Water Forum held in Marseilles in 2012.

The goal of the initiative is to firmly establish good water governance principles, based on the experience gained by institutions and countries worldwide and proposals from four working groups established in March 2013.

**INBO, IOWater and UNESCO facilitate Working Group 3 on water governance in basins of national and transboundary rivers, lakes and aquifers.**

This work in the basins will lead to the proposal for principles of good water governance along the following lines:

- Legislative and institutional frameworks such as treaties, regional agreements, regulations, management plans and any other legal provision for a balanced use of resources and soils;

- Strengthening and establishment of national or transboundary river, lake and aquifer basin organizations capable of achieving sustainable water resources management;
- Development of analyses and assessments allowing the orientation of decision making;
- Joint management of surface and ground water resources;
- Establishment of a set of governance indicators at the level of basins.

This work was presented at the World Water Forum during the sessions planned on the theme "Effective Governance (4.2.)", and more particularly during the session 4.2.3 on "strengthening basin governance to manage water resources on different scales."

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## International River Symposium

### For better management of great rivers



**The 17<sup>th</sup> River Symposium was held in Canberra, Australia, from 15 to 18 September 2014 in the Murray-Darling River Basin.**

This basin, which received a large part of the 13 billion dollars committed since 2007 by the Australian Government to the water reform, served as a background to the discussions under the general theme of "Large River Basins".

The International River Symposium is supported by the **Global Partnership for the Promotion of Integrated River Basin Management**, which includes the International River Foundation, the Nature Conservancy, the World Wide Fund for Nature (WWF), the **International Network of Basin Organizations**, the Global Environment Fund, the International Union for Conservation of Nature, the International Commission for the Protection of the Danube and the Great Rivers Partnership and the Global Water Partnership.

The symposium is a true international platform for sharing knowledge and innovative ideas on all aspects of river management around the world. It intends to be a "think-tank" bringing out the best practices.

Mr. Jean-François Donzier, Secretary of the **International Network of Basin Organizations**, was invited to present the final conclusions of the Symposium.

The 2014 "International River Prize" was awarded to the International Commission for the Protection of the Rhine.

[www.riversymposium.com](http://www.riversymposium.com)

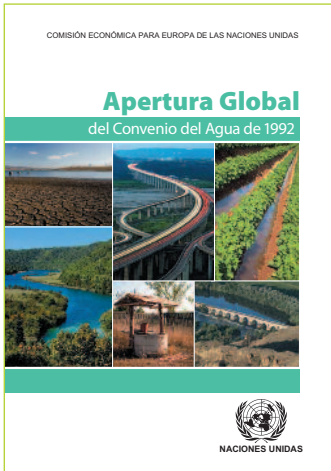


INTERNATIONAL  
**RIVERSYMPOSIUM**  
[www.riversymposium.com](http://www.riversymposium.com)





### Strengthening cooperation on shared water resources: the role of the water conventions



As 60 per cent of the world's freshwaters are transboundary and suffer from growing pressures, solid international legal frameworks are critical to prevent conflicts and ensure sustainable management of shared water resources.

2014 was a special year for transboundary water cooperation. Two global legal frameworks now foster cooperation in transboundary basins.

**The 1997 UN Convention on the Law of the Non-Navigational Uses of International Watercourses** entered into force that year with a 35<sup>th</sup> country acceding.

**The 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes** (UNECE Water Convention or Helsinki Convention) is opened for worldwide accession and counts today 40 Parties.

These two legal frameworks together provide firm ground for cooperation in transboundary basins. As the United Nations Secretary-General stressed, these two Conventions complement each other and should be implemented in a coherent manner.

Numerous countries in different parts of the world recognize that the two water conventions can be a source of inspiration for progress in the joint management of surface waters and groundwaters.

The work implemented under the Water Convention provides opportunities for sharing good practices, for example in managing basin organizations.

**At the Workshop "River Basin Commissions and Other Joint Bodies for Transboundary Water Cooperation: Technical Aspects"** (Geneva, 9-10 April 2014), co-organized with INBO and many other partners, 120 participants exchanged their experiences on the work of joint bodies, notably inter-sectoral coordination, infrastructure, groundwater manage-



ment, environmental protection and governance issues, including financing and communication. Draft principles for effective joint bodies, focusing on joint bodies' establishment, structure and functions, their operation and their funding were agreed upon.

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## Adaptation to climate change in basins

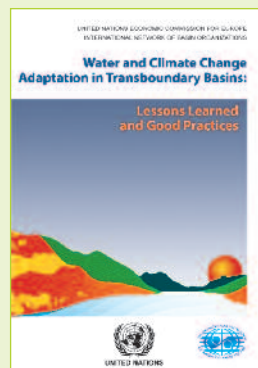
**UNECE and INBO have joined forces to materialize one of the commitments made during the World Water Forum in Marseilles on adaptation to climate change on the basin scale.**

For over two years, they have worked on the subject with a score of basin organizations worldwide and a dozen international partners.

**A Platform of Basin Organizations working on adaptation to climate change was established both to exchange good practices, collect the first lessons learned from undertaken actions and disseminate them.**

This group has also developed a document on **"Water and Climate Change Adaptation in Transboundary Basins: Lessons Learned and Good Practices"** for rivers, lakes and aquifers.

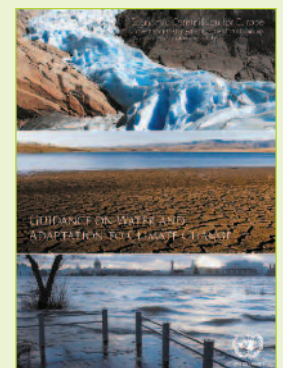
This publication completes the **"Guidance on Water and Adaptation to Climate Change"** drafted by UNECE in 2009.



**Different versions can be downloaded from:**

[www.basins-management-publications.org](http://www.basins-management-publications.org)

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





### 5<sup>th</sup> ANBO General Assembly

12 and 13 February 2015 - Addis Ababa - Ethiopia

The African Network of Basin Organizations (ANBO) gathered all its members and partners in Addis Ababa on 12 and 13 February 2015 for its fifth General Assembly whose main objective was to validate its ten-year strategy and 5-year action plan.

His Excellency Mr. Alemayehu Tegenu, Ethiopian Minister for Water and Energy, Mrs. Rhoda Peace Tumusiime, Commissioner for Economy and Agriculture in the African Union, opened the meeting.

In December 2014, the African capital had already hosted the meetings of the steering committee of the Project "Strengthening Institutions for Transboundary Water management in Africa" (SITWA) and that of ANBO Coordination Board.

The meeting of February 2015 was the occasion to welcome the new members, to discuss the new projects initiated by financial partners and exchange on the analysis of the existing situation regarding the application of the International Conventions on Transboundary River Basins.

The fourth General Assembly, which had taken place in Dakar in 2010, had approved, among others:

- The development of viable financing mechanisms for the African basin organizations and their quick implementation.
- The Regional Integrated Development Program of the Fouta Djallon.

The 2015 General Assembly was the occasion to examine the new orientations of the Network, the statutory and financial reports and renew its bodies.



It approved the ten-year 2015-2025 strategy by the Network, as well as the logical framework of the project for support to the Network financed by the UNDP/GEF.

Following this high-level meeting, the other significant date in ANBO diary will be the meeting with donors and partners in development, which will take place mid-2015 and make it possible to sign funding agreements for the implementation of ANBO strategy.

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## SITWA: YEAR 2

### Strengthening Institutions for the management of Transboundary Water resources in Africa



Workshop in Kampala

With financial support from the European Union, ANBO has been implementing the "Strengthening Institutions for Transboundary Water management in Africa" (SITWA) Project since 2012, with technical support from the GWP (Global Water Partnership).

The main objective is to strengthen regional cooperation at political, economic and stakeholder level for sus-

tainable management of transboundary water resources in Africa, to contribute to peace and security, stability and poverty reduction, based on African knowledge.

The specific objectives are to make ANBO a sustainable and influential organization at the service of the African Ministers Council on Water (AMCOW), through a technical assistance program to basin organizations

(RBOs) and the Regional Economic Commissions (RECs).

After validation of the 2014-2016 action plan in Addis Ababa, Ethiopia, SITWA project embarked on a second operational phase. It has completed the drafting process of the "2015-2025 10-year strategy and the 2015-2019 five-year action plan", marked by five sub-regional consultation workshops.

The document was validated by all parties and submitted to the General Assembly for approval. Meanwhile, three studies have been validated in Kampala, Uganda in September 2014 by major basin organizations, after a consultation process held in Kigali in July 2014.

These studies concern IWRM Planning, Climate Change Adaptation and joint Infrastructure Development in African transboundary river basins.

**The African Water Information System (AWIS)** gathered in Saly, Senegal, its Focal Points and specified the rules to power the system.

A training program was organized on the financing of RBOs as part of a joint operation with ICA (The Infrastructure Consortium for Africa) and SIWI (Stockholm International Water Institute).

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## AWIS



### African Water Information System



AWIS information-sharing workshop

The African Water Information System (AWIS) regroups partner organizations that gather or produce information on water and its management in the whole of Africa.

It is referencing this information and proposes free access via its web portal.

The dynamics around AWIS was revived in March 2014 by the Organization for the Development of the Senegal River (OMVS), in partnership with the European Union.

A workshop on information sharing was held in Mbour (Senegal).

It underlined the high added value of AWIS based on networking African information producers, on multilingual work in French, English and Portuguese and on its unique portal shared by thousands of users.

The Focal Points benefited from training from IOWater, Secretariat of the International Network of Basin Organizations (INBO) to independently enrich the portal.

A new workshop in videoconferencing, held on 30 October 2014, helped to consolidate knowledge and methodology.

[www.african-wis.org](http://www.african-wis.org)



### Report on the experience of African River Basin Organizations

The "Report on the Experience of Transboundary River Basin Organizations - Good Practices and Recommendations" was published in April 2014 with the support of the French Development Agency (AFD) and is available in French and English versions on the website:

[www.basins-management-publications.org](http://www.basins-management-publications.org)

A partnership agreement was signed by AFD and INBO World Secretariat about various topics of collaboration:

- Support to the river basin organizations of the Senegal (OMVS), Niger (NBA), Congo (CICOS), Volta (VBA), Chad (LCBC) and Mekong (MRC), to the Water Resources Coordination Center (WRCC) of the Economic Community of West African States (ECOWAS) and to the African Network of Basin Organizations (ANBO);

- Facilitation of a working group for the hydrological monitoring of major transboundary basins; capitalization of training materials and prefiguration of a sustainable funding model for WHYCOS projects;
- Establishment of a working group on satellite altimetry applied to hydrology.

As part of this activity, a first meeting of the Working Group was held at the IRD Montpellier in November 2014 at the invitation of the International Office for Water (IOWater) and under the aegis of AFD, with CNES, IRD, IRSTEA, BRL and CNR. This is a first meeting bringing together the worlds of space, hydrology and water resources management.



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### Africa Water Forum 2014

The Africa Water Forum 2014 was held in Ouagadougou from 12 to 14 June 2014, gathering over 650 participants around the question: "how to facilitate access to water and sanitation services for everyone in Africa?".

Faced with quick population growth and urbanization (the continent will have nearly 3 billion people by 2050, including 60% of urban people), and with the effects of increasing climate disturbance, access to safe drinking water and improved sanitation for everyone in Africa, as well as availability for other water uses, such as irrigation and energy production, are becoming, more than ever, major challenges.

In this event, jointly organized by the Government of Burkina Faso and 2IE in partnership with the African Ministers Council on Water (AMCOW) and the World Water Council, INBO Secretariat intervened as facilitator in the two following sessions:

- Cooperation and development of large hydraulic structures in transboundary basins in Africa;
- Pedagogical Innovation for increasing capacity building in the water and sanitation sector.

[www.2ie-edu.org](http://www.2ie-edu.org)





### Parliamentary Conference of the Member Countries

The first Conference of Parliamentarians and Ministers, of Burkina Faso, Chad, Côte d'Ivoire, Guinea, Niger and Nigeria, on sustainable financing of the Niger Basin Authority (NBA), was held on 11 and 12 November 2013, in Abuja, Nigeria, under the chairmanship of Mrs. Amina Mahamat, State Secretary for Finance and Budget of the Republic of Chad.

The purpose of this conference was to give new impetus to the institution to seek appropriate solutions to its harmonious and sustainable development.

**NBA has organized such a conference for the first time in its history.**

The Member States should support NBA to enable it to properly carry out its mission to improve the living conditions of the people of the Niger Basin.

The participants listened to several speeches on the emerging responsibility of the Network of Parliamentarians in the sustainable financing of NBA's budget.

The mandate, objectives, achievements and sustainable funding of NBA were also discussed.

**Abdoulaye Kaya**  
In charge of Communications  
Niger Basin Authority (NBA)  
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### NBA is celebrating its 50<sup>th</sup> anniversary!

#### Interview with the Executive Secretary

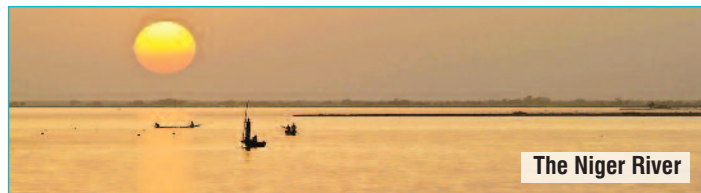


**50 years later, can you tell if the goal assigned to the NBA by its founding fathers is achieved today?**

When establishing the Authority, the founding fathers assigned the goal of Promoting Cooperation among Member States and ensuring the integrated development of the Niger River Basin in all areas of energy, water resources, agriculture, livestock, fisheries and aquaculture, forestry and logging, transport and communications, and industry.

Indeed, after the financial crisis of the 90s, and thanks to **the Shared Vision process** for sustainable development of the Niger River Basin - launched in February 2002 by the NBA's Summit of Heads of State and Government - the Member States expressed their political will to cooperate by acting on common cause for a joint and sustainable management of the Basin's natural resources.

Under this new political will, the legal and institutional framework of the NBA has been strengthened with the adoption of **the Water Charter** and its appendices.



Fifty years later, we can proudly say that the first aim, namely the promotion of cooperation among Member Countries, has been reached.

**Is it possible to give a report on the NBA actions for the populations in terms of integrated development of the River Basin?**

Regarding the integrated development of the Basin, decisive actions and major changes have been undertaken, which allow making a positive assessment and promising perspectives:

- **Improving knowledge of water resources in the basin**, with a regular monitoring of 105 hydrological stations, including 32 data collection platforms, and the creation of 9 databases at each country level and a database at regional level, for exchanging information between countries.
- **Developing decision-making support tools** for planning actions and forecasting extreme hydrological events in a context of climate change.
- **Adopting the Sustainable Development Action Plan (SDAP)** with a joint Investment Plan for the 2008-2027 period.

**Estimated at 6.2 million Euros, the SDAP Investment Plan** includes the rehabilitation of existing structural works (Kainji and Jebba, Lagdo) and the construction of new dams (Fomi, Taoussa, Kandadji, etc.), actions to protect resources and ecosystems and stakeholders' capacity building.

The total amount of announcements made by the Technical and Financial Partners (TFPs) is 1,561.29 million Euros, including agreements signed for € 800 million and € 140.52 million being mobilized:

- **14 regional projects** (without structuring dams) have been implemented or are in progress for a total amount of 505 million Euros.
- **Three regional projects** are in the process of starting or in preparation for a total amount of 275.85 million Euros.

In this report, we will note the particular importance of the projects portfolio, which shows the financial partners' confidence in NBA and its Member States. It is true that NBA, after being through very difficult times, is today a model for transboundary basin management, both in Africa and over the world.

#### Your concluding word?

Today, the Member States and the Executive Secretariat must keep a constant focus on continuing to win the TFPs support to NBA actions for the benefit of over 160 million people.

As a corollary, we would ask the NBA's Technical and Financial Partners, including the World Bank their leader, to continue their support to the Authority for increasing **the Shared Vision** benefits and especially for strengthening the resilience of the Basin people to the adverse effects of climate variability.

**His Excellency Collins R.U. IHEKIRE**  
NBA Executive Secretary

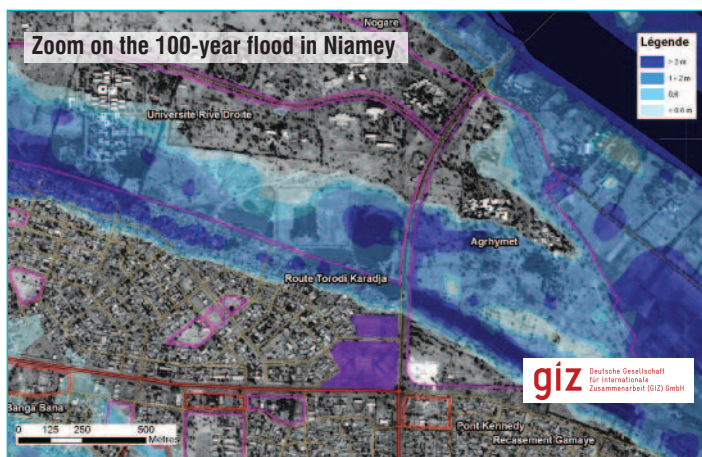
[www.abn.ne](http://www.abn.ne)





## Niger Basin Authority (NBA)

### Improving flood forecasting and early warning systems



The German International Cooperation Agency for Development (GIZ) is funding the project for supporting the NBA in the improvement of flood forecasting and early warning systems.

The Deltares-IOWater-UNESCO IHE Group is responsible for implementing the project, whose overall aim is to reduce the vulnerability to flooding for the people living along the Niger River. Activities, that are part of this project implementation, are:

- Mapping hazards and flood risks in the areas concerned,

- Developing a flood forecasting model that takes into account the meteorological and hydrological aspects,
- Improving the management of the Niger HYCOS project,
- Supporting the NBA in the improvement and development of an early warning system.

Several joint missions were thus carried out at NBA head office in Niamey, in order to study the current flood forecasting system (Forecasting Computer System - SIP) and identify opportunities for development. The first maps and forecasting tests will be made in 2015.

### A Network of Journalists



Members of the Network

The Niger Basin Authority, in agreement with the Ministry of Water and Forestry of Côte d'Ivoire, held a national workshop on 20 March 2014 in Abidjan, Côte d'Ivoire, to establish a Network of Ivorian Journalists and Communicators to better inform the population in general and the Basin's users in particular.

The birth of this network is a catalyst to make the Niger Basin Authority more visible across the country and make its activities known to the whole Ivorian population.

The NBA representatives have in turn presented the background of the institution and the vision, goals, Niger Basin Water Charter and the Strategic Plan of the NBA.

The participants elected a bureau of six (6) members, consisting mainly of journalists and communicators from Côte d'Ivoire.

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## Volta Basin Authority (VBA)



### Capacity building of the Executive Branch



The International Network of Basin Organizations has been helping the Volta Basin Authority (VBA) since 2012 through a capacity building project for the implementation of its 2010-2014 Strategic Plan, with support from the European Union, the French Development Agency, the French Seine-Normandy and Adour-Garonne Water Agencies.

The VBA Council of Ministers was held in Lomé, Togo, in March 2014, before the Committee of Experts. During this statutory meeting, the Ministers of the six Member Countries adopted resolutions, including hiring experts to strengthen the team of the VBA Executive Branch, and provide more resources to fulfill its mission.

A mid-term review was conducted in August 2014, which validated the orientations of the project.

The next steps include a support to the Strategic Plan and to the decision-making support tool that accompanies it, as well as to the Water Charter of the Volta Basin.

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## Lake Chad Basin Commission (LCBC)



### Water Charter of the Basin

The Lake Chad Basin Commission (LCBC), established in 1964, is mandated to carry out sustainable and fair management of the lake, its tributaries

and other shared resources in the basin. It is also in charge of the conservation of ecosystems, of peace-keeping and cross-border security.



Lake Chad

The "Lake Chad Conservation project - Contribution to the Lake Development Strategy", funded by the French Global Environment Facility (FFEM) has two components:

- one related to joint expertise and modeling, implemented by the Institute of Research for Development (IRD),
- the other related to the entry into force of the Water Charter and the strengthening of relationships with other LCBC Basin Organizations, implemented by the International Office for Water (IOWater), INBO Secretariat.

