

INTERNATIONAL NEWS

Capacity building for better water management

MANAGEMENT
COOPERATION
INFORMATION
TRAINING

EDITORIAL

"Leaving no one behind" is the theme of the 2019 World Water Day. Hundreds of millions of people in the world still do not have access to safe drinking water and effective sanitation. Progress has been made, but remains fragile, in many regions of the world faced with increasingly obvious impacts of climate change, demographic growth, and uncontrolled urbanisation.

In France, constant updating of human competencies is crucial to accompany developments in technology and regulations. The water professions are being transformed by new digital technologies, and requirements for monitoring treatment and infrastructures are becoming stricter, calling for increased expertise and tools to disseminate information. Interconnections between drinking water supply, effective sanitation and water resources management are more vital than ever, especially given climate change predictions that are already taking place. The robustness of the model established in 1964 has been proven.

Progress can still be made, in particular to increase equity in the implementation of the "polluter pays" principle. In any case, it is essential to give greater impetus to financial circuits assigned to preserving water resources, and now also biodiversity, at a time when France is facing a new set of challenges.

On the international scene, water attracts increasing attention, but not enough to respond to issues like the needs of a growing population, expected economic, energy and agricultural development, and the indispensable preservation of the environment.

We need to move faster, and to remember, in the words of Amin Maalouf, that "Time is not our ally, it is our judge, and we have already borrowed too much".

Eric TARDIEU
Director General



*International
Office
for Water*

It is time to take stock of the situation... Feedback from

18 - 23 March 2018 - Brasilia - Brazil



Session on "Water Information Systems"

The International Network of Basin Organisations (INBO), the Global Alliances for Water and Climate (GAfWaC), the International Network of Water Training Centres (INWTC) and their partners, were given the coordination of about ten thematic sessions in connection with the Forum's "Regional" and "Citizen" processes.

These sessions allowed addressing the issues of integrated management of transboundary river basins, the adaptation, which is now essential, to the effects of climate change on water resources and the information and training of all stakeholders concerned.

Two Special Sessions, among the most attended throughout the Forum, were devoted to "Strengthening Citizen Participation in Basin Management" and to "Water Information Systems: Data and Tools for Water Management and for Making the Right Decisions". First, we will remember the slogan, which has prevailed in almost all the themes of the Forum: **"We cannot manage what we do not know how to measure!"**.

In each country and each basin, the organisation and improvement of the production, collection, conservation and exchange of data, as part of true Integrated Water Information Systems (WIS), whose long-term sustainability must be ensured, should allow for a precise view of the situations and of their evolution, especially in relation with the