The activities focus on the preparation of the Annexes to the Charter, the stakeholders' awareness raising for its ratification, but also of the UN Convention of 1997, and the establishment of strategies on the relationships between LCBC and its partners.

Four workshops were organized to inform about the Water Charter and the 1997 Convention as well as a study tour to Paris of LCBC experts.

On this occasion, they attended a debriefing meeting organized by the FFEM.

A workshop will be organized in 2015 to share experiences and the strengthening of LCBC relations with other transboundary basin organizations. A communication brochure for parliamentarians is being developed to support the ratification of the Water Charter.

The achievement of this project will allow strengthening the legal and institutional framework of the LCBC, to ensure better management of water resources in the basin, and thus improve the well-being of people.

### Workshop on improving Lake Chad water quantity



Participants in the workshop

A workshop on improving Lake Chad water quantity was held from 4 to 8 August 2014 in Douala, Cameroon.

The participants prepared the Tender Documents (TD) for improving the flow of the Chari and Logone Rivers (main tributaries of Lake Chad) and the development of Lake Chad, receiving the sediment carried by the rivers.

These activities are included in the components of the transboundary program of the LCBC Five-Year Investment Plan (FYIP) 2013-2017, funded by the African Development Bank (ADB).

Please be reminded that the LCBC 14<sup>th</sup> Summit of Heads of State and Government, held on 30 April 2012 in N'Djamena, had authorized the Executive Secretariat to undertake concrete actions to contribute to the restoration of Lake Chad water level.

These actions primarily focused on limiting water loss in the Chari and Logone Rivers in their floodplains, protecting banks against erosion and controlling the silting of these rivers and the sedimentation in Lake Chad.

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## Congo River Basin - CICOS

### Water Facility of the European Union: Project for helping CICOS



Participation in the AERM Basin Committee

Started in early 2012, the project for support to water resources management in the Congo River Basin, which receives funding from the European Union and the Rhine-Meuse Water Agency (AERM) ended in 2014.

For three years, training courses on operational hydrology have been organized for the National Hydrological Services of the countries of the International Congo-Ubangi-Sangha Basin Commission (CICOS), and support given for the establishment of a Masterplan for Water Development and Management (SDAGE) through a participatory approach.

Several activities were organized in 2014, especially exchanges about the "SDAGE's" objectives and their appropriation by Non-State stakeholders, with the support of IOWater, Solidarity-Water Europe and "Eau Vive".

The CICOS representatives were also invited by "AERM" to take part in the Rhine-Meuse Basin Committee.

The project-closing workshop, co-funded by German Cooperation, which took place in November 2014, was indeed the first meeting of the **Regional Consultative Hub** established by CICOS for the "SDAGE" implementation.

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### "Prosper'eau": a game to raise awareness on IWRM



From 10 to 12 November 2014, the workshop on the establishment of the **Congo River Basin's Regional Dialogue Platform** was held in Brazzaville (Congo) and jointly funded by the European Union, the Rhine-Meuse Water Agency and German Cooperation.

About one hundred participants from Cameroon, Central African Republic, Congo, Democratic Republic of Congo and Gabon contributed by their active presence in the success of this workshop, facilitated by the International Office for Water, INBO Secretariat, Solidarity Water Europe and "Eau Vive".

The establishment of this Regional Platform is essential to enable, through links with the International Commission of the Congo-Ubangui-Sangha Basin (CICOS), the development of the **Master Plan for Water Development and Management (SDAGE) of the Congo River Basin**.

But this "SDAGE" must also rely on a strong involvement of the basin's users and populations. Integrated and sound management of the Congo River should be the key to a prosperity shared by these populations.

This principle is the origin of the **"Prosper'eau" game**, which has been tested with the participants of the workshop.

A **"Prosper'eau"** session proposes to the participants to split into three groups (Populations, Politicians and Providers). Starting from a "water" challenge for the basin (building of a dam, diminishing fish resources, climate change...) each group plays its cards and then draw, on the game board, solutions ... or oppositions.

CICOS, the fourth player, acts as facilitator.

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## Senegal - Arachidier Basin



### "PAGIRE": Action Plan for Integrated Water Resources Management

The Arachidier Basin covers one quarter of Senegal surface area. Located north of Gambia, it includes the basins of the Sine, Saloum, Car-car and of small coastal rivers and tributaries north of Gambia.

The sizing and building of effective structures to improve the mobilization of surface water are difficult due to various specific constraints (lack of hydrological data, rising of sea water, semi-endorheic flows, etc.).

The Department of Water Resources Management and Planning (DGPRES) was the prime contractor for

this study and has entrusted its implementation to the group of consulting firms ARTELIA / IDEV-ic. Financial support was provided by the Kingdom of Belgium.

The main objectives of the study were to provide decision makers and technicians with the elements they needed to improve knowledge and mobilization of surface water in the Arachidier Basin.

It provided a number of operational tools for site selection and the sizing of structures.

These tools include:

- A map atlas with different thematic maps (population, altimetry, hydrogeology, morphopedology, depth of runoff, isohyets, sensitivity to water erosion, etc.);
- A GIS database;
- A statistical generator of daily rainfalls;
- A rain/flow model;
- A simulation model for water impoundments;
- Characterization sheets of different areas.

Hydrometeorological stations, including rain gauges and water level gauges, were installed and commissioned.

This study was carried out from February 2013 to February 2014.

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## Burkina Faso



### Mouhoun Water Agency



The Mouhoun River

The Mouhoun Basin was selected to be the pilot basin for the establishment of a new Water Policy in Burkina Faso. IOWater, INBO Secretariat, is implementing a project which started in 2013 for a 2-year duration. It aims to support the Burkinabe Authorities in their approach to IWRM, through the

development of methodologies and tools for knowledge and good water resources management in the Mouhoun Basin, under the partnership between **the Mouhoun Water Agency (AEM) and the French Adour-Garonne and Seine-Normandy Water Agencies.**

A first mission on the topics of planning and governance took place in Burkina Faso in March 2014. It was the opportunity to help in the drafting of **the Masterplan for Water Development and Management (SDAGE) of the Mouhoun**, which was finally adopted in July 2014.

The French partners received a high-level delegation of AEM and the Ministry of Water and Hydraulic Structures to show concretely and through case studies the French "Water Police" practices.

Finally, in the context of the gradual establishment of the **"Financial Contribution to Water"** adopted in Burkina Faso in 2009, a fact-finding mission took place early 2015 in Dédougou, AEM home office, to work

on the recovery of this tax on water withdrawals in the basin.

Knowledge and characterization of users being a prerequisite, capacity building in data management has also been proposed.

**The Mouhoun Water Agency has now a "SDAGE", the first one in Burkina.**

Cooperation efforts are now focusing on the implementation of a Program of Measures to achieve the selected objectives.

### Integrated management of the Nakanbé in Burkina and the White Volta in Ghana



IOWater, INBO Secretariat, is implementing a project for support to the **Nakanbé Water Agency (AEN)**, initiated in 2011 with the help of the **French Loire-Brittany Water Agency (AELB)**.

As a first phase of this partnership had been successful, the second phase was launched in 2014 and started with the reception of a delegation of three "AEN" staff officers in France.

For 10 days, these experts in planning, funding and water quality monitoring have been able to "immerse themselves" in the "AELB", with regard to the implementation of the "SDAGE" (Basin Management Plan), water treatment and protection of the resource.

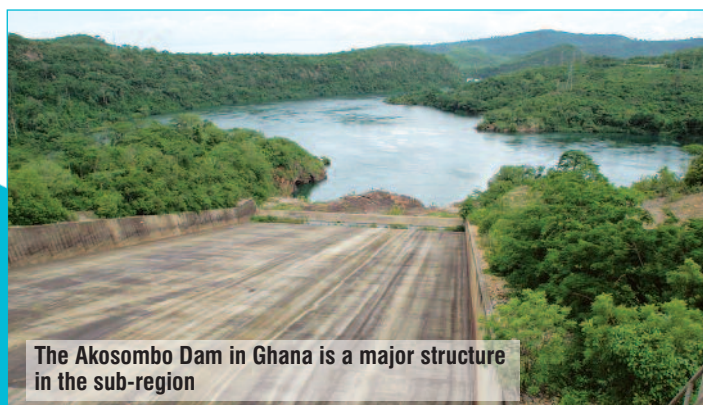
A documentary film about the role of elected officials in resources management in the Nakanbé Basin was also made in Burkina Faso and was screened at the 7th World Water Forum in Korea.

**The process of establishing the Nakanbé Basin Management Plan is underway:** one of the challenges for 2015 is to support "AEN" in this process and help it to prepare its implementation.

As the **"White Volta"** is a transboundary river, a link was established with the **Water Resources Commission** in Ghana and more specifically with the **White Volta Basin Board**, which covers the lower Nakanbé River Basin. A mission of "AELB" and IOWater took place in Accra in May 2014 to share planning and financing issues with the Ghanaian partners, in partnership with the Volta Basin Authority.

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The Akosombo Dam in Ghana is a major structure in the sub-region

### Benin - Togo Mono River Basin



The International Office for Water, INBO Secretariat, and the Water-Solidarity Program are implementing **a project that aims to help the new Mono Basin Authority**, to build experts' capacity and support planning for water resources management in this transboundary basin, under the partnership started by the Rhone-Mediterranean-Corsica Water Agency with Benin and Togo.

The priority goal of this project is also to facilitate the implementation of solidarity projects under the French Law of 2005 on decentralized cooperation in the field of water and sanitation.





## Nile Basin

### Free Speech

#### The Grand Ethiopian Renaissance Dam



Work on the Grand Ethiopian Renaissance Dam

**The \$5.0 billion Grand Ethiopian Renaissance Dam (GERD) on the Blue Nile's main stream will be Africa's biggest.**

Egypt, Sudan and Ethiopia have just signed a "declaration of principles" that would pave the way for further diplomatic cooperation on the GERD.

#### Downstream Possible Impacts and concerns

It is assumed that in most cases, there will be relatively little risk of conflict between Ethiopia's desire to maximize the GERD's hydropower production and the downstream users. The dam will smooth the peaks of the Nile flood, shifting the natural flow pattern to increase summer low flows. This will benefit Sudan by reducing floods and increasing summer irrigation supplies.

There are also negative significances, such as cessation of some recession agriculture, long term changes in the geomorphology of the river and associated floodplains, and less silt for its brickmaking industry. Moreover, because Sudan lacks an over-year storage facility, the GERD reservoir must provide for sufficient flow to this coun-

try to meet monthly water requirements for municipal, industrial, and agricultural use.

Moreover, because of the over-year storage at the Aswan High Dam (AHD), Egypt is concerned more about annual inflows into the AHD reservoir than it is in the monthly pattern of those inflows.

In the long term the Aswan High Dam reservoir will run at lower levels, closer to what its designers originally envisaged and evaporation losses from the reservoir will be reduced. But as water withdrawals upstream in Sudan and Ethiopia will have increased at the same time, Egypt will therefore have less water overall to use for flushing salts from its agricultural lands.

#### Need for an agreement on the coordinated operation of the GERD with the Aswan High Dam

It is important that the GERD, AHD and Sudan's reservoirs be operated in coordination by the three countries. The GERD and any other future infrastructure facilities in the Blue Nile cascade are primarily hydropower

facilities. Their economic justification does not depend on the value of the additional drought protection that they provide. A joint operating agreement is needed now to clarify how Egypt, Sudan, and Ethiopia will compromise. It is best to have these discussions in advance and not during times of crisis or under the pressure of extreme hydrological events.

#### Technical issues regarding design of the GERD

The agreement about filling the reservoir must be flexible enough to adapt to the actual sequence of Nile flows that occurs while the GERD reservoir is filling. It must be able to meet the agreed objectives given the many possible conditions of the Eastern Nile water resource each year.

The tripartite committee between Ethiopia, Sudan, and Egypt is aiming to select an independent consultant to prepare a series of technical and environmental studies including possible alternatives for optimal design and operation of the dam.

#### Need for an agreement on the sale of hydropower

Ethiopia is financing alone the construction of the GERD without international funds. When the GERD is completed, its average hydropower generation is expected to be about 15,000 GWh per year, roughly 50% more than the average hydropower generation from the Aswan High Dam over the past four decades. This is approximately equal to the entire current national electricity consumption in Ethiopia.

On the medium term, the hydropower generated by Ethiopia cannot be fully utilized in its domestic power market, and will therefore need to be sold to regional markets. This requires that a power trade agreement be concluded soon and that transmission lines be built to deliver the GERD's hydropower to regional markets. Without a power trade agreement, it is unclear where the transmission lines need to be built. The construction of high voltage direct current transmission lines link to Sudan and Egypt, even to Kenya and Djibouti, is likely to take about 5 years to complete. Egypt is in dire need of nearly 3,500-4,000 MW to cover its existing shortage of energy which makes it a potential customer to power generated specially taken into consideration that Egypt has built a regional interconnection with the Middle East countries.

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## AfriWater CoP

### Launch of the first African Civil Society Network on IWRM



On the 28<sup>th</sup> August 2014, African Water Community of Practice (Afri-Water CoP) was launched in Lome, Togo.

This is the first and only Civil Society Network in Africa around Integrated Water Resource Management (IWRM).

Afriwater CoP plays a significant role in connecting skills, experiences and expertise of Civil Society Organizations working in Africa to ensure Sustainable River Basin Management to encourage knowledge sharing, best practices identification, resource mobilization and to build a strong front to lobby for knowledge-based, sustainable and bottom up efficient policies to be put in place.

AfriWater CoP is committed to promoting Sustainable River Basin Management.

This Community of Practice works on the improvement of ecosystems, promotes natural infrastructure and the main target for its activities is ecosystems management and the commu-

nity's well being, with respect to all factors that affect them, including climate change, development and population growth.

With this innovative platform, discussions are underway with **the African Network of Basin Organizations (ANBO)** to involve the Civil Society as a way to promote collaboration and partnerships in River Basin Management.

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## Lesotho



### Lesotho Highlands Water Project (LHWP)



The Lesotho Highlands Water Project (LHWP) is a bi-national project between Lesotho and South Africa. It entails transfer of water from the Lesotho river basins to South Africa through a system of reservoirs and tunnels.

Environmental and social considerations are embedded in the founding Treaty between the two governments. The relevant Treaty articles were given effect through commissioning of Environmental Impact Assessments (EIAs), with the subsequent implementation of Environmental Action Plans (EAPs), that were applied only to the dam upstream catchment areas, even though the Treaty required the Authorities to account for all areas and communities affected by the project.

In 1997 the **Lesotho Highlands Development Authority (LHDA)** commissioned a detailed assessment of Instream Flow Requirements (IFR) associated with Phase 1 of the LHWP, which was followed by a long-term monitoring program.

The first tranche of compensatory payment was made to downstream communities based on the predicted reduction in woody vegetation.

The findings of the IFR assessment formed the basis of the Decision Rules for downstream compensation for affected river reaches.

The recently concluded monitoring study, ten years after the first tranche compensation payment has been made, indicates that there has been a great improvement in the health of the riverine system, an increase in woody vegetation and fish resource.

The implementation of the IFR Policy has provided for the adaptive management of flow releases for maintenance of predetermined conditions for riverine ecosystems downstream of Phase 1 impoundments.

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# North America

## Canada - Quebec



### Twinning arrangements between basin organizations from France and Quebec

Three twinning arrangements were signed in February 2015 by basin organizations in France and Quebec. These agreements are the result of a **twinning program jointly coordinated by the Regrouping of the River Basin Organizations of Quebec (ROBVQ) and the French Association of French Public Local Basin Authorities (AFEPTB).**

#### A three-year collaboration

This collaboration between "ROBVQ" and "AFEPTB" was initiated on the sidelines of the World Water Forum in Marseille in 2012. In the years that followed, a partnership agreement between both networks was signed in Vogüe, in France, then in Lac-Beauport, in Quebec.

Following a call for proposals, three new twinning arrangements were selected to obtain financial and technical support.

Thus, the Vidourle "EPTB" was twinned with Saguenay RBO, the Seine-Great Lakes "EPTB" with the 7 rivers Basin Agency and the Gardons "SAG" with COPERNIC, the Organization for Dialogue in the Nicolet River Basin. These twinning agreements were selected on the basis of similar interests: e.g. urban water management or flood prevention and management.

#### The first twinning agreement as the model

These were not the first twinning agreements between France and Quebec. Similar initiatives were undertaken by the Jacques-Cartier Basin Corporation and Dordogne "EPTB" or between Charante "EPTB" and COVABAR (RBO responsible for the Richelieu River).

#### The twinning charters

The twinning charters ratified by these organizations are the starting point for collaboration.



#### An exportable twinning program

This twinning program was made possible through a financial contribution from the Permanent Commission of Cooperation between France and Quebec. An additional objective of the program is to produce exportable tools facilitating twinning between basins.

**The North American Network of Basin Organizations** has been an active contributor in the selection of twinning agreements, producing a model twinning charter and writing a twinning guide.

It has been planned with the National Water Commission of Mexico (CONAGUA) to expand twinning projects to Mexico.

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### "Répert'EAU" : good practices used in Quebec for water management!

[www.REPERTEAU.info](http://www.REPERTEAU.info)

**River Basin Organizations (RBOs) in Quebec now have an online tool to access to the appropriate municipal practices in water management implemented throughout Quebec!**

#### Municipalities and water resources management

Over the years, the laws, regulations and policies for water management have multiplied in Quebec and gave great responsibilities to County Regional Municipalities (CRM) and the other municipalities of the Province.

Municipal stakeholders innovate more and more to fulfill their legal obligations. In such a context, an online directory of Quebec good municipal practices in water management was developed, the "Répert'EAU" (WATER Directory)!

#### Disseminating examples!

The "Répert'EAU" provides practical solutions to existing problems, it creates an active community linked by the sharing of best practices and facilitates collaboration among water stakeholders to diminish the costs of project implementation.

Experience sheets of the "Répert'EAU" include a project summary and budget, photos, challenges, partners, a space for comments, etc. Some of which were carried out in partnership with River Basin Organizations (RBOs), thus demonstrating that the missions of these organizations are complementary to those of municipalities.

You can subscribe to an email alert to stay informed about the practices added.

The platform was launched on 17 October. Good practices are already online and more will be added later on, some of which were carried out in partnership with RBOs, thus demonstrating that the missions of these organizations are complementary to those of municipalities.

The directory is available on the Website and videos were produced for some good practices.

You can find them on the YouTube channel of the Quebec RBOs at:

[www.youtube.com/user/lesobvdu-quebec](http://www.youtube.com/user/lesobvdu-quebec)

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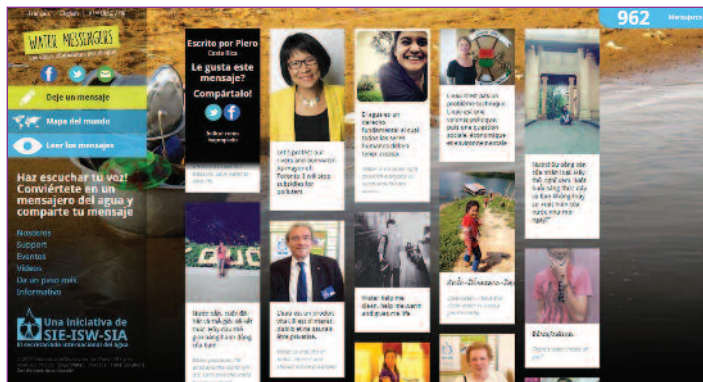
# North America

## International Secretariat for Water (ISW)



### The "Water Messengers" Campaign

An opportunity to make your voice heard for water and sanitation



The International Secretariat for Water (ISW), with headquarters in Montreal (Canada) has launched the "Water Messengers" campaign worldwide.

Through this campaign, the ISW and its partners want to give everyone the opportunity to make his/her voice heard and makes the leaders raise awareness of the importance of water for the citizens the world.

This campaign is also a way to support a specific goal related to water in the Sustainable Development Goals that will be announced on September, 2015 by the UN.

#### A campaign available to all

This campaign is carried out on line, on the "water messengers" website : [www.watermessengers.org](http://www.watermessengers.org)

Everyone can freely leave his/her message with his/her picture and then share it within his/her social networks.

This campaign is supported by several local and international events to ensure the biggest number of participants and to avoid the digital divide.

We are more than 1,000 water messengers in more than 100 countries.

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## The 3<sup>rd</sup> International Forum on Integrated Water Management

### Publication of the proceedings

The North American Network of Basin Organizations (NANBO), the Water Governance Council of the Saint-François River Basins (COGESAF) and the Regrouping of the River Basin Organizations of Quebec (ROBVQ) took the opportunity of the 7<sup>th</sup> World Water Forum, taking place in Daegu-Gyeongbuk in South Korea in April 2015, to release the proceedings of the **3<sup>rd</sup> International Forum on Integrated Water Management: Tools for Action**, which took place in Quebec City early 2014.

The aim of these proceedings is to give an overview of the event and extend discussions on transboundary water management challenges in the context of climate change – a theme which gathered the 71 speakers and more than 300 participants from 12 countries and 7 Canadian provinces.

The document highlights the fact that basins and aquifers are natural territories in which water flows regardless of national or administrative boundaries. True basin-based integrated management often involves a transboundary approach.

**"This is particularly important in the backdrop of climate change where there is increasing pressure on water resources,"** said Normand Cazalais, NANBO Executive Director.



Transboundary management mitigates the negative impacts and possible conflicts. Collaboration facilitates the implementation of more effective and efficient adaptation measures due to the exchange of quality information, basin-level planning and the possibility of fairly sharing the costs and benefits of the initiatives.

The "International Forum on Integrated Water Management: Tools for Action" was launched in 2009 as an initiative of the Water Governance Council of the Saint-François River Basins (COGE-

SAF), in collaboration with the Quebec Metropolitan Community and Laval University. It takes place every two years.

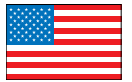
The proceedings of "the 3<sup>rd</sup> International Forum on Integrated Water Management: Tools for Action", are available on the website.

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### The Great Lakes Protection Fund



Lake Ontario

A private sector board, elected by the Governors, invests that public money, and uses the private earnings for its environmental mission. No further public funding or dues.

Some of the Fund's track record:

- The original \$81MM remains untouched.
- Investment earnings have been used to commit over \$70MM to regional innovation teams.
- Member States have received over \$45MM for their Great Lakes priorities.
- The endowment is now worth \$125MM.
- The portfolio contains 255 funded projects with over 3,400 participants.

The Fund's programmatic strategy is to design and test new approaches that link creation of economic wealth with the creation of ecological improvement. The Fund's projects have introduced new industries, encouraged new actions, and shaped new value chains.

Several key factors have driven this success, despite often-important differences among the Member States:

- **Committed leadership:** the Governors elect board members with experience in investment, corporate governance, and risk-taking.
- **Fidelity to high-level priorities:** the governors ask for and get breakthroughs on shared priorities.

- **Just enough capital:** the one-time capitalization was enough to support significant activity by teams of creative citizens, but not enough to tempt leakage into infrastructure projects, governmental operations or commercial subsidies.
- **Discipline:** the Fund does not "spread money around." It invests in large projects with ambitious goals and longer timelines.
- **Focus on catalytic innovations:** work supported by the Fund is a legacy that current Governors leave for their successors.

**The Great Lakes Protection Fund uses public capital to produce private returns and puts those returns to work building public benefit.**

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## The Program in Water Conflict Management and Transformation (PWCMT)

The PWCMT is designed to aid in local, national and international water conflict prevention and resolutions. It serves as a training, resource and information hub for students, citizens, officials, and business leaders across the United States and internationally, facilitating dialogue on critical water issues through four integrated programs:

- **The Certificate in Water Conflict Management and Transformation** provides specialized resources and skills that explicitly integrates human, policy and scientific dimensions.

- **The Transboundary Freshwater Dispute Database** is a computer science/geography/public policy education and research tool developed around a Geographic Information System of the world's international river basins. It comprises of several free and accessible databases (International Treaties, Transboundary Freshwater Spatial Data, International Events, International River Basin Organization).
- **Collaborative Facilitations and Skills-Building Workshops** offer facilitations/mediations between stakeholders at both the transnational and international levels. The stakeholders learn to collaborate and develop conflict management skills.

The Universities Partnership for Transboundary Waters established in 2001 is an international consortium, including several institutions on five continents.

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# Latin America and the Caribbean

## Haiti



### Integrated Water Resources Management in the Artibonite Basin

#### Study of development alternatives

With 80% of rice production and 10% of the electricity production in Haiti, the Artibonite Basin is a key site for the economy of the island.

The basin is submitted to various pressures (deforestation, floods, etc.) and difficult to manage because of its binational character.

The Haitian Ministry of Agriculture has requested Artelia to assess the development alternatives in the basin through an integrated approach.

Extensive fieldwork on water use and flooding, clarification of the rules on resource management, environmental synthesis and estimate of the econo-

mic value of hydropower and agricultural production, helped design an optimization model for the development and management of water resources in the basin.

This study was carried out between February 2013 and June 2014.

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The Arbonite

## "SERELAREFA"

### A Latin-American River Restoration Network



The 4 year UE co-funded "SERELAREFA" was launched in 2010 and has now just been completed with success.

It was coordinated by the Italian Center for River Restoration (CIRF) in partnership with Spain (Universidad Politécnica de Madrid), Mexico (Universidad de Guadalajara), Chile (Universidad de Concepción and DOH-Ministry of Public Works) and Brazil (Universidad Federal do Rio de Janeiro).

It aimed to promote the river restoration concept in Latin America.

The project created opportunities to share river restoration knowledge and encouraged networking between practitioners, research institutions and public management bodies in Latin America.

A comparative paper explores how some national legislations define the fluvial space.

**The definition of the Fluvial Space is definitely a key issue because without space ... there is no river.**

The paper aims at stimulating the setting up of policies and relevant actions coherent with the River restoration philosophy at national (Brazil, Chile,

México) and international (Latin America and Europe) levels.

Amongst the conclusions, there is evidence that the legal and institutional frameworks of the countries considered suffer from a significant weakness as far as the fluvial space definition and management is concerned.

**Institutional coordination is a must.**

Climate change, to accommodate harsher events, makes a need even more impelling for a law dedicated to the river as a whole, including its geomorphological, hydrological, ecological and societal dimensions, based on the

River Basin and Integrated Water Resources Management concepts and ensuring a system global view.

Documentation of the activities developed can be found on the website:

[www.serelarefa.com](http://www.serelarefa.com)

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## Free Speech

### La Plata River Basin: UBACYT Research Project



The La Plata River

The UBACYT project of the University of Buenos Aires currently covers a three-year period (2011-2014). It consists of several lines of research with a multidisciplinary approach.

It led to some proposals:

Integrated Management in the La Plata Basin requires a networked institutional arrangement. It is necessary to assess, with performance indicators,

the Coordinator Intergovernmental Committee (CIC) of the La Plata Basin Treaty (1969) and the current structures on river sections or sub-basins.

Integrated Water Resources Management must be based on the principles adopted by the international community since the Rio and Dublin Summits (1992).

It must include the right of access to safe water and sanitation for all, consecrated by Resolution 64/292 of the United Nations General Assembly.

IWRM needs to better take into account the role of ecosystems, guaranteeing them a suitable water quantity and quality.

For the great South American river systems, the project suggests combining river basin management with the principles of ecosystem analysis and giving priority to the maintenance of the hydrological regime.

The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992) and its Water and Health Protocol (UNECE, 1999) could be applied to South American river systems.

Principles of law and obligations were introduced in the constitutions and legislations of the five La Plata States and in regional conventions.

The forceful introduction of the Precautionary Principle (PP) in transboundary water governance seems to be quite timely.

The Guaraní Aquifer has an adequate legal framework for regulating the management and use of the resource, which is fundamental to adapt to future water crises in the Mercosur area. The reconciliation of the La Plata Basin governance with that of the Guaraní Aquifer is crucial.

It is necessary to increase the representativeness of water users, through environmental education programs and social participation.

We suggest adding these principles to the management of other transboundary river basins.

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## Ecuador



### Consolidation of the information system on water resources

With the adoption of a new Water Law in August 2014, the Republic of Ecuador established a new **Agency for the Regulation and Control of the Water Sector (ARCA)**, supervised by the Secretariat of Water Resources (SENAGUA) and the Ministry of Coordination of Strategic Sectors (MICSE).

A study of the roadmap of this new agency is being made by the Aigos Consulting Firm.

In this context, the International Office for Water, INBO Secretariat, was entrusted with a specific analysis of the potential consolidation of the Information System on Water Resources in Ecuador (SIRH).

The mission on this topic, carried out in September 2014, was the occasion of meeting with the representatives of organizations involved in the production, management and enhancement of water data (ARCA, SENAGUA, SENPLADES, INHAMI, MAE, IGM, etc.).

**These exchanges allowed specifying a series of recommendations aiming firstly to organize the establishment of "ARCA" Information System and secondly to enhance the sharing and integrated management of water data between institutions at the national, regional and local levels.**

The main findings of this study were presented to H.E. the Minister, Mr. Rafael Poveda, (MICSE) at the end of the mission, as well as to Mrs. Claudia Otero (ARCA Director) and Mr. Christobal Punina Lazano (Assistant Secretary General for Water) during their visit to IOWater in Paris on 12 September 2014.



Meeting with representatives of the Military Geographical Institute



### Support to the development of Water Information Systems

A reform process is underway in Colombia to improve water resources management.

This process includes, among other things, the short-term development of strategic plans for 5 major hydrographic regions of the country: Magdalena-Cauca, Caribbean, Pacific, Orinoco, Amazon.

To support this reform, IOWater, INBO Secretariat, is implementing an institutional cooperation project, funded by the French Adour Garonne Water Agency, which includes:

- 1 An institutional and methodological assistance to the preparation of the Rio Magdalena-Cauca Strategic Plan;
- 2 A support to the improvement of the needed data management;

### 3 A local component seeking to improve industrial pollution control in the Bogota River.

Year 2014 mainly focused on the "data management" component.

After a step of exchange of experience on water information systems and of assessment of the Colombian partners' needs, a series of recommendations was presented, in particular to improve interoperability between the various national and regional information systems.

The French experience in terms of creating language/common reference frames and **improving interoperability between existing water information systems**, seems quite suitable for the integration of the regional data required by **the Regional Water Resources Assessment Program (ERA)**.



The broad lines for action have thus been identified to develop products of common interest for improving data interoperability in the context of the Cundinamarca ERA.

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## "PREPAREDD MAGDALENA"

### Strategy of adaptation to and mitigation of climate change in the Magdalena River Basin

The "PREPAREDD MAGDALENA" Project fits in with the historical context of a privileged relationship between France and Colombia. This relationship has been present in a recent past through the co-financing by the "FFEM" and "CORMAGDALENA" of various projects related to environmental protection.

The current context of climatic variation and extreme events, which produced catastrophic floods, reveals the importance of true management of basins.

Effectively, the lack of coordination in environmental matters has caused not only loss of bio-diversity, but also very important deforestation, which is the factor of the imbalance from which the Magdalena River Basin is currently suffering.

The integrated management of the Magdalena River is one of the main topics of the "PREPAREDD MAGDALENA" project, especially through the commissioning of three pilot projects at various levels of the Basin:

in Huila at the level of the upstream water catchment area, in the intermediate navigable sector, and in an area which controls the water flow in the lagoon system of Zapatosa.

The project intends valuating the potential of the Magdalena Basin for the mitigation of climate change, generating, with involved communities and economic sectors, productive sustainable processes which recognize the value of the river and forests, strengthening the strategy which the country commissions:

- Create benchmarks for the execution of afforestation / reforestation projects.
- Build the national capacities in the strategy of mitigation of climate change.

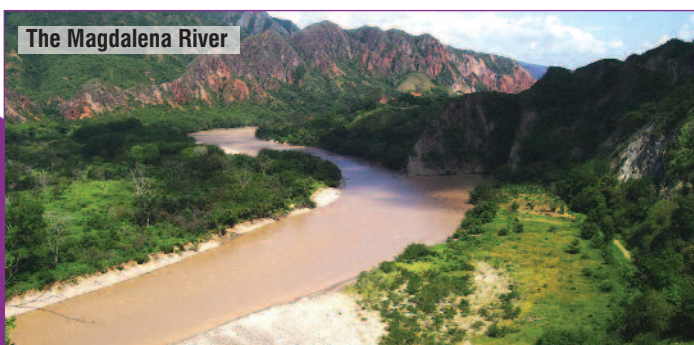
■ Commission replicable experiences with involved communities and economic sectors.

"CORMAGDALENA" has led the project, facilitating the implementation of activities, obtaining funds, the integration of institutions and the articulation at various government levels, towards an integrated management system which promotes environmental and social resilience in the Magdalena River Basin.

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The Magdalena River





## Brazil



### An original Triangular Cooperation

Through the "Gaúcho Forum of Committees", the 26 Basin Committees of the State of Rio Grande do Sul have participated in a Triangular Cooperation Program since September 2014. It allows them to benefit from the experience of the Loire-Brittany Water Agency and the International Office for Water, INBO Secretariat, in France, and the Intermunicipal Consortium of Piracicaba, Capivari and Jundiá River Basins (PCJ), located in the Brazilian State of São Paulo, which has been one of the pilot river basins for applying the Brazilian Law on Water Resources.

A seminar addressing members of these "Gaúcho" Basin Committees was organized in December 2014 in the city of Caxias do Sul, on the occasion of the 50<sup>th</sup> anniversary of the French Water Law (1964) and the 20<sup>th</sup> anniversary of the Water Law of Rio Grande do Sul (1994).

It allowed focusing on the progress made in the implementation of a decentralized and participatory model of water management in river basins in

the State of Rio Grande do Sul, and estimating its prospects.

The city of Caxias do Sul, for instance, is located upstream of the Taquari-Antas and Cai basins, today characterized by a strong pollution coming from industrial production and intensive stock breeding. However, these two rivers have their mouths in the Guaíba Lake near the State capital, Porto Alegre, which suffers from the consequences of these activities.

In this case, the lack of Water Agencies, yet planned in the Law of 1994, makes it difficult to achieve results, in spite of the dynamism of the "Gaúcho" Committees.

The State Law plans these agencies to be public institutions, while those established in the rest of Brazil have been Associations, more flexible and easy to create.

The experiences of partners in the cooperation project have enlightened the water stakeholders of Rio Grande do Sul in the search for solutions suited to their particular legal and institutional context.

Instruments for integrated water resources management, whether financial, or for planning and information purpose, are indeed fundamental for the Basin Committees to take appropriate measures.

**The Triangular Cooperation Program will continue in 2015 with a study tour of the "Gaúcho" Committees in the PCJ river basins, a second seminar in the State of Rio Grande do Sul (this time in the Rio Uruguai Basin), and technical missions on several priority topics, including pollution by nitrates.**

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### "EcoCuencas"

The "EcoCuencas" project was designed during 2014 by the International Office for Water, INBO Secretariat, in partnership with Ecologic (Germany), Asconit (France), the Piracicaba Capivari Jundiá Agency (Brazil), the Water Department (Secretaria del Agua - SENA-GUA/Ecuador), the National Water Authority (ANA) and IRAGER (Peru), the Verde Basin Authority (Corporación Cuenca Verde - Colombia) and the Brazilian Network of Basin Organizations (REBOB).

It was selected by the European Union within the regional program for the management of basins and coastal zones in the context of climate change "WATERCLIMA" for Latin America and the Caribbean and started at the beginning of 2015.



Pig breeding in the Rio Taquari-Antas Basin





### Mexico proposes a Pact for Water



15<sup>th</sup> Conference of the Latin American Water Directors - Panama

During the 69<sup>th</sup> UN General Assembly, Mr. Enrique Peña Nieto, Constitutional President of the United States of Mexico, presented the initiative to **establish an Intergovernmental Working Group on Water** as a "space to develop new adaptation work that would allow for better preparedness to

the impact of increasingly intense climate phenomena". This initiative coincides with the work being done to prepare Agenda Post 2015 in connection with the Sustainable Development Goals (SDGs), which, for the first time, plans to give a single goal to the water issue.

The Mexican Secretary for the Environment and Natural Resources, Mr. Juan Jose Guerra Abud, presented water to the Conference of the Parties as a key factor for adaptation, reduction of vulnerability and building of resilience to climate variability.

The President of Mexico and his counterparts from Chile, Peru and Colombia proposed to recognize the importance of the water sector in international agendas.

**The Intergovernmental Working Group on Water had already been presented during the Latin American Water Week in Mexico**, where it was approved by delegates from Nicaragua, Brazil, Dominican Republic, Bolivia, and Uruguay.

The project was also presented during the Meeting of the Council of the UNESCO's International Hydrological Program (IHP).

**At the 15<sup>th</sup> Conference of the Latin American Water Directors**, held in Panama City, they agreed that the "CODIA" member countries should "show solidarity with the initiative of establishing the Intergovernmental Working Group on Water, whereby the water component acquires, on the world stage, the political recognition necessary for becoming a priority in the agenda of international organizations".

This statement was presented at the 25<sup>th</sup> Latin American Summit of Heads of State and Government, held in Veracruz, Mexico, on 8 and 9 December 2014.

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### Mexican Basin Organizations integrate NANBO

**The North American Network of Basin Organizations (NANBO)** organized an information forum at the 2<sup>nd</sup> Water Week of Latin America in 2014, which took place from 23 to 27 June in the City of Mexico.

The President of the Network, **Mr. Abel Jiménez Alcazar**, highlighted the objectives, services, achievements and activities that the Network is developing to promote Integrated Water Resources Management (IWRM) in Canada, the United States and Mexico.

He stressed the efforts NANBO made to establish collaboration schemes between its members, to promote the transfer of knowledge and experiences that contribute to improving water governance and management.

NANBO Chief Executive, **Mr. Normand Cazalais**, presented some important experiences of the network action in processes of twinning basin organizations from the Canadian Province of Quebec, France and Mexico.

Following this presentation, the Councils of the Lerma Chapala Basin, Guerrero Coast, Balsas River Basin, Rio Grande Basin and Oaxaca Coast Councils became NANBO members.



Mr. Abel Jiménez Alcazar

This great meeting allowed NANBO to position itself in the Mexican and Latin American context, to strengthen its collaborative opportunities in the region.

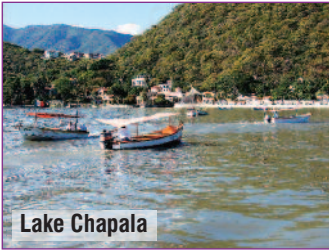
[www.monroban.org](http://www.monroban.org)







### Strengthened water governance in the Lerma Chapala Basin



Lake Chapala

In 2014, the Council of Lerma Chapala Basin, one of the main basins of Mexico, adopted far-reaching agreements for water governance.

This Council was created in 1993 and was the first to be established in the country.

It is comprised of government officials and water users from the States of Guanajuato, Jalisco, Mexico, Michoacán and Queretaro, covering a total area of 55,000 km<sup>2</sup>.

The Lerma River is born in the State of Mexico and ends in Lake Chapala; its length is nearly 700 km.

In recent years, this Basin Council worked particularly on the development of agreements which address conflicts over water use between States and between users of various sectors and reduce the damages to Lake Chapala.

These agreements allowed the annual distribution of the basin's surface waters according to rules that ensure equitable resource allocation agreed between users and States.

The basin hydrological imbalances have been reduced, ensuring acceptable levels of water volume in Lake Chapala, and guaranteeing water supply to the metropolitan area of Guadalajara, the second largest city in Mexico.

These arrangements became part of an agreement, which rose to presidential decree last April, and it constitutes the main legal instrument of this kind in Mexico.



Adoption of the Convention for the Lerma River Cleaning and Recovery

The Basin Council in its plenary session held on June 3, 2014, also adopted the **Convention for the Cleaning and Recovery of the Lerma River**, signed by the National Water Commission and the Governments of the Basin States.

This Agreement shall constitute the legal basis for the creation of the **"Joint Fund for Recovery and Clea-**

**ning of the Lerma River"** and shall promote actions in each of the States, infrastructure projects and actions to preserve and restore natural resources.

The Monitoring Commission of the Lerma Chapala Basin Council will be the authority responsible for the identification, assessment and approval of the work and actions for the recovery and cleaning of the Lerma River.

### Greater citizens' participation in the Basin Councils

**There are currently 26 Basin Councils in Mexico:** they are joint organizations where the government and water users coordinate their actions and organize a dialogue.

These Councils also rely on 204 Basin Commissions and Committees, which deal with the Council tasks at sub-basin, aquifer and beach levels.

Councils operate as autonomous bodies and gradually adopted their own operating rules, increased the number of their members, water users or citizens, and they elect their executive management.

In 2013, a total of 13 Basin Councils had already appointed their President in a transparent manner.

In 2014, the Mexico Valley Basin Council chose as President Mr. Roberto Olivares, General Manager of the National Association of Water and Sanitation Companies; the Oaxaca Coast Basin Council chose Mr. Javier Villacaña, President of Oaxaca City Hall, and the Usumacinta and Grijalva River Council, Mr. José Alfredo Araujo,

Director of the Water Operating Agency of Tuxtla Gutiérrez, Chiapas.

The designation of these personalities will strengthen the management of the Basin Councils and the coordination and cooperation with the Government Authorities and water users involved.

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The Mexico Valley Basin Council



# Latin America

## Peru - National Water Authority



### The World Bank supports "ANA"

The National Water Authority (ANA), established in 2008 and attached to the Ministry of Agriculture,

has for mission to develop policies and strategies for integrated water resources management in Peru.

The field implementation of "ANA's" missions is relayed by three levels of decentralized organizations, according to a geographic distribution by major river basins:

- 14 Administrative Water Authorities (AAA);
- 72 Local Water Authorities (ALA);
- 17 Water Resources Basin Councils (CRHC).



"AAAs" and "ALAs" have more than 900 staff members.

The main objective of the World Bank study, in which the International Office for Water, INBO Secretariat, contributed, was to identify a set of recommendations for "ANA" to better fulfill its missions.

Among the key conclusions of this study, an update of the functional organization of "ANA" was recommended, with the creation of a General Technical Secretariat in charge of supersizing and coordinating "AAA" and "ALA" activities.

The multiplication of tasks and the operational implementation of "AAAs" in 2014, require a staff increase in order to have a proper implementation of the activities.

"ANA" needs to have adequate financial resources, based, in particular, on the new system of economic fees, that has just been implemented in Peru.

[www.ana.gob.pe](http://www.ana.gob.pe)



### In Peru, there are now economic fees for water use!



The Chili River

Under the institutional cooperation agreement signed in September 2013 with the National Water Authority of Peru, the French Artois-Picardy Water Agency is providing support to a project aiming to:

- Implement an ecological tax system (economic fees for water abstraction and wastewater discharges);
- Develop Water Resources Basin Councils (CRHC) and Management Plans.

The Chili River Basin was selected as pilot area for this project.

A delegation, led by Jean Schepman (President of the International Action Commission of the Artois-Picardy Basin Committee), went to Lima and Arequipa in May 2014.

Today, the implementation of economic fees in Peru is effective, based on the calculation method recommended in the World Bank study.

The amounts collected are growing, from 50 Million Sols (1 € = 3.5 sols) in 2012 to more than 100 million in 2013.

The "Cuenca del Chili" Basin Council is operational and a first Management Plan is developed.

The mission of experts who went there could identify the priorities of this cooperation:

- Better structuring of their Basin Council (method for appointing members, internal rules ...);
- Development of a Technical Secretariat (embryo of a Water Agency);

- Limitation of informal activities without a land license or without any authorization for water abstraction / pollution;
- Public consultation and involvement of stakeholders.

The new 2015 cooperation phase plans to develop:

- A paper in Spanish on the Basin Committee: statute, role, method for appointing members, operation, thematic and geographical working groups;
- A paper and a poster on the economic fee system and river basin management in Peru;
- A study tour of a Peruvian delegation in France.

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## Cambodia

### Pilot Project for Stung Sen River Basin



The Stung Sen River

This project, coordinated by IOWater, INBO Secretariat, and financially supported by the French Loire-Brittany and Rhine-Meuse Water Agencies, aims to improve water governance through the promotion of Integrated Water Resources Management (IWRM) in the Stung Sen River Basin, main tributary of the Tonle Sap Lake.

The first 2-year implementation phase gave encouraging results and enabled the Cambodian Administration, including the Tonle Sap Authority (TSA) and the Ministry of Water Resources and Meteorology (MOWRAM), to make great progress in the implementation of river basin management.

#### Stung Sen Basin

The work done during the first two years has indeed focused on the initial stages of the **planning process** (assessment, characterization of the basin, definition of the challenges and objectives for the basin) and on the elements necessary for the initiation of a **participatory process** (study of the framework for the establishment of a sub-basin committee for the Stung Sen, the first meetings of this Committee and the training of its members).

Many field missions have also been made to move forward on the step of **basin characterization**, although a lot of data were non-existent, especially regarding the use of water resources and their quality.

Late 2014, the **Stung Sen Sub-basin Committee** met for the second time to validate the characterization of the pilot basin and the launching of a new phase of the project for another two years.

The work will focus on the following steps of the planning process, including the establishment of the Program of Measures and Management Plan for the Stung Sen River Basin, as well as their estimated costs.

As the first step allowed collecting a large number of data sets and identifying the data sources regularly updated by the partners services, the TSA now wishes to develop its internal capacity to manage and make the best use of these data to produce summary information needed for decision-making and public information through a **true Water Information System**.

The MOWRAM has an ambitious investment policy for the installation of new monitoring stations.

A study tour was also organized in France in September with the Loire-Brittany Water Agency (AELB) for three TSA executives in order to present to the Cambodian the functioning of the French Water Agencies and the role of the Basin users.

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## Laos



### Integrated Basin Management for the Nam Ngum

The second phase of the pilot project for Integrated Water Resources Management in Laos, carried out with the financial support of the Loire-Brittany Water Agency, helped build the capacities of local and national teams by:

- Disseminating the experience acquired on the Nam Ngum through the development of a **methodological guide** to help teams in the preparation of River Basin Management Plans and develop tools for IWRM (catalogue of measures, cost estimate model, etc.).
- Development of a **shared management model for data on quantitative water management** with application to the Nam Ngum Basin prefiguring the development of a **National Water Information System**.

In February 2014, a delegation of representatives of the Loire-Brittany and Rhine-Meuse Water Agencies and IOWater, INBO Secretariat, met with the Vice-Minister of Natural Resources and Environment, Mr. Sisavath Vithaxay, and key stakeholders in IWRM implementation at national and local levels.

It was decided to organize, from 15 to 17 October 2014, in Vientiane, which hosts the home office of the Mekong River Commission, a workshop for exchanging the experiments of 6 countries of the Mekong River Basin.

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Meeting with the Vice-Minister of Natural Resources and Environment



## Mekong River Basin

**Regional seminar for exchange of experiences on Integrated Water Resources Management**  
**15, 16 and 17 October - Vientiane - Laos**



Organized under the auspices of the Lao Ministry of Natural Resources and Environment, with the support of the French Embassy and financial support of the Loire-Brittany Water Agency, the seminar gathered over **100 experts from the Mekong River Basin**, representatives of local and national authorities, donors and the civil society.

The Lao Vice-Minister of Natural Resources and Environment, Mr. Sisavath Vithaxay, the French Ambassador to Laos, Mr. Yves Carmona, and the Chairman of the Loire-Brittany Basin Committee, Mr. Joel Pélicot, opened the seminar.



Three thematic sessions allowed the Cambodian, Vietnamese, Burmese, Chinese, Lao, Thai and French delegations to exchange the experiences and good practices in integrated water resources management, developed by the countries of the Mekong River Basin.

The first two days of the seminar were an opportunity to discuss recent progresses made in some countries, at the national level and in pilot river basins, to strengthen synergies with the Mekong River Commission (MRC), especially regarding institutional organization, data management and funding.



A delegation of young representatives of the countries of the Mekong River Basin also participated in the seminar and presented the Declaration hereafter.

During the third day, the participants made a field visit to the Nam Ngum River Basin.

**INBO, IOWater, the Rhine-Meuse Water Agency and the International Secretariat for Water (ISW) provided technical support for the success of this event.**

All the participants received their **"Blue Passport of Basin Citizen"**.

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## MEKONG YOUTH DECLARATION



**We, as Mekong youth, strongly believe:**

- In the power of communication to catalyze change in our society and promote our Mekong Identity. Through our creativity, we will use communication to educate citizens on the water issues in our region.
- That increased cooperation will lead to reach sustainable development. We agree to strengthen cooperation among the public and private sector and civil society to ensure the inclusion of all needs and opinions.

- In sharing our knowledge and experiences about the Mekong. We will establish the **Mekong Youth Environment Network (MekongYEN)** that will serve as a platform for cooperation, capacity-building and intergenerational dialogues.
  - That participation will improve water resources management. We will identify key water messages from the region and ensure that they are heard in policy discussions and national, regional, and global platforms such as the 7<sup>th</sup> World Water Forum.
  - In the ability of young people to achieve concrete and positive change on the ground. We will support youth by facilitating access to small grants and mentorship to accelerate implementation of community-based projects in the Mekong River Basin.
  - That education and raising public awareness are ones of the most efficient ways to change behaviors of children, youth, and local communities in both rural and urban areas on water conservation and waste reduction. We will organize creative competitions for producing awareness materials.
- Our passion and commitments for our basin will last long. We invite you to work with us, the Mekong Youth. With your support, our vision of the Mekong will come true.



## Mekong River Basin

### The Rhine Meets the Mekong

Adaptation to climate change is on the agenda



Although the two Mekong and Rhine Basins are roughly 9,000 km from each other, they nonetheless have much in common in terms of river management.

**Representatives of the International Commission for the Hydrology of the Rhine basin (CHR), the International Commission for Protection of the Rhine (ICPR), the Mekong River Commission (MRC) met at**

**the home office of the German Federal Institute for Hydrology from the 8<sup>th</sup> to the 9<sup>th</sup> of May in 2014 in Koblenz for the first Rhine-Mekong Symposium.**

The theme of this congress was climate change and its effect on the entire river basins as well as related themes.

Climate change both on the Rhine as well as on the Mekong has already had a great influence on the hydrological

regimes as well as on the life and economy around the two rivers and the reduction of these effects as well as adaptation to climate change are of great importance.

In both catchments an increase in temperature has been observed as well as increased precipitation in the wet seasons. Natural catastrophes, above all flooding and drought, are also registered in the two areas, although the risks

in Europe tend to be of an economic nature, while in Southeast Asia the existential fundament of larger parts of the population is at risk. In both areas studies have been carried out or started.

This meeting offered organizations from both river areas the possibility to exchange knowledge and experiences. The CHR researches deal with, for example, the theme of climate change and its possible effects. The CHR has nine member institutions, and the Federal Institute of Hydrology (BfG) is the main German representative.

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## Vietnam



### A new institutional organization is gradually established

**The first phase of the Dong Nai River pilot project (2009-2012) has raised awareness of the key Vietnamese stakeholders regarding techniques for joint basin management.**

As part of the ongoing cooperation with Vietnam through a second project phase, the formalization of an institutional organization for Integrated Water Resources Management (IWRM) is a crucial step for the sustainability of the results of the pilot project in the Dong Nai River Basin.

A new Water Law was adopted in June 2012 and the decree specifying its implementation method in November 2013.

The building of a Vietnamese team, trained in the different techniques for developing a Basin Management Plan and Program of Measures, is at the core of Phase 2 of the project for the effective implementation of the new legislative framework.

The Department of Water Resources Planning and Investigation for the South (DWRPIS) was already introduced to these techniques during Phase 1.

The Directorate of Water Resources Management will develop three Regional Boards for Northern, Central and Southern Vietnam. These will orchestrate collaboration in the Basin Committees of these regions with the technical support of DWRPIS involved in the preparation of technical support documents.

These training sessions will be carried out in 2015.

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The Dong Nai River





### French-Chinese cooperation in the Hai Pilot River Basin and Zhou Sub-Basin

The French-Chinese cooperation project for Integrated Water Resources Management (IWRM) in the Hai River Basin is part of the cooperation agreement signed in 2009 by the Chinese Ministry of Water Resources (MWR) and the French Ministry of Ecology and Sustainable Development.

Its first phase (2011-2012) had allowed the development of mutual understanding by both countries on their respective institutions, procedures and means for managing water.

Since the World Water Forum in Marseilles (2012) and the signing of a Memorandum of Understanding for a second 3-year phase, in the presence of Mr. Chen Lei, Chinese Minister of Water Resources, the project aimed to test the French tools and methods allowing to bring solutions to the problems related to anthropogenic pressures (untreated wastewater, non-point source agricultural pollution) exerted on the Zhou pilot River Sub-Basin and that affect the water quality of the Yuqiao reservoir for the supply of the City of Tianjin and cause eutrophication and growth of blue-green algae and macrophytes.



Meeting of the Hai Project Steering Committee (Tianjin - September 2014)

To improve the situation, **three main objectives are pursued across the basin:**

- **Implementation of the basin's resources assessment;**
- **Establishment of a coordination group for water management;**
- **Drafting of a Basin Management Plan.**

As part of this second phase, eight technical assistance missions have already been carried out by the French partners, coordinated by the International Office for Water, INBO Secretariat: the Ministry of Ecology, the Seine Nor-

mandy Water Agency, the Interdepartmental Syndicate for Sanitation of Greater Paris and the Interdepartmental Institution of the Seine Great Lakes.

Their Chinese counterparts (MWR, the Hai River Conservancy Commission and the Water Boards of the Municipality of Tianjin and Hebei Province) participated in two study visits organized in France.

These activities covered a wide range of tools: planning methods, Water Development and Management Master Plans, involvement of institutional stakeholders, the Water Inter-services Mission (MISE), etc.

Training sessions organized in China on specific technical issues (ecological engineering, calculation of concentrations and Water Body balances, monitoring strategies and equipment) were greatly appreciated.

They motivated the establishment of a specific project on predictive modeling of cyanobacterial proliferation supported by the Center for Environmental Monitoring of the Hai River and implemented by the French "Ecole des Ponts et Chaussées".

A technical diagnosis report was finalized by the Chinese part in October 2014 and presented to a panel of local authorities, invited to comment it.

**The success achieved in the drafting of this diagnosis through dialogue allowed addressing, in the best conditions, the goal of the fourth year of the project (2015): structuring of a Management Plan for the Zhou River Sub-Basin.**

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Treatment pond with floating planted filters



## China



### Lake Taihu

#### Identification of aquatic plants by remote sensing for the lake health assessment

Located in the heart of the Yangtze Delta, the Taihu Lake Basin covers a total area of 36,900 km<sup>2</sup>.

In 2012, based on monitoring data of the previous year, the Taihu Basin Authority started the first pilot study on the health assessment of Lake Taihu. In 2013, the index system was perfected.

**Aquatic plants coverage is one of the indexes in the health assessment system.**

In recent years, the aquatic plants in Lake Taihu gradually disappeared, affected by the deterioration of water quality and eutrophication of the lake.

Remote sensing has been introduced to assess lake health more comprehensively and scientifically and obtain more detailed and accurate data for the

management of the aquatic plant resources.

The technique used allowed assessing the health of aquatic plants in different areas of Lake Taihu: as compared to the 1980s, the distribution of aquatic plants experienced tremendous changes. In some areas, the aquatic plants coverage declined a lot, while in some other areas it increased.

It seems that the aquatic plants coverage did not change significantly in 2011 and 2012.

Compared with the 1980s, aquatic plants disappeared in Zhushan Bay and south of Dagongshan in Gong Bay, while they increased a lot in East Lake Taihu.



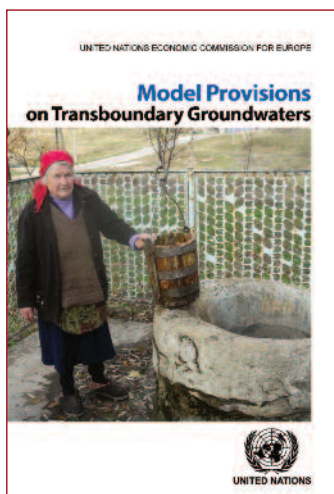
Distribution change of different types of aquatic plants has not yet been considered, so that a further study is needed.

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# United Nations

## UNECE

### Promoting transboundary cooperation on groundwater



The workshop **"Counting our gains: Sharing experiences on identifying, assessing and communicating the benefits of transboundary water cooperation"** was held on 22 and 23 May 2014 in Geneva (Switzerland). INBO participated in the event, organized by UNECE with the International Hydrological Program (IHP) of UNESCO.

As part of the "Groundwater Resources Governance in Transboundary Aquifers (GGRETA)" project, implemented by UNESCO-IHP with the support of the

Swiss Agency for Development and Cooperation (SDC), two Kazakh experts were invited to present the Pretashkent transboundary aquifer, shared by Kazakhstan and Uzbekistan.

The workshop helped follow up the cooperation established between UNECE and UNESCO after the Resolution of December 2012 that had planned for a joint production of recommendations for the management of shared groundwater.

The report "Model Provisions on Transboundary Groundwaters" was published in June 2014.

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# Eastern Europe - Caucasus - Central Asia

## Free Speech

### Kura-Araz rivers basin: Transboundary problems in Integrated Water Resources Management

The Kura-Araz rivers basin covers significant territories of Turkey, Azerbaijan and Georgia. Armenia is completely located within this basin. Most of the underground waters of the Kura-Araz basin are transboundary.

There are some environmental problems in the basin:

- Excessive pollution of Kura-Araz rivers and their tributaries;
- Bacteriological contamination of groundwater by irrigated areas, cities and cattle farms;
- Degradation caused by quarrying activities;
- Depletion of reserves in local areas as a result of uncontrolled use of groundwater.

The main transboundary problems of Integrated Water Resources Management in Kura-Araz rivers basin are caused by water pollution.

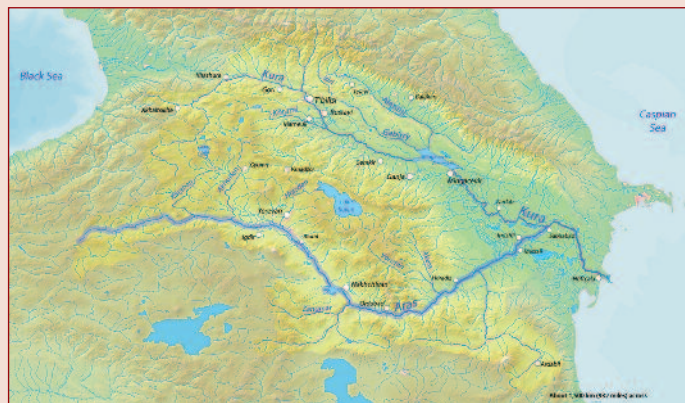
Wastewaters of big cities are discharged into the Kura-Araz rivers and their tributaries without any treatment.

Azerbaijan, which is located downstream of the Kura-Araz basin suffers from the transboundary pollution. All pollutants from the neighboring countries are discharged into the Kura-Araz rivers and arrive in Azerbaijan, especially heavy metals and organic matters.

Water springs are polluted, as well as groundwater and the Sarsang reservoir.

First of all, every basin country should follow the recommendations from the Helsinki Convention 1992 regarding transboundary waters.

An independent monitoring system should be created with the participation of international organizations.



All surface and underground waters and water intakes should be inventoried, a water cadastre should be created.

Pollution sources should be inventoried with the help of international organizations.

Wastewater treatment plants should be modernized to prevent the discharge of very polluted water into rivers and irrigation water should be treated.

It is expedient to prepare geo-ecological maps of transboundary regions to prevent the degradation of basins.

Every country should prepare an integrated water resources management plan for its own territory.

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## Central Asia: iMoMo

### "innovative Monitoring and Modeling of Water"

Since the beginning of 2014, IOWater, INBO Secretariat, has been collaborating in Central Asia to the iMoMo project, financed by the Swiss Agency for Development and Cooperation (SDC) and led by the "Haute Ecole Arc Ingénierie" of Neuchâtel (HE-Arc).

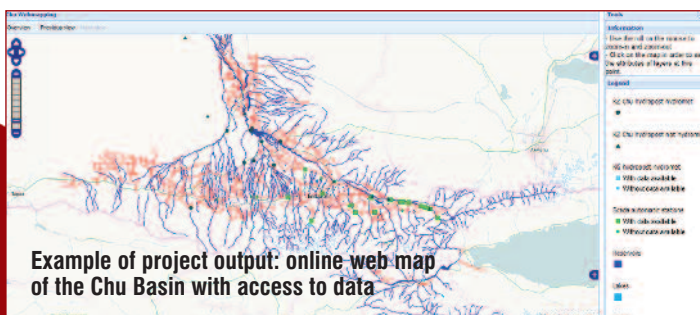
Quick advancements in low-cost sensor and communication technology, hardware and software integration, open up new perspectives for water data collection and exchange, analysis and knowledge dissemination.

The activities, launched in Central Asia in the pilot Chu River Basin, transboundary between Kirghizstan and Kazakhstan, have 3 components:


- 1 **Improvement of water and financial accountability of Water User Associations (WUAs)**, with the installation of low-cost monitoring devices at the level of 2 pilot WUAs;
- 2 **Establishment of a Water Information System (WIS) in the Chu River Basin**, connected to existing databases and using technologies for sharing data/information to meet the need of better knowledge of water balances of the river and irrigation canals;

- 3 **Modeling of an operational, web-deployed water balance** for forecasting vegetation season flows, based on remotely-sensed snow cover analysis.

Considering the significant results obtained on each of these 3 components via interoperability development and modeling, it is already planned to expand this project in 2015 to other basins in Kyrgyzstan and at transboundary level in Central Asia.



Example of project output: online web map of the Chu Basin with access to data

 Schweizerische Eidgenossenschaft  
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Confederazione Svizzera  
Confederaziun svizra

Direction du Développement  
et de la Coopération DDC



# Eastern Europe - Caucasus - Central Asia

## Russian Federation



### The compendium of environmental technologies for biodiversity conservation in the hydropower sector

According to the 2014 Living Planet Report, published by the WWF, 76 percent of freshwater wildlife has gone in the past 40 years.

**This catastrophic decline of freshwater's biodiversity needs immediate reaction to prevent the biodegradation of our rivers and lakes.**

One of the possible solutions is the urgent implementation of effective environmental technologies in the water sector.

Examples of such implementation and their results are shown in the **"Compendium of the best available practices on biodiversity conservation for hydropower"**, the 1<sup>st</sup> edition of which has just been published in Russia under the auspices of UNDP.

In the compendium, the technologies are allocated according to the life stage of the project and correspond to the well-known principles "Avoid-Minimize-Mitigate-Compensate".

The criteria used for choosing the particular technology were the increase in the populations of vulnerable and rare species and the overall growth of biodiversity in the affected areas. Analysis of patent, publications and materials from conferences were used to create this set of technologies.

Among the cited technologies were the examples on regulations of water regimes and sediment transport control, aeration and protection of river

ecosystems, fish-friendly turbines and different fish-way constructions, including the unique experience of the Piracema channel in Brazil.

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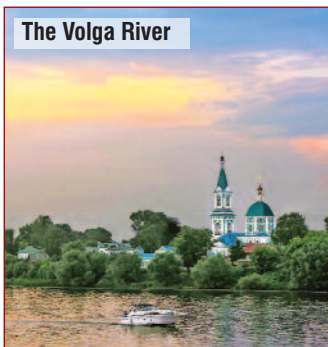
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RusHydro

### Monitoring program for the headwaters of the Volga River



The Volga River

The Basin of the Volga, Europe's greatest river, comprises about 40 % of the Russian population, 45 % of the country's industry and more than 50 % of its agriculture.

It has been shown that its upper course (about 500 km, from its spring to Tver) still has large sections with low impact from human activities and a natural type-specific flora and fauna.

In 2005, an assessment of hydrological, limno-chemical and biological parameters was carried out by scientists from the Russian Federation and Austria.

The hydroecological research was carried out by the Russian Academy of Science - Geographical Institute, the Tver State Technical University and the University of Innsbruck. Tver State University worked on geocological issues

and the State Academy of Slavic Culture assessed the status of the Basin's cultural elements.

The results have shown that a regular data assessment is important to assess and monitor the river ecosystem, as well as estimate its ecological status. Three sites in the headwaters of the Volga River (Rzhev, Staritsa, Tver) were selected for a monitoring program (hydrobiology and hydrochemistry), which has been running since 2006.

**Every year field campaigns are run during the summer low-flow period.**

The results for the first 5 years have been recently published (2014): a taxon-rich macroinvertebrate fauna was recorded and the dataset provides an overview of the annual and interannual variations. In the headwaters of the Volga River, seasonal changes in the hydrological and hydrochemical regime are driven by natural factors based on different water sources, i.e. snow-melt versus groundwater.

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## Moldova



### Analysis of priority options for water governance

More than twenty years after the break-up of the Soviet Union, the Republic of Moldova is still facing considerable challenges.

**For more than 13 years, Swiss Cooperation has supported the development of innovative and decentralized water supply and sanitation services.**

Thanks to this help, access to drinking water was improved for more than 40.000 people in Moldova.

In this context, the International Office for Water (IOWater), INBO Secretariat, was selected by the Swiss Cooperation Office in Moldova (SDC/SCO-M), in collaboration with the Coordination Office for Technical Cooperation of the Austrian Embassy (ADA), in order to conduct an in-depth analysis of the situation and present recommendations for action focusing on:

- Developing a **water information management system**, that provides complete and reliable data to the e-governance platform;

- **Promoting integrated water resources management**, according to the provisions of the new water law;
- **Organizing capacity building and training**, aimed at implementation of a newly adjusted regulatory framework on water supply and sanitation.

Two French and 2 Austrian experts realized a first mission between 14 and 20 September 2014, in order to analyze the situation and identify the priority needs and concrete actions that could be implemented in the coming years with SDC and ADA support on these 3 topics.

The mission report was presented and discussed during a national workshop organized on 22 October 2014 in Chisinau.



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## 12<sup>th</sup> European Conference "EUROPE-INBO 2014" on the

12 - 15 November 2014 - Bucharest - Romania

### Declaration of Bucharest

The 12<sup>th</sup> Conference of the "EUROPE-INBO" group took place in Bucharest, Romania, from 12 to 15 November 2014, at the invitation of the Romanian Ministry of Environment and Climate Change, the National Agency "APELE ROMANE" and the National Institute of Hydrology and Water Management.

It gathered 134 participants, representatives of national administrations and basin organizations as well as of NGOs, companies, international and regional organizations, coming from 33 countries.

The work of the conference was organized around four roundtables addressing the following issues:

- Preparation of the 2<sup>nd</sup> Basin Management Plans of the European Water Framework Directive (2016 - 2021),
- Natural Water Retention Measures and River Restoration,

- Implementation and funding of Programs of Measures,
- Water governance in Trans-boundary Basins.

Prior to the EUROPE-INBO conference, two workshops were organized:

- A technical workshop on river restoration and Natural Water Retention Measures,
- A workshop on the European regional process of the 7<sup>th</sup> World Water Forum.

The conference allowed reminding that the preparation of the next Basin Management Plans required integrating water quantity issues, adaptation to climate change and better coordinating the directives between themselves and ensure a link with sectoral policies (agriculture, energy, navigation...).

Just before implementing the second Management Plans, coordination with the Marine Strategy Framework Directive and the Flood Directive appears essential.

The participants were pleased with the holding of joint meetings between the Water, Marine Environment and Nature Directors at European level and with the organization by the European Commission of a joint workshop on water, nature and marine strategy in December 2014 to think about coordinating the directives implementation in these three sectors.

Since the release of the "Blueprint", there has been a better consideration of the quantitative issues in WFD Management Plans and tools. This is particularly the case through the production of guidance documents on water accounts. The development of scarcity and drought management plans in many countries are going in the good direction.

Communication with populations about progress made in the status of Water Bodies in 2015 is to be increased insofar as that recovering good status will take time.

**Non-point source pollution and hydro-morphology are the most significant pressures affecting rivers.**

To move forward, **it is necessary to progress towards better integration among the European Directives** (Flood Directive, Habitats Directive, Birds Directive and the Renewable Energy Directive) **and improve the coordination and complete it with sectoral policies of the Union (CAP, energy, transports, etc.). Better integrated basin management is necessary to ensure the restoration and protection of water ecosystems or apply Natural Water Retention Measures.**

It is necessary to better integrate the various policies, communicate on the benefits of river restoration and Natural Water Retention Measures and mobilize the partners from the different sectors concerned.

In addition, better commitment of local communities in ecosystem restoration projects is needed with a greater mobilization of the elected representatives for these projects.

The lack of knowledge of the multiple benefits of "green infrastructure" is an obstacle to its implementation on a large scale, especially in the Basin Management Plans, Flood Risk Prevention, Natura 2000 actions and Rural Development Plans.



134 participants coming from 33 Countries - © IOWater - C.Runel



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



## implementation of the Water Framework Directive

The participants underlined the importance of consistency between the measures taken to achieve environmental objectives and the policies and practices of the agricultural sector.

The ongoing preparation of the Rural Development Plans is an opportunity for **taking river hydromorphology into account**. The participants asked the water managers to be closer to their colleagues of the agricultural sector to **include measures for reducing agricultural pressures and pollution and to limit financing for practices having strong negative effects on the quality of Water Bodies**.

The next Basin Management Plans should be based on a more exhaustive economic analysis of pressures and on quantification of costs and impacts of the measures needed to comply with the objectives of the WFD. For this purpose, it is necessary to establish clear and transparent methodologies, improve common knowledge, but also, if needed, to agree on a practical guide under the Common Implementation Strategy (CIS) to complete and update the WATECO guidance document.

**The participants took note of the entry into force on 17 August 2014 of the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses.**

This convention, as well as the UNECE Water Convention of 1992, is a solid basis for international cooperation in transboundary basins.



Closing ceremony - © IOWater - C.Runel

**Whatever the scale, good knowledge and easy access to data and information on the status and evolution of water resources and of their use is a key to a successful water policy.**

For better communicating with the decision makers and the general public, the members of "EUROPE-INBO" group insisted on the need for developing tools for data interpretation. The participants recommended increasing the exchange of experience on the ways of producing and sharing comparable data among stakeholders, as well as on the tools and methods used for the analysis and interpretation of data and the dissemination of knowledge to decision makers and the general public.

**With regard to the Flood Directive, it was reminded that Flood Risk Management Plans should be developed in each basin.**

The participants also reminded the importance of involving field stakeholders and the public. Appropriation by all users of water policies and of the resulting measures is essential to advance and increase efficiency. The Monitoring Program could be a good communication tool if based on standardized methods improving the understanding, comparison and use of information.

The participants also stressed that the indicators used to characterize the status of Water Bodies are too general. They do not reflect the effectiveness of the actions undertaken during the program cycle. Less aggregated indicators, used at local and national levels, would allow a better understanding of the results of the efforts made.

The "EUROPE-INBO 2014" conference is a new important step for assessing implementation and for formulating sound proposals to improve WFD implementation in the next cycles, especially for the 2016-2021 period.

**Ms. Daniela RADULESCU (Romania), was elected President of the EUROPE-INBO Group for the year to come, until the next conference in 2015.**

**The next "EUROPE-INBO 2015" International Conference will take place in Thessaloniki in Greece from 21 to 24 October 2015.**

The delegates decided to hold next "EUROPE-INBO" conferences in 2016 in Lourdes, France, and in 2017 in Dublin, Ireland.



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

## 4<sup>th</sup> International Conference on "Water in Mountains"

**The mountain people are getting mobilized to anticipate the effects of climate change on water resources**

The "4<sup>th</sup> International Conference on Water in Mountains", organized by Asters (Upper-Savoy Natural Space Conservancy), the Endowment Fund "Living Mountain", the International Office for Water (IOWater) and the International Network of Basin Organizations (INBO) took place on 8, 9 and 10 October 2014, in Megeve (Upper Savoy - France).

Following previous meetings in 2002, 2006 and 2010, this conference issued an alert to the need to quickly adopt strategies to adapt to the impacts of global warming on water resources in the mountains, which are areas where the main large European rivers Ebro, Danube, Po, Rhine, Rhone, and Vistula ... and their major tributaries, originate.

**Global warming now seems to be unavoidable and the European mountains are already among the first victims!**

With the decrease in snow cover and glacier melt, the water regimes of all major European rivers coming from mountains are now changing.

However, the flow regularity of these rivers is crucial for the supply of drinking water to populations and for the economic development at the foothills and in the plains (hydropower, inland

navigation, irrigation, tourism or still the cooling of thermal or nuclear power plants...).

Meeting water needs in the future and for all purposes is thus everybody's business.

**Water management in the upper river basins is a strategic issue for the mountain people, but also for the populations and economies ... in the plains!**

It is thus necessary to act quickly if we want our mountains to remain "Europe's Water Towers".

Flood frequency and intensity will greatly increase in autumn, winter and spring, as well as summer droughts.

Climate change in mountains will also generate severe erosion, landslides, degradation in river quality and an increase in water temperature. Hydro-power production could be reduced by 15%, cooling of thermal and nuclear power plants will be more difficult, river navigation will have to adapt, competition between water uses will become fiercer.

**Time is running out:** we must now identify and model these changes at local level in order to undertake the field actions that are urgently needed!



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**Field experiments were presented at the "Conference on Water in Mountains". They work and produce results that can be replicated; we must disseminate them.**

- First, **saving water and facilitating recycling:** leak detection in drinking water supply systems, the reuse of treated wastewater, groundwater recharge, promoting the efficient use of water must become a priority.
- Next, **rethinking the management of water, lakes, wetlands and mountain soils,** taking into account the strategic constraints of the supply of water to the population and agricultural, industrial and tourist economies at the foothills and in plains downstream. We must develop "a new culture of risk".
- Finally, **better recognizing the role of mountains for the community as a whole from upstream to downstream areas, under integrated basin policies.**

This will require **strengthening the institutional and financial mechanisms** and refocusing them towards these new priorities, as in the case of the new French Law "GEMAPI" (Management of Aquatic Ecosystems and Flood Prevention).

Planning must be made in the basins of large rivers and based on strong inter-sectoral and international cooperation when river basins are transboundary as in the case of the Rhone, with French-Swiss cooperation.

**With the Water Framework Directive of 2000 and its related Directives, the European Union has an effective tool to truly apply these adaptation strategies. Moreover, it requires from the Member States that they incorporate appropriate measures in the coming Basin Management Plans and Programs of Measures 2016 - 2021 then 2021-2027.**

**Let's quickly implement them!**

The participants also decided to **establish a "Network of Water Stakeholders in Mountains"** to sustain their work between two "Megeve" conferences, to exchange and promote these good practices.

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[www.egem2014.org](http://www.egem2014.org)



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## ”European River Restoration Conference”



### Linking restoration and innovative river management



The 6<sup>th</sup> ”European River Restoration” Conference was held from 27 to 29 October in Vienna. Its topic was: ”Establishing relationships between restoration projects and innovative river management”.

An issue was at the core of the debate: how to innovate in integrated river basin management by using, in particular, Green Infrastructure, Natural Water Retention Measures and Contemporary River Corridor Management?

- **A Green Infrastructure** is a semi-natural space, designed and managed to provide a wide range of ecosystem services.
- **Natural Water Retention Measures (NWRM)** aim to reduce vulnerability to floods and droughts.
- **”Contemporary River Corridor Management” (CRCM)** requires a cross-sectoral commitment and cooperation among stakeholders at local, regional, national and international levels. The results of CRCM practices conducted on six

Central European rivers were presented and are available on:

[www.see-river.net](http://www.see-river.net).

Jean-François Donzier, INBO Secretary, presented the events on Basin Management in the next World Water Forum.

Finally, the 2<sup>nd</sup> European Riverprize was awarded to the River Mur in Austria.

[www.errc2014.eu](http://www.errc2014.eu)

## European Commission



### River basin management supported by INSPIRE

The European Directive 2007/2/EC adopted in 2007 establishes the **Infrastructure for Spatial Information in Europe (INSPIRE)** which aims to provide harmonized, high quality spatial information to support environmental policies along with all policies or activities which may have an impact on the environment in Europe.

INSPIRE is a decentralized information system, based on the national spatial data infrastructures of the Member States.

The Directive does not require collection of new data, but existing and newly created spatial datasets should be interoperable and publicly accessible, through network services, within the established implementation roadmap, which should be completed by 2020.

The implementation of INSPIRE enables a more efficient access and sharing of environmental spatial information among the public sector at national level and across Europe.

INSPIRE spatial data are organized into 34 themes. Each theme has its data model and application schemas, defined in the INSPIRE Technical Guidelines and Commission Regulations that assures data interoperability across Europe.

The Hydrography theme jointly with the themes Elevation (digital elevation models), Land cover (physical and biological cover of the earth's surface), Management area (areas managed, regulated or used for reporting at European, national, regional and local levels), Protected sites (areas managed for conservation objectives) and Geology, are providing spatial data models for the reference spatial information regarding river basin management.

Reference data and data modeled by the thematically more specific application schemas included in themes: Soil, Utility and governmental services, Environmental monitoring facilities, Agricultural and aquaculture facilities, Energy resources, Habitats and biotopes, etc. provide precise and efficient information for river basin management.

The INSPIRE Directive also allows data integration from different thematic communities for transboundary river basins.

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Modeled area (source INSPIRE Data Specification on Hydrography Guidelines v3.1)





### New Peer-Review Mechanism

The consortium, formed by the International Office for Water, INBO Secretariat, (France-leader partner), the National Institute of Hydrology and Water Management (Romania), CEENBO Secretariat, and the Mediterranean Network of Basin Organizations Secretariat (MENBO) (Spain), was selected by the DG Environment of the European Commission in September 2014 for setting up the "Peer-Review Mechanism", and taking care of its secretariat for the next 2 years.

The objective is to set up a simple, voluntary and targeted system to allow mutual learning between peers about the European Water Framework Directive (WFD) implementation and participative River Basin Management Planning.

The main people involved will be practitioners from River Basin District Authorities responsible, in the Member States, for the implementation of the WFD, which will voluntarily submit issues related to River Basin Management Plans to the review performed by experts from other Member States.

**The final output of this new mechanism is the improvement of the WFD implementation in River Basin Districts (RBD) by sharing experience involving various European Member States.**

It responds to the assessment of the 2011-2015 River Basin Management Plans made by the European Commission across Europe that has shown significant differences in implementation among countries.

The impact assessment, accompanying the Blueprint, states that "Peer Review (...) has proven to be an effective process in other areas of EU law.

The sharing of experience between colleagues allows for a problem-solving approach to be taken.

Under the Common Implementation Strategy (CIS), the peer review mechanism allows disseminating the experience of the best performing countries to help improving implementation in Member States or Basin Authorities willing to be reviewed.

The steps of the setting up of a Peer-Review Mechanism are as follows:

- **Step 1: Launching of the call for expression of interest from early 2015** for, on the one side, the identification of the Basin District Authorities willing to have their tools reviewed and, on the other side, voluntary practitioners willing to contribute to the peer review based on their Europass Curriculum Vitae and competence field.

- **Step 2: Development of terms of references** for the proposed actions in the selected voluntary Districts.
- **Step 3: First peer-reviews performed** and organization of a practical workshop on specific topics in spring 2015.
- **Step 4: Continuation of Peer-Reviews until 2016** and elaboration of lessons learnt documents

All materials related to the Peer Review Mechanism can be found on the project website:

[www.aquacoope.org/peer.review](http://www.aquacoope.org/peer.review)



## Final Conference of the IWRM-net SCP project

The six research projects on integrated water resources management funded in 2009 by the European IWRM-Net consortium are now complete!

The final conference was held on 21 - 22 October in Brussels at the Delegation of the High Council of Scientific Research (CSIC) and was attended by about sixty participants.



	<b>Impacts of climate change on water resources management: regional strategies and European view</b> DE (Department of Hydraulic Engineering and Water Resources Management & CESR: Center for Environmental Systems Research, Univ. of Kassel) - FR (IRSTEA, EPTB Seine Grands Lacs) - IT (Mediterranean Agronomic Institute of Bari)
	<b>Developing an integrated model to predict abiotic habitat conditions and biota of rivers for application in climate change research and water management</b> DE (IGB: Leibniz-Institute of Freshwater Ecology and Inland Fisheries, UDE: Univ. of Duisburg-Essen - Dep't of Aquatic Ecology, CAU: Christian-Albrechts Univ. - Dep't of Hydrology and Water Resources Management) - PT (CCMar: Centre of Marine Sciences - Univ. of Algarve) - FR (Univ. Paul Sabatier - ECOLAB)
	<b>IWRM for Climate Change Adaptation in Rural Social Ecosystems in Southern Europe</b> IT (CMCC: Euro-Med. Centre of Climate Change) - PT (EIA: Ensino, Investigação e Administração S.A., Atlântica Univ.) - SP (Univ. Politécnica de Valencia)
	<b>Utilizing the Ecosyst. Services Approach for Water Framework Directive Implementation</b> FR (Asconit Consultants, Credoc: Centre de Recherche pour l'Etude et l'Observation des Conditions de vie) - PT (IMAR: Instituto do Mar) - DE (Seeconsult, InterSus Sustainability Services)
	<b>WATER-2-ADAPT: Resilience enhancement and water demand management for climate change adaptation</b> IT (FEEM: Fondazione Eni Enrico Mattei) - SP (BC3: Basque Centre for Climate Change) - DE (Seeconsult: Society-Economy-Ecology-Consulting, CALS: Chamber of Agriculture of Lower Saxony)
	<b>Water markets scenarios for southern Europe: New solutions for coping with water scarcity and drought risk</b> FR FR (BRGM, ACTéon, IRSTEA) - IT (DipSA: Dept of Agricultural Sciences, Univ. of Bologna) - SP (UPM: Univ. Politécnica de Madrid, UCO: Univ. de Cordoba)

Water scarcity management, adaptation to climate change, valuation of ecosystem services, water markets..., researchers, policy-makers and managers of water resources and aquatic environments were invited to discuss the main results of the projects and their implications for public action around two thematic sessions:

- **Management of water resources and aquatic environments: innovative solutions for adapting to climate change;**
- **Socioeconomic aspects of the management of water resources and aquatic environments.**

The summary of this conference is available online at:

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



## Science-Policy Interface (SPI)

**The International Network of Basin Organizations** has been involved in raising awareness of issues on the transfer of research results to improve the management of water resources and aquatic ecosystems, based on solid scientific information, by participating in many **Science-Policy Interface (SPI)** demonstration projects.

IOWater, INBO Secretariat, also facilitates the European Water Community (EWC) virtual platform, in particular.

A dedicated CIS-SPI action was conducted as part of the Common Implementation Strategy (CIS) of the European Water Framework Directive

(WFD) and coordinated by ONEMA and the DG Environment between 2010 and 2012.

**As part of this activity, the recommended SPI methods are tested, taking into account the needs of water managers in an Irish pilot basin, the Eastern River Basin District (ERBD).**

Three sites around Dublin were pre-identified as having challenges related to the implementation of the WFD and Flood Directive, especially for assessing Natural Water Retention Measures with an ecosystem approach.

**The "Community of Practitioners" met in October 2014 in Ireland.**

The testing of the method for scientific knowledge transfer took place between

October and December to prepare a final report on the implementation of the recommendations in January 2015.

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



Preparatory meeting for SPI activities  
Plovdiv - November 2013 © IOWater - C.Runel

## Ecological engineering applied to water



### Natural Water Retention Measures - "NWRM"

**Ecological engineering is becoming a key area for action and a green infrastructure policy is gradually taking up in the water sector.**

The increased use of such techniques is justified more and more by the recent progress they have made: we know today how to design green roofs,

infiltration trenches and ponds that fit perfectly into the urban landscape, floodplains that protect cities, grass strips that limit erosion, etc.

However, the multiplicity of people using these techniques, the variety of possible actions and associated joint benefits as well as services provided to the environment, make it now very difficult to aggregate and capitalize the acquired knowledge.

**In 2013, the DG Environment of the European Commission launched an invitation to tender for structuring knowledge to enable the use of these techniques.**

Commonly known by the name of ecological engineering, these measures are gathered under the title of **"Natural Water Retention Measures (NWRM)"**.

**The 11 European project partners have developed a platform ([www.nwrn.eu](http://www.nwrn.eu)) whose catalogue currently includes 53 measures, regrouped into four sectors: Forestry, Urban area, Agriculture and Nature / Hydromorphology.**

Case studies are also presented and a database is accessible via the platform.

To facilitate access to information for water managers and decision makers, a practical guide has been developed and translated into the 25 languages of the European Union.

**The project results were presented in the fall of 2014 to the various WFD Common Implementation Strategy (CIS) working groups but also at the EUROPE-INBO 2014 General Assembly and at the Conference on Water in Mountains in Megeve.**

<http://nwrn.eu>



**NWRM partners:**

- International Office for Water 
- ACTeon Environment 
- Baltic Environment Forum 
- I.A.CO Environmental & Water Consultants 
- Instituto Madrilenó De Estudios Avanzados 
- Regional Environmental Center 
- Regionális Energiagazdasági Kutatóközpont 
- Scotland's Rural College 
- Swedish University of Agricultural Sciences 
- ENV'ECO (environmental economics consultancy) 
- AMEC Environment & Infrastructure UK 

## "EUROPE-INBO 2015"

**For the implementation of the European Water Framework Directive**



**Thessaloniki - Greece  
21 - 24 October 2015**

**To participate, please register:**

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





### Benefits of floodplain restoration for society

#### Implementing the concept of ecosystem services in transboundary river basin management



The Vecht River

In a Dutch-German pilot study in the international Vecht Basin, the practical applicability of an ecosystem services approach in regional/local water management in a transboundary area has been tested.

The pilot study aims to develop a regional scheme for payment of ecosystem services in the transboundary Vecht region.

#### Would it be possible to generate additional payments from the stakeholders to implement the wetland restoration?

The pilot study demonstrated that floodplain restoration generates a wealth of benefits to society. It showed that an integrated planning process is required to optimize those benefits.

Turning these benefits into financial support of stakeholder groups may be more difficult, in particular if benefits are too uncertain and their value is too small.

The study gives an example on the challenges for implementing a public water management payment approach in a transboundary context and how the ecosystem services approach could contribute to initiate stakeholders' support.

The study has been funded by Dutch "Ministerie voor Infrastructuur en Milieu" and the German "Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit" in the context of

their activities for the implementation of the UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes, adopted in 1992 in Helsinki.

Additional funding was provided by "Niedersächsische Ministerium für Umwelt, Energie und Klimaschutz".

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## Spain - Duero River Basin Authority



### Management of the services provided by the Duero riverbank: "La Senda del Duero"

The Duero River Basin Authority is the autonomous organization of the Spanish Ministry of Agriculture, Food and Environment that manages water in this River Basin.

**For years the cities have turned their backs to the rivers** causing them to become spaces forgotten by society, pits of discharges, dividing barriers that limit the interaction of individuals in population centers.

The Duero River Basin Authority has the firm intention to change this trend, by managing the resources provided by the river and its environment and in this way recovering spaces for use.

#### Plan II of Restoration of the Riverbanks is an overall action plan focusing on the recovery of the river and riverside spaces.

Among the various undertaken actions, the project "Duero River Trail and Environmental Recovery of the Riverbanks between the Urban Centers of Olivares and Bocos", with a budget of more than 5,200,000 Euros, allowed building trails and numerous structures that improve accessibility of people to this natural resource.

This project allowed the creation of more than 40 kilometers of paths that respect the natural topography and the bank sinuosity. Four wooden footbridges of more than 100 meters long have been built to connect both banks of the river.

More than 500 meters-long smaller wooden footbridges, adapted to the relief of the banks, have been constructed to avoid all kinds of natural obstacles. Numerous small jetties and fishing piers have been built providing better access to the river.

Many native species have been planted and a signaling system of panels and beacons has been created which provides knowledge about the location of the works and the surrounding landscape.

All these infrastructures are protected by defense and drainage elements which ensure their durability in extreme situations. All these actions are designed and built to last with strict environmental control and allow the development of activities.

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The "Senda del Duero"





## Spain



### MedWetRivers Project

**The Project named "Natura 2000 management and monitoring program for Mediterranean Wetlands and Rivers (MedWetRivers)", funded by the Life-Nature Program of the European Union, aims to put into effect the European policy and legislation related to nature and biodiversity, i.e. the Birds and Habitats Directives.**

The "Castilla y León" regional government is the beneficiary of this Project and counts on the participation of the Spanish Ministry of Agriculture, Food and Environment and Duero Basin Authority (Confederación Hidrográfica del Duero-CHD), a basin organization depending on the Water General Directorate of the above Ministry.

The main goal of the Project is to maintain and recover the aquatic habitats and species of community interest in

the "Red Natura 2000" protected areas of the Mediterranean Region of Castilla y León Autonomous Community. Aquatic ecosystems, being made up of rivers, wetlands, reservoirs, aquifers, floodplains and other water bodies, are an interface both physical and administrative, and also a space subject to different managements and approaches. Thus, it is necessary to integrate the Water Directives (Framework and Floods) with the Natura 2000 network directives.

The actions assigned to CHD mainly focus on Hydrological Planning.

Once the Hydrological Plan adopted, the first planning phase (2010-2015) already addressed some of the matters connected with the Natura 2000 network (SCI and SPA) and other protected areas (Natural Fluvial Reserves, Special Protected Areas and Wet-

lands), which have been integrated into the Register of Protected Areas.

A large number of the concerned Water Bodies (about 200 out of 774 are in the Spanish part of the Duero Basin, either surface water or groundwater bodies) require additional assessment, the definition of environmental objectives and actions to be integrated into the Program of Measures.

This is something that has not been possible to implement in the first Hydrological Plan but must be improved in the next planning period (2016-2021).

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



**Floods in the Tormes river at the mouth of the Corneja river**

### Duero Basin Authority's work in the Teleno region as a consequence of the forest fire of August 2012

In August 2012, 12,000 ha of maritime pine forests set fire to the Teleno region, located in northern Spain. The fire extent in the high environmental valued of the mountain landscape caused an ecologic catastrophe with effects on the existing river network.

The Duero Basin Authority, in collaboration with the Regional Government, decided to act urgently on the environment of the rivers in the affected zone, in order to prevent contamination of water resources by ashes and burnt

organic matter and to minimize erosion processes in the catchments feeding the streams and rivers of the region.

It was decided to carry out environmental restoration emergency work before the beginning of the rainy season.

It started with the clearing of the vegetation affected by the fire in buffer zones located close to the rivers, extending at some points up to 100 m (police zone).

Silvicultural treatment was performed on the vegetation still alive after the fire to stabilize it ensuring its sustainability.

**51 hydrotechnical works consisting of small dykes made of wood from the cut trees and consolidated with stones and plant debris were constructed to counteract erosion processes.**

To finish the restoration and renewal of the vegetation, 15,000 trees were planted on a surface area of 18.5 ha, creating a continuous buffer of riparian vegetation next to the watercourse, which did not exist before the fire. It will allow greatly increasing biodiversity, will function as a natural firewall and will contribute to the quick environmental recovery of the surroundings.



**Retention of ashes and mud by the wood dyke**

The success of the environmental restoration work was made clear during the first rainy days, as the constructed dykes played their part against erosion. In this way, the rapid response of the Duero Basin Authority contributed to mitigating the damage caused to the environment by the fire that occurred in August 2012 in the Teleno region.

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**State of the soil after the fire and after the beginning of erosion processes**





### A glossary on water and aquatic environments



The glossary on water and aquatic environments is a common tool for the partners of the French Water Information System (WIS).

It results from the pooling of fifty glossaries since 2010, in order to develop a semantic data model.

**It includes about 1,100 terms currently available in English, French and Spanish.**

This is a "collaborative" website, any user can propose to amend it, delete some words or add others. Proposals are evaluated by a group of users, WIS partners. The website content is entirely free and reusable.

It is also in line with the "linked data" dynamics, which aims to promote the publication of structured data on the Web using semantic technologies.

Current efforts are based on the linking of the glossary terms with the "SANDRE" concepts, Wikipedia articles (DBpedia) and the GEMET thesaurus.

In 2014, the Glossary was enriched with approximately 300 Glossary terms, most of them coming from the "Thésaurus Eau"©.

In order to make the Glossary more interactive, more game-like interfaces, based on relationship graphs, were established for the general public and, for specialists, a SPARQL query interface ([fr.wikipedia.org/wiki/SPARQL](http://fr.wikipedia.org/wiki/SPARQL)) will allow exploring, recovering or viewing the contents of the glossary.

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

### "SANDRE"

#### French National Service for Water Data and Common Reference Frames Management

##### Establishing a common language

The "SANDRE" was created to simplify the exchange of data between the various French stakeholders involved in the **Water Information System (WIS)**. It thus offers a unique interchange interface and addresses the need to establish a common language between partners from the water world.

**Through "SANDRE", many tools are then developed to allow the stakeholders concerned to make their information systems interoperable:** dictionaries and interactive exchange scenarios, web services,

reference data, a cartographic atlas, a metadata catalogue, audits of computer systems, compliance labels, etc.

**"SANDRE" is proposing more than 20,000 pages of technical specifications. It establishes compliance labels for over 15,000 files per year.**

**Its website receives more than 250,000 visitors a year.**

IOWater, INBO Secretariat, takes care of "SANDRE" Technical Secretariat under a multi-year Convention of Objectives with the National Agency for Water and Aquatic Environments (ONEMA).

##### Adapting to the stakeholders' needs

For example, each year in France, more than ten million results of water analyses (drinking water, surface water, groundwater, coastal water, wastewater, ...) are produced and exchanged between analysis laboratories and partners (ARS, DREAL, Water Agencies, industrialists, ...).

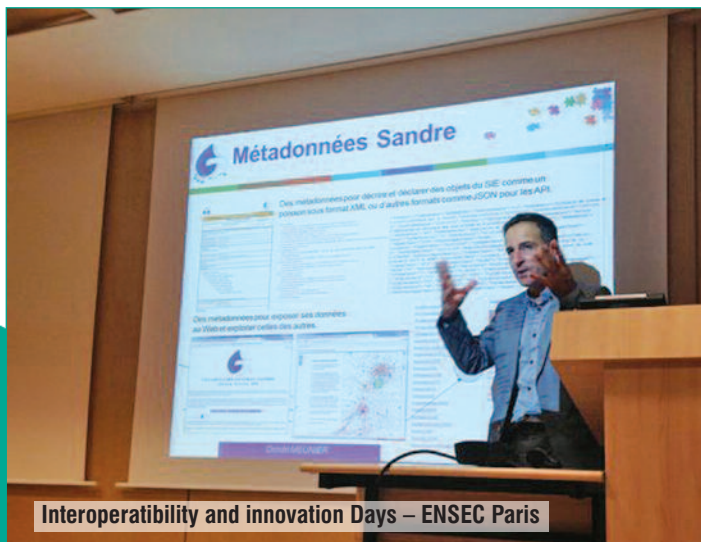
**"SANDRE" Secretariat worked out a standard for data interchange "EDILABO", with all the partners concerned.**

The order of 29 November 2006, stipulates, in article 3, that any laboratory must from now on be able to receive a request for analyses and to provide results in the "EDILABO" format.

The new dictionaries of "SANDRE" data on wetlands, river and administrative reference frames are now compatible with the European INSPIRE Directive.

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## France



### "Garonne 2050"

#### Adaptation to global changes for the Garonne River Basin



**With its "Garonne 2050" study, the Adour-Garonne Water Agency carried out a forward-looking analysis of needs and resources, primarily taking into account the impact of climate change.**

The study took place over a period of three years, from 2010 to 2013, combining a forward-looking methodology with the participation of the basin stakeholders and simulations used to calculate the approximate amounts of water to be mobilized and costs involved for the basin manager.

**The principal challenge for 2050 is that natural flow will be halved during the low-water period which itself will be earlier and longer from May to November.**

The result of the simulation has shown that if we should want, by 2050, to compensate for this natural hydrological reduction to maintain today's Target Low Water Flows (DOE) and preserve biodiversity, aquatic recreational activities and landscapes during the summer period (including in towns and cities), then the total deficit, to be made good over the year, should be around 760 Mm<sup>3</sup>/year. As a comparison, abstraction of surface water for irrigated agriculture in the basin currently amounts to around 400 Mm<sup>3</sup> and water stored in hydropower reservoirs amounts to 1,200 Mm<sup>3</sup>.

**Models of three exploratory scenarios were created and submitted for consultation.**

**Scenario 1: "No compensation for natural reduction in low-water flows".**

**Scenario 2: "total compensation of reduction in low-water flows".** Three options have been considered to balance supply and demand:

- hydropower reserves feed the Garonne;
- a substantial part of stored hydropower resources can be used to support low-water (520 Mm<sup>3</sup> instead of 120) and 360 Mm<sup>3</sup> of additional reserves are created;
- the combination of three radical solutions: ban on any agricultural use from the river, building of 300 Mm<sup>3</sup> of additional storage and getting a greater contribution to low-water support from hydropower reserves (380 instead of 120 Mm<sup>3</sup>/year).

**Scenario 3: "compensation for half of low-water flows",** which appears more accessible and less costly than scenario 2. To achieve it, however, we have to find 335 Mm<sup>3</sup> to balance supply and demand, in addition to rational agricultural use.

**One of the important conclusions of this study is that it will be extremely difficult to secure uses and maintain the current low-water flow.**

By half-compensating for the reduction in low-water flows, we can safeguard the amenities of the river for local residents, without impacting the management of energy or sacrificing irrigated agriculture. It is almost impossible however to maintain an acceptable low-water flow, without relying on additional storage.

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## Climate change: less water? less hydropower?

### First answers on the Durance

Global warming now seems to be admitted. However, its impact on water resources and water demands of the different sectors (agriculture, tourism, drinking water, hydropower...) remains to be assessed in order to anticipate potential changes, to adapt as soon as possible the river management rules and thus limit the negative effects of climate change.

**This is the core of the R<sup>2</sup>D<sup>2</sup>-2050 research project (Risk, Water Resource and Sustainable Management of the Durance in 2050).**

Being an example of rivers subjected to high pressure, the Durance was chosen as a case study.

The originality of the R<sup>2</sup>D<sup>2</sup>-2050 project is its multi-model approach that integrates various climate assumptions, several models simulating the available water resource and users' water needs and different socioeconomic scenarios for the Provence Alps-Riviera region for the middle the 21<sup>st</sup> century.

The results suggest an increase in temperature, a significant decrease in summer flows and deep changes in the water regime in spring (consequence of a snow melt earlier in the year).

In 2050, the management of the Durance and Verdon dams would meet water demand downstream, now consi-

dered as a priority at the expense of hydropower production in winter and maintaining a water level in the reservoirs required for tourist activities in summer.

This project, jointly financed by the Ministry of Ecology and the Rhone-Mediterranean-Corsica Water Agency, gathered Irstea, EDF, Pierre and Marie

Curie University, LTHE, the Canal de Provence Company and ACTeon.

**Soraya Ferhani & Nadège Chapelin**

**Eric Sauquet**

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### The French "SAGE":

#### What territorial strategies for water management in Europe?

To implement the European Water Framework Directive (WFD) and especially its River Basin Management Plans and Programs of Measures, France has a strategy based on a consistent hydrographic unit, the sub-basin, in promoting the development of **Water Development and Management Plans (SAGE)** at this level.

#### Is the French "SAGE" unique in Europe?

The tools for sub-basin water resources management that meet the characteristics of the French "SAGE" were analyzed in eight European countries:

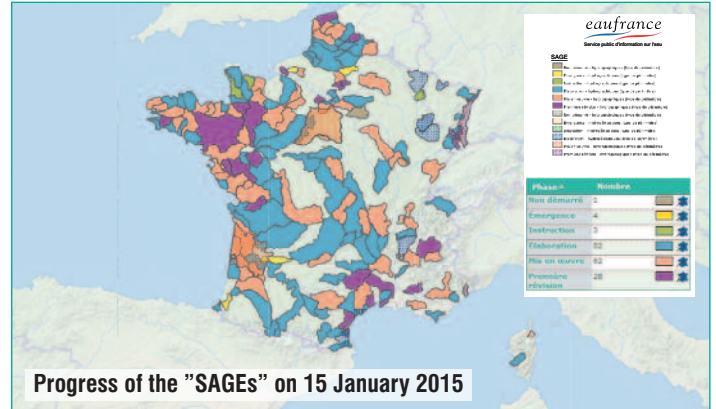
- Planning at the level of a sub-basin or a consistent hydrographic unit;
- Approach to sound and sustainable water resources management;

- A multi-stakeholder consultation framework;
- A document having a regulatory scope and defining enforceable rules.

The observation of the eight European countries, Belgium (Walloon Region), Germany (Lander of Lower Saxony), Italy, Luxembourg, the Netherlands, Spain, Sweden and the United Kingdom, shows that these countries have mainly developed plans for managing water resources at regional level, depending on their institutional, historical and cultural context.

Spain is organizing water management on the scale of major river basins, but Luxembourg keeps water resource planning at national level.

England has recently developed an approach to planning at the level of consistent hydrographic units.



If the Programs of Measures of the River Basin Management Plans are usually developed with regional plans, some countries bordering France have developed tools that draw heavily on river contracts on the sub-basin scale (the Walloon Region, Luxembourg, Italy, Spain occasionally).

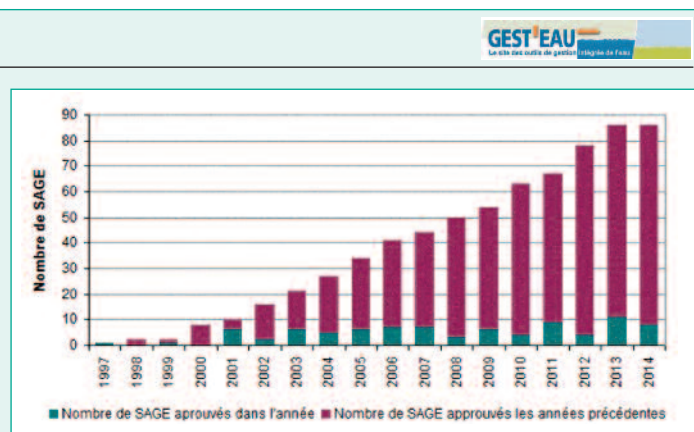
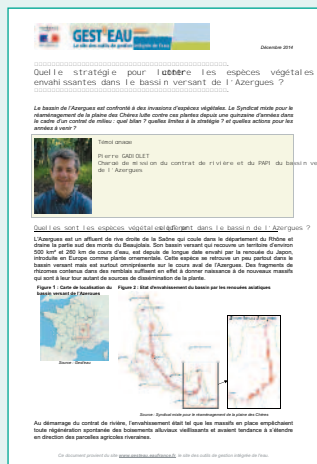
The Lander of Lower Saxony, the Netherlands, England, Walloon Region, Luxembourg and Sweden have institutionalized dialogue in multi-stakeholder committees.

However, their implementation method, their powers and privileges vary depending on the country.

### "GEST'EAU"

"Gest'eau" is the national website dedicated to Water Development and Management Plans (SAGE) and Environments Contracts.

In 2014, it recorded more than 1.2 million visitors.



Its objective is to foster the sharing of knowledge between stakeholders involved in local integrated water management processes.

1,402 documentary notes have been entered into the website.

If these tools are now better known, stakeholders in local water management are always so curious to see on the website their progress and evolution, the number of processes per year and the surface area covered by SAGEs and Contracts on their territory.

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

### The "SAGEs"

#### 20<sup>th</sup> anniversary



For twenty years, the Water Development and Management Plan (SAGE), planning tool for local water management, has evolved to adapt to environmental and legal changes.

In France, it has become a key tool for ensuring sound and sustainable water resources management and planning.

An educational document on the Water Development and Management Plans (SAGE) has been published with the financial support of ONEMA.

Who develops it? What are the steps? What is its added value? This synthesis answers these questions...



## France



### National Seminar on the "SAGEs"



The Department of Water and Biodiversity of the Ministry of Ecology, Sustainable Development and Energy (MEDDE), the National Agency for Water and Aquatic Environments (ONEMA) and the International Office for Water (IOWater), INBO Secretariat, in connection with the "SAGE" National Group and the Water Agencies, organized a seminar on Water Development and Management Plans (SAGE) in Paris on Tuesday 23 and Wednesday 24 September 2014.

The seminar enabled the **Presidents of the Local Water Commissions (LWC)**, Public Local Basin Authorities (EPTB) and key structures of the SAGE to appropriate **the new responsibility "Management of Aquatic Environments and Flood Prevention" (GEMAPI)**, which will come into force on 1<sup>st</sup> January 2016, and to seize its related opportunities.

#### Multiple objectives

It also allowed the different water professionals to share their "SAGE" implementation experiences as a tool for overall and regional planning at the

junction of policies for the management of water and aquatic environments, for flood prevention and urban planning.

**The seminar gathered nearly 300 participants over the two days.**

[www.seminairesage.oieau.fr](http://www.seminairesage.oieau.fr)

### The Siagne "SAGE" keeps going



#### A River Basin with strong contrasts

The Siagne, a permanent karstic river, is born in the Escagnolles County and flows over 44 km before running out into the Mediterranean Sea. Situated in both the Var and Alpes-Maritimes Departments, its basin covers a surface

area of 520 km<sup>2</sup> and includes 32 municipalities.

#### The assessment is being completed

The Water Development and Management Plan (SAGE) of the Siagne was launched in July 2010 and the Local Water Commission established on 14 May 2013.

**The key structure for the "SAGE" is the Interdepartmental and Intermunicipal single-purposed Syndicate (SIIVU) of the Upper Siagne.**

This 2-year study started in spring 2013. After a phase for information collection and analysis, including the organization of several meetings with groups of involved partners, the initial assessment and baseline scenario were validated by the Reading Committee in September 2014.

#### The prospective phase is being implemented

The "SAGE" assessment started with a participatory workshop in autumn 2014 and the contrasting alternative scenarios are expected in early 2015. A study is carried out at the same time to define the water volumes that can be abstracted.

The challenges of restoring ecological continuity, governance, optimization of hydraulic structures and water resources sharing are at the core of the actions to be carried out in the coming years.

**A Geographic Information System (GIS) and a Water Information System (WIS)**, including a cartographic atlas and a metadata catalogue, were created online and are freely available on the website:

[www.oieaudci.net/catsiagne](http://www.oieaudci.net/catsiagne)



Lake St. Cassien

### 1964-2014 The Water Law is 50 years old

**For the 50-year anniversary of the Water Law, the Ministry of Ecology and Sustainable Development organized a Conference on 21 October 2014 in Paris.**

Its objective was to discuss about the achievements of the water policy and draw up its assessment in 2014. **Mrs. Ségolène Royal, French Minister for Ecology, closed the meeting.**

She declared in particular: "Access to quality water is one of the great challenges of this century, on a global scale but also for each French citizen. In France, water policy aims to preserve aquatic environments and recover water quality. The sector must also be a lever for economic activity. Ecological Engineering is a too often ignored strategic sector of the green economy. Now it participates not only in achieving the objectives of water policy and biodiversity, but also in creating jobs that are not relocatable. The water sector, as a whole, must be supported as a priority to help energy transition and the emergence of a blue growth".





### The "Crau" aquifer management

#### Challenges and conditions for concerted sustainable management



The "Syndicat Mixte de Gestion de la nappe de la Crau/Joint Syndicate for the management of the Crau aquifer" (SYMCRU) is

working on sustainable groundwater management to face the various stakes of its territory.

In the Bouches-du-Rhône (South of France), the Crau aquifer provides the main water resource for about 300,000 inhabitants, for the agricultural and industrial sectors on the Crau plain. Over an area of 550 km<sup>2</sup>, 70% to 80% of the aquifer recharge is originating from irrigation water, abstracted from the Durance River for grassland production. Thus, this resource is highly vulnerable to the sprawling of economic and urban areas.

In 2011, SYMCRU became an agency dedicated to groundwater management.

Since 2013, it has been working on the drafting of an "Aquifer Contract". This should lead to an action plan in 2015 to maintain the good status of the Crau groundwater body, in accordance with the European Water Framework Directive.

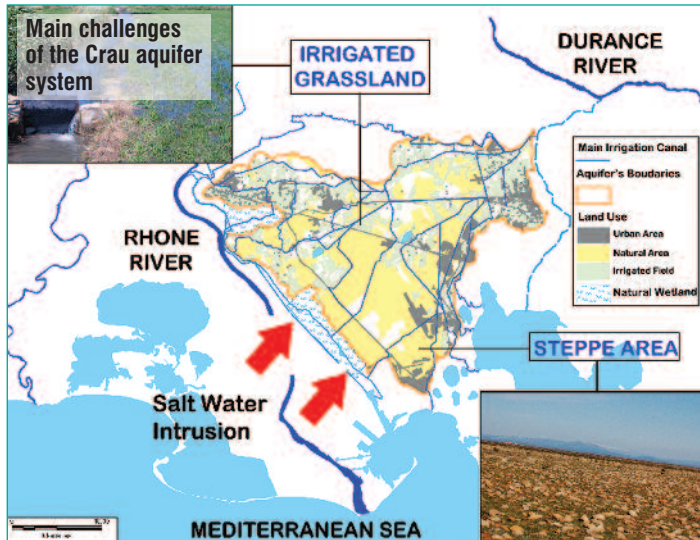
A Water Development and Management Plan (SAGE) will be decided in the coming years, based on feedbacks collected during the implementation of the "aquifer contract".

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Groundwater quality is good in the Crau aquifer area. However, the resource is threatened by salt intrusion at the vicinity of its coastal boundary. Its evolution could be affected by the facility development and activities in the port and industrial area of Fos-sur-Mer.

### Val-de-Marne

#### Getting ready for the flooding risk

Located at the gates of Paris, by the confluence of the Seine and Marne rivers, Val-de-Marne is one of the departments of the "Ile-de-France" region, most exposed to the risk of flooding.

Moreover, the land has evolved a lot since 1910, a strong densification and urbanization increasing its vulnerability. Today, 27 out of the 47 cities are exposed to floods in Val-de-Marne (urbanized up to 90%). A once-a-century flood would generate considerable damage along with an economic loss never seen before, up to 30 billion Euros worth of damage.

As part of the "Plan Bleu/Blue Plan", the Val-de-Marne General Council has proposed since 2011 actions that allow developing a flooding risk culture and preparing all the stakeholders to get ready in case of a major flood.



Every year, in partnership with Public Services, the General Council of the Department organizes workshops each quarter for the municipalities, groups of municipalities and network operators. The main goal is to give them the resources to prepare themselves by elaborating a municipal rescue plan.

"Activate a municipal command center", "prepare a flood exercise" are examples of tackled topics - sometimes as role playing - so that the cities know what to do on "D" day.

To this operational component, may be added awareness support materials intended for the population.

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In the event of a once-a-century flood, the water level could reach up to two meters. It would directly concern at least 250,000 inhabitants and significant impacts would be expected on the population movement, on economic activities and life for thousands of

These stakeholders struggle to find information and tools to prepare themselves. The "Plan bleu" is providing a forum for sharing and mutualizing experiences.



Floods in 2013



## France - Overseas Departments



### Reunion Island

#### BEJISA Cyclone: data collected by the HR- HYDRONET system

The tropical cyclone BEJISA was particularly active from the 2<sup>nd</sup> to 3<sup>rd</sup> of January 2014 on the west side of the island and more moderate in the south. During the official Red Alert, floods, tidal waves and swells proved to be remarkable, even extreme in St Gilles on the west side of the island.

**Measures were taken and disseminated in real time by the tide-temperature recorder installed in the St. Peter marina.**

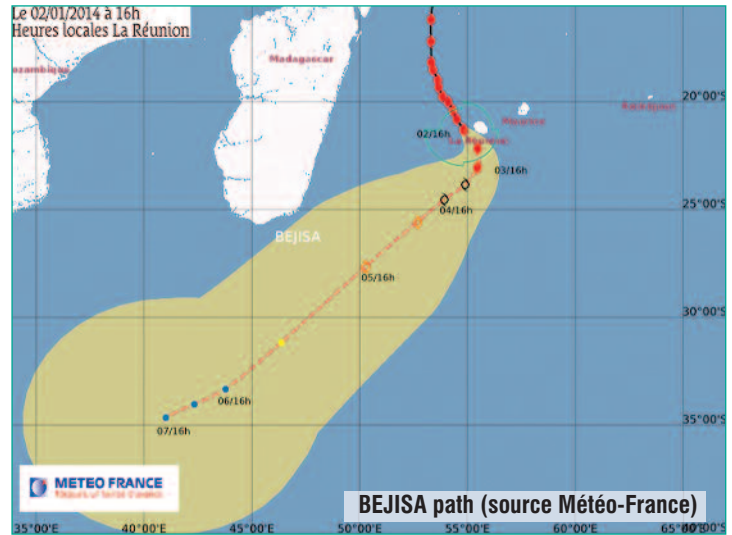
The tide-level curve and the thermogram were recorded in real time without disturbing the GSM/GPRS network.

Tidal high water and the maximum level reached were respectively 0.35m and 1.30 m on the 3<sup>rd</sup> January while the tropical storm was going away.

The 1.15 m level above chart datum resulted in an SMS and e.mail warning to the Civil Security correspondents in the town and at the harbor master, who were in charge of the preventive evacuation of residents and resident boat-owners, which ultimately did not take place because the cyclone went away.

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### The Martinique

#### A European territory precursor for water management

**The Martinique Water Office (MWO) is a public body established in 2002 and responsible for supporting various activities of common interest in the field of water management and aquatic environments.**

Its missions are to study and monitor water resources, aquatic and coastal environments and their uses, technical assistance, training as well as information and awareness of the population of the Martinique.

#### Adapt the European standards to the features of ultramarine basins

The Martinique is a small basin island subject to a tropical climate. It cumulates and shares with other European Outermost Regions (EORs) morphological, climatic and biodiversity specificities. It also falls within the scope of European Community Law in the field of water, especially the Water Framework Directive and its binding timetable for which appropriate benchmarks must be developed and the skills of local stakeholders enhanced.

MWO is responsible for the project management of various works to adapt the techniques for monitoring and assessing the quality of aquatic environments to ultramarine contexts: i.e. the development, on behalf of the five French overseas departments, of Indexes of Ecological Continuity (IEC) and Ultramarine Hydro-Morphological Benchmarks (UHMB) as well as Bio indicators, diatoms and macro invertebrates..

#### Share experiences on the regional and global environment

Since 2005, the Martinique Water Office has been positioned to build a constructive dialogue with international partners on issues related to integrated water resources management and basin governance.

In 2012, it represented the French Overseas Departments and more broadly the EORs at the World Water Forum in Marseille: it facilitated a session on "Adaptation of water management to the EORs context".

During this session, a number of commitments were made:

- Establishment of a network of basin islands under INBO;
- Development of a knowledge Reference Frames on the insular tropical and subtropical ecosystems;

- **Strengthening of knowledge and local expertise** through the establishment of regional platforms for training in the water sector.

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The Lorrain River - River's chemical and biological quality monitoring station



# Europe - The Balkans

## Croatia



### End of the twinning agreement on the Flood Directive

In April 2014, Austria, France and the Netherlands closed the twinning project on the European Flood Directive with Croatia, which became a full EU Member State in July 2013.

Adopted in 2007, the Flood Directive imposed its schedule to the four countries participating in the twinning project. The schedule of the Directive, which eventually will be synchronized with that of the Water Framework Directive, gives the following deadlines for the 3 stages of preparation of Flood Risk Management Plans to be developed in each river basin/hydrographical unit:

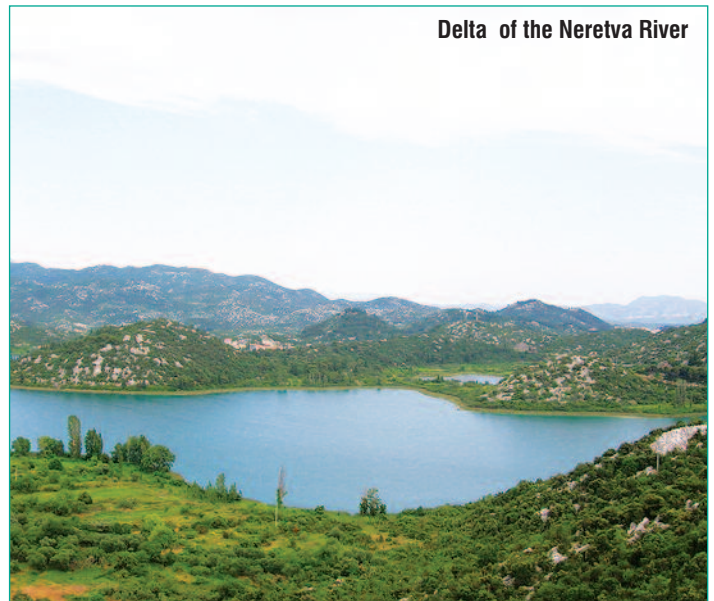
- Preliminary Flood Risk Assessment (PFRA) with selection of Areas with Significant Potential Flood Risk (ASPF) by December 2011;

- Hazard and risk mapping of ASPFR by December 2013;
- Flood Risk Management Plans (FRMPs), including their Program of Measures by December 2015.

This 16-month project especially focused on the mapping of flood risk in **two priority pilot areas**:

- the Kupa River in the Black Sea Basin,
- the delta of the Neretva River in the Adriatic Sea Basin with specific flood characteristics.

A training program allowed supporting the preparation of the Flood Risk Management Plan (FRMP) with its Program of Measures and associated economic analysis.



Delta of the Neretva River

A model for identifying the data necessary for preparing the plan was also developed for dissemination of this pilot experience to other Croatian basins.

**Alan Cibilic**

Flood twinning project  
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## Macedonia



### Institutional capacity building and Improvement of Legislation



The European Union is financing a 2-year technical assistance project for capacity building of the Ministry for the Environment of Macedonia, in order to develop and apply the legislation on water.

IOWater, INBO Secretariat, in partnership with Ramboll, is in charge of carrying out 2 activities for the improvement of the legislative framework for water resources management and for the development of a Management Plan for the main basin of the country, that of the Vardar River.

A thorough analysis of the Macedonian legislation for water management was conducted to identify discrepancies with the obligations of the various European water-related Directives.

Recommendations for amending the texts of current law were proposed and additions will be prepared later on in the project.

The four initial elements to be developed for the Vardar River Basin Plan include:

- Characterization of Water Bodies in the basin;
- Identification of pressures on Water Bodies;
- Mapping of protected areas;
- Development of a Monitoring Plan.

One of the priority objectives of the project is also the on-the-job training and capacity building of the staff of the Water Department of the Macedonian Ministry for the Environment.



# Meetings

## Danube-Eastern Europe Regional Water Forum

15-17 June 2015 - Bucharest, Romania

The Danube-Eastern Europe Regional Water Forum is an annual event organized by the Romanian Water Association with the support of the International Water Association, promoting an efficient exchange of experience and an actual assessment of the development of the water sector in Romania and countries of the region.

The Danube-Eastern Europe Regional Water Forum gathered approximately 1,500 participants in 2014: representatives of European institutions,

central and local public authorities, international financial institutions, water and sanitation services operators, consulting companies, national and regional professional associations, academics and other relevant institutions.

The 2015 Danube-Eastern Europe Regional Water Forum is taking place in Bucharest from 15 to 17 June 2015.

It provides an actual debate on water resources of river basins up to their efficient use, with a view to ensuring sustainable development.

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## I.S.Rivers 2015

Research at the service of great rivers

22-26 June, 2015 in Lyons - France



The GRAIE and the River Basin Workshop Zone (ZABR) have organized the second edition of I.S.Rivers from 22 to 26 June 2015. It focused on the world's natural and human-impacted rivers, especially European ones.

The conference has two objectives:

- to promote multidisciplinary approaches between scientific knowledge and implemented strategies, taking into account the diversity of rivers.

- to engage all stakeholders and to build links to stimulate European and international collaborations between scientists and river managers.

**Anne Clémens & Elodie Brelot**

General Secretaries of I.S.Rivers

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## 1996-2016 "Mexico + 20"

The 10<sup>th</sup> INBO World General Assembly will take place in Mexico



General Assembly in Morelia, in presence of the President of Mexico - March 1996

The International Network of Basin Organizations (INBO) was created in 1994 in Aix-les-Bains (France), but the first Statutory General Assembly took place in 1996 in Morelia, Mexico.

Twenty years later, once again the 10<sup>th</sup> World General Assembly of the Network will take place in Mexico at the invitation of the Director General of CONAGUA.

Thank you to keep this event in your diary as of now!

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



# Europe - The Mediterranean

## BeWater Project

### Society as a stakeholder in river basin adaptation to global change around the Mediterranean Region



With global change projections in the Mediterranean, which are bound to cause significant environmental and socioeconomic impacts, the BeWater Project aims to promote dialogue and collaboration between science and society for sustainable water management.

BeWater is implementing a transition process ensuring that social empowerment will help confronting the emerging global change challenges with proactive responses.

12 partners coming from Belgium, Cyprus, Germany, Greece, Italy, the Netherlands, Slovenia, Spain, Tunisia and the United Kingdom joined forces in October 2013 to implement a 3.5-year multi-actor project running until March 2017, with a €3.6 million funding - €2.9 million out of which from the European Commission, in the context of its 7<sup>th</sup> Framework Program.

Using as case studies four River Basins - Rmel (Tunisia), Tordera (Catalunya), Vipava (Slovenia) and Pedieos (Cyprus) - BeWater aims to promote shared learning via information, knowledge & experience exchanges. Whether it is forest fires, aquifer overexploit-

ation, temperature and precipitation changes, drought and flood cycles, desertification, erosion and salinization, rising water demand and economic consequences, all four river basins are faced with diverse water-related socio-ecological vulnerabilities.

Project partners will have organized participatory workshops involving local stakeholders, scientific partners and public administration representatives in the four river basins, with each basin identifying its own global change challenges.

Scientific partners will have designed potential water management options to address these by leveraging all available information, which will then be validated together with local stakeholders. The most feasible options will be prioritized and used as the basis for a Basin Adaptation Plan.

BeWater empowers citizens to learn more about adaptive water management, to share their knowledge and experience with the scientific community, and become actively involved in the implementation of the adaptive water management plan.

BeWater will formulate concrete proposals, based on the local river basin context and case studies, as well as guidelines for policies of national and international relevance.

**For more information, please contact:**

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## Morocco



### Improving Water Security in the Haouz Plain

**A partnership between the African Water Facility (AWF/ADB) and the Tensift Basin Agency (ABHT)**

The Haouz aquifer covers an area of 6,000 km<sup>2</sup>. It is a strategic resource in the socioeconomic development of the region.

This aquifer helps to supply a population of about 1.6 million people, the irrigation of nearly 82,000 hectares that use more than 80% of the mobilized groundwater, tourism and the embellishment of the city of Marrakech, where green spaces cover an area of over 900 hectares.

Due to the succession of droughts combined with increasingly growing water abstractions, that far exceed the renewable inputs, **this aquifer now shows a negative balance.**

This advanced state of overexploitation results in a continuous drop in the groundwater level, up to 2 m/year in some areas.

With the aim of safeguarding the aquifer, the "ABHT" carried out a study that identified various actions to be taken, including artificial recharge.

**In such a context, the Government of Morocco requested ADB to finance the development of a pilot artificial recharge project.**

Thus, a grant agreement amounting to €1,892,500 was signed by the AWF and Morocco for the realization of:

- Technical studies;
- The development of five sills;
- The treatment of river banks;
- 6 piezometers, installation of automatic equipment, construction of a hydrological station and a weather station to monitor the impact of the sills on the aquifer.

These activities were carried out between 2009 and 2013. The studies made show that the total infiltrated volume gained by the development of the five sills would rise to 9 million m<sup>3</sup>/year.

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Sill operating during the flooding in October 2012



# Europe - The Mediterranean

## EMWIS

SEMIDE  
EMWIS

### Better management of water knowledge in the Mediterranean

#### New Spanish Presidency for EMWIS

The Chairmanship of the Steering Committee of the **Euro-Mediterranean Water Information System (EMWIS)** was transferred from Italy to Spain during the committee meeting last September in Valencia: **the President of the Jucar Basin Authority, Ms. Maria Ángeles Ureña, succeeded to Mr. Walter Mazzitti.**

The Committee approved the development priorities for the coming years. They include:

- Continuing the development of **National Water Information Systems** in the Mediterranean countries;
- Boosting **joint working groups**, with experts from the European Union (in particular those in the CIS: Common Implementation Strategy of the Water Framework Directive), on issues of common interest, such as the reuse of treated wastewater, solutions to fight against water scarcity and degradation of the quality of water resources...
- Developing synergies with regional and national political processes such as the **Water Strategy for the Western Mediterranean (5+5)**: a preparatory meeting was held as a side event of the Steering Committee;
- Preparing new projects leading to achievements directly usable in the countries;

**The Water Directors of the 13 countries present reiterated their commitment to continue their joint activities within EMWIS platform, highlighting its uniqueness in institutional exchanges between all the Mediterranean countries.**

#### The Mediterranean Water Knowledge Platform (UfM)

Following the unanimous approval of the project by 43 Member Countries of the Union for the Mediterranean (UfM) in April 2014, the first meeting of the project Steering Committee was held in Valencia (Spain). The four pilot countries of the Southern Mediterranean (Jordan, Lebanon, Morocco and Tunisia) presented the work progress made for the implementation of **National Water Information Systems** shared by these countries' institutions and in the drafting of white papers that can guide policies for integrated water resources management.

The project is now entering an active phase of looking for funding of its regional activities. Indeed, the regional component of the project is open to all Northern, Southern and Eastern Mediterranean countries and aims to provide guides, tools, training, exchange of experiences and finally the demonstration of data flow for international reporting.

<http://upm-eau.net>



Union pour la Méditerranée  
Union for the Mediterranean



Passing the Presidency from Italy to Spain



Steering Committee of the Mediterranean Water Platform

#### Innovation to meet the Mediterranean water challenges

The Mediterranean region is facing many challenges in sustainable water resources management. Many solutions have been developed by research centers, but the transition to a large-scale deployment is delayed due to the lack of field validation in real size.

**The European Union, with its "Innovation Program for Water", is supporting real-size water demonstration projects involving laboratories, companies and end users.**

**EMWIS takes part in four of these projects, with a high potential for the region, to:**

- Advise farmers on their irrigation practice on a daily basis, but also on the planning of coming crops that will soon be possible thanks to an online expert system implemented by "OPIRIS" ([www.opiris.eu](http://www.opiris.eu));

- Solve the three problems of feeding populations, energy efficiency and water efficiency, the "WEAM4i" project implements solutions for intelligent irrigation management ([weam4i.eu](http://weam4i.eu));
- Make large Mediterranean tourist resorts water-self sufficient, which remains a very long-term goal, but the "demEAUmed" project is testing solutions for water treatment and control for that purpose ([www.demeaumed.eu](http://www.demeaumed.eu));
- In the Mediterranean, dams are important for irrigation, drinking water supply and flood control, but their management is complex. The "SAID" project proposes a set of tools for monitoring, control and early warning related to water quality, hydrometeorology for floods, management and maintenance of structures ([www.said-project.eu](http://www.said-project.eu)).

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SEMIDE  
EMWIS





### Algiers-Hodna-Soummam River Basin Agency

#### Master Plan for Water Resources Development (PDARE)

As part of German-Algerian cooperation, the Algiers-Hodna-Soummam Water Agency carried out a study on the drafting of the Master Plan for Water Resources Development of its hydrographic region.

The Master Plan for Water Resources Development (PDARE) is a major tool for integrated water resources management in Algeria. It was established by the Water Act of 4 August 2005.

According to Decree of 4 January 2010, it should include:

- **An assessment of the water resources that can be mobilized**, including alternative resources coming from wastewater treatment and sea water desalination, in particular, and from resources recovered by reducing physical losses and by pollution removal from natural resources;
- **An assessment of water needs** based on long-term sectoral development goals for each natural hydrographic unit;

- **Identification of structural projects and programs for the mobilization and allocation of water resources**, to meet the long term additional water needs;
- **Identification of structural projects and programs** for the rehabilitation and development of the drinking water supply, sanitation and irrigation infrastructure;
- **The temporal distribution of all developmental projects and programs**, according to the changing water needs in the planning period, and estimating investment costs.

This study began in 2005 and was completed in seven steps:

- Establishment of a team in charge of the "PDARE";
- Development of a database and GIS;
- Implementation of planning tools;
- Integration into "quality" and "cost" modules;



- Continuing training of the executives in charge of "PDARE";
- Definition and development of water resource management scenarios;
- Development of the "PDARE" preliminary draft.

The "PDARE" of the Algiers-Hodna-Soummam Hydrographic Region was presented to the members of the Basin Committee and to water stakeholders on 5 May 2014.

The Action Plan to be undertaken in the next twenty years focuses on four lines:

- Water demand management;
- Water supply development;
- Water resources conservation and protection;
- Fight against water-related risks.

Challenges are arising today in terms of water resources conservation and exploitation.

#### Mourad Boukrouna

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### "ONEDD": Environmental Information System

Pursuant to the decision of 5 September 2011 of the Algerian Ministry of Regional Planning and Environment, the National Observatory of Environment and Sustainable Development (ONEDD) has to develop with its partners some indicators on sustainable development.

To fulfill this mission, "ONEDD" is implementing an Environmental Information System (EIS).

This work is fundamental to increase environmental knowledge in Algeria.

The expected results of the twinning project funded by the European Union are:

- Capacity building of "ONEDD" in the processing and interpretation of geographic and environmental data;
- Establishment of an operational EIS;

- Training of "ONEDD" engineers and technicians on the operation of the EIS;
- Increase of the sharing of environmental information and its access for the civil society.

This project, led by the French Ministry of Ecology, Sustainable Development and Energy (MEDDE), was initiated in September 2014 and is supported by fifteen French and Austrian experts collaborating with their Algerian colleagues. This corresponds to 280 days of expertise and training in Algeria and two study tours in France and Austria over a period of 18 months.

#### Substantive action on data management is being carried out.

It involves the development of a catalogue of data sources of the Environmental Information System, the establishment of new exchange systems and the harmonization of data production formats between the involved parties.

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







### Governance of irrigated areas in north-central Tunisia

Sidi Saâd dam reservoir



The General Directorate of Rural Engineering and Water Use (DGGREE) of the Ministry of Agriculture is carrying out a technical support project for the sustainability of irrigated areas in five Governorates in central and northern Tunisia.

This project, which consists of an institutional support to Agricultural Development Groups (ADG), is implemented by the Canal-de-Provence Company and financed by the French Development Agency with a contribution from the French Rhone-Mediterranean-Corsica Water Agency.

IOWater, INBO Secretariat, is contributing in the assessment of Public Irrigated Areas (PIA) by carrying out field surveys, involving Agricultural Development Groups (ADG) and the Directorates of the Regional Agricultural

Development Commissions (RADC), and more specifically in the organization of participatory workshops in which stakeholders talk about problems and difficulties they encounter.

Workshops were held in the fall of 2014:

- In the Governorate of Bizerte on the relationships between RADC and ADGs, in which each participant was asked to present the tasks that the other is performing, as well as his own, then wonder about the indicators they have in common to objectify their assessments, and finally share all the solutions that they could implement. The method is based on the Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis associated with the adapted metaplan technique.

- In the Governorate of Kairouan, as the problem of resource scarcity is arising in critical terms, the stakeholders have chosen to work on the cost of infractions by using role playing games featuring a group of offenders and a group of managers who must respond with suited communication tools.

The analysis of technical, organizational and governance difficulties encountered on the PIAs concerned should lead to an assessment of needs and to a capacity building program including awareness raising, the training of trainers, professional managers, technicians and managers, which will be implemented during the second year of the project.

### Rural and Agricultural Development

Two new projects were launched in Tunisia under the "Support Program for public water resources management policy for agricultural and rural development (PAPS-Water)" funded by the European Union.

The first project, aiming to provide overall technical assistance, began in October 2014.

The second project "Assessment of the National Water Saving Program (irrigation)" started in November 2014.

IOWater, INBO Secretariat, is part of the Louis Berger/IOWater/SCET/CCM Consulting consortium, which was selected to implement this project.



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## Success for three European institutional twinning projects

### Bathing Water Directive

Started in January 2013 for an initial 2-year period, the Twinning project on Bathing Water with Turkey is coordinated by the International Office for Water, INBO Secretariat, on behalf of the French Ministry of Social Affairs and Health, together with the Italian association Minoprio, mandated by the Lombardia Regional Council

The Turkish legislative framework has been analyzed and its updating is underway, according to the new Bathing Water Directive 2006/7/EC.

Simultaneously, **150 staff members of the Public Health Institution of Turkey, in charge of bathing water management, are being trained on the various aspect of the Directive:**

- Classification of bathing areas according to their quality;
- Development of profiles for bathing areas, with an Action Plan to improve water quality and manage risks;
- Management of the data flow and development of a database;
- Global monitoring of bathing areas, from the information of the public to the management of crisis situations;
- Improvement of the technical capacities of control laboratories.



Group of experts in the seminar on monitoring for bathing waters

### Flood Directive

The project "Capacity building for the Implementation of the Flood Directive" was launched to support the **Directorate General for Water Management of the Ministry of Forestry and Water Affairs** in its new coordination mission for better flood risk management in Turkey.

**It has been developing for over 2 years with the support of major French and Romanian Public Institutions working on this directive in their respective countries:** the Directorate General for Risk Prevention of the French Ministry of Environment (MEDDE), the "CEREMA", the National Agency Apele Romane and its Institute of Hydrology and Water Management, coordinated by IOWater, INBO Secretariat.

The project aimed at developing the main tools planned for in the EU Directive:

- Transposition of the Flood Directive (FD) into Turkish legislation and adaptation of the institutional organization;
- Implementation of the **3 preparatory steps for a Flood Risk Management Plan in the pilot "Bati Karadeniz" Basin**. The users were consulted in these key stages. A methodological guidance document was drafted to be disseminated to the 25 other Turkish basins and training activities were tested in three basins;
- Preparation of the **National Flood Directive Implementation Plan**, integrating economic analysis.

A key moment was the consultation with stakeholders in Karabük on 27 August 2013 on the results of the Preliminary Flood Risk Assessment (PFRA) for the pilot "Bati Karadeniz" Basin for validating the first stage of the Flood Risk Management Plan.

### Water Framework Directive

This twinning agreement on the implementation of the Framework Directive was carried out between September 2011 and February 2014.

This project, implemented by the Netherlands, France and Spain, aimed to support the Turkish Ministry of Forestry and Water Affairs in **developing monitoring plans for six pilot basins and a national monitoring plan**.

On the French side, experts from the "MEDDE", Seine-Normandie Water Agency, "IRSTEA", "IFREMER", and coordinated by IOWater, INBO Secretariat, contributed to this work.

In 2014, the Twinning project was completed with the finalization of the **National Plan for the Implementation of Monitoring Programs**, including institutional and legislative recommendations in particular, but also an estimate of the costs incurred to harmonize Turkish practices with the requirements of the EU Water Framework Directive in the monitoring of Water Bodies.

[www.aquacoope.org/turkeybw](http://www.aquacoope.org/turkeybw)



Floods in Istanbul in 2009

A complete test of the Flood Directive implementation in the pilot basin and a test for dissemination to 3 other Turkish basins





## Blue Peace



The **Blue Peace** approach developed by the **Strategic Foresight Group (SFG)** aims to transform transboundary water management into an instrument for cooperation, with collaborative and sustainable strategies shared by riparian countries.

In order to turn ideas into action, a Blue Peace community was created to join forces, through various activities and events organized throughout the year.

In September 2014, SFG in partnership with the MEF (Master in Economics and Finance) University, the Swiss Agency for Development and Cooperation and the Swiss Federal Department of Foreign Affairs organized the first annual Forum on Blue Peace in the Middle East in Istanbul, Turkey. It gathered 90 participants.

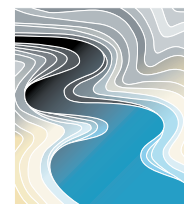
These participants proposed concrete initiatives at bi-lateral as well as regional levels to promote cooperation and sustainable management of water resources in the region.

The Forum began with presentations on the experience of the Organization for the Development of the Senegal River (OMVS), and also on work in progress for the Atlas of the Orontes River Basin, shared by Syria, Lebanon and Turkey.

The Forum demonstrated that the Blue Peace Community of Practice is particularly valuable at a time when the region is engaged in multiple conflicts, which resulted in breakdown of communications between stakeholders.

In October 2014, SFG in cooperation with Harris Manchester College, Oxford University, the Swiss Agency for Development and Cooperation and the Swiss Federal Department of Foreign Affairs, also hosted a roundtable, attended by several policy makers from Israel, Palestine and Jordan, to discuss possible ways forward for improving water relations between the three countries as a contribution to building trust, cooperation and peace in the region.

### BLUE PEACE IN THE MIDDLE EAST PROGRESS REPORT



Strategic Foresight Group

Strategic Foresight Group publications and conference reports are freely accessible on the SFG website.

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## Free speech

### Iraqi Kurdistan Audit of dams in army operations areas

The Iraqi Kurdistan is crossed by the Tigris-Euphrates transboundary river systems and there are currently more than 45 large Dams and Barrages

constructed in the three countries (Iraq, Syria and Turkey), around 20 of those are inside Iraq.

Despite the political and security instability that has affected Iraq during the last three decades, the status, operation and assessment of the rehabilitation work of several dams could be surveyed from 1998 to 2012.

However, further detailed assessments are required at several sites, especially for the dams which continue to be affected by ongoing army operations near Mosul and other dams in the middle part of Iraq.

The sites with known critical issues are the following:

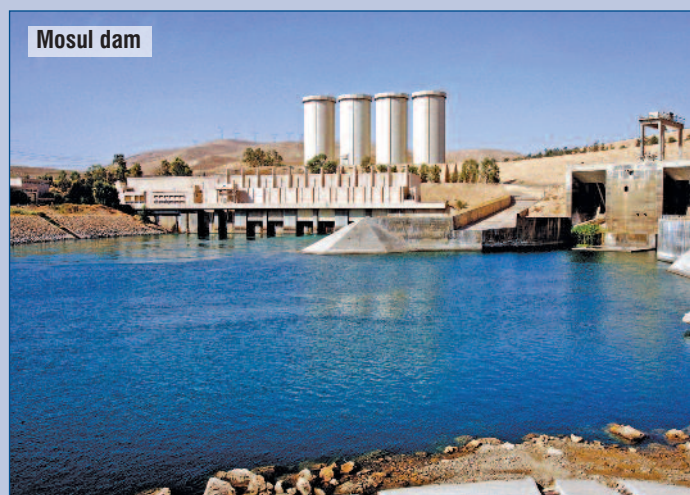
- Mosul Dam (Built 1981-1986),
- Al-Adhaim Dam (Built 1991-1999),

- Al-Haditha Dam (Built 1978-1988),
- Al Falluja Barrage,
- Derbendikhan Rockfill Dam (Built 1957- 1962),
- Dokan Arch Dam (Built 1954-1958),
- Hamreen Earth Dam (Built 1976-1980).

The last dams are still located in army operations areas.

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



## 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**
- **Handbooks for Integrated Basin Management**
- **The 7<sup>th</sup> World Water Forum of Daegu-Gyeongju 2015**
- **"The World Pact for better River Basin Management"**

### Privileged links with websites:

[worldwaterforum7.org](http://worldwaterforum7.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)  
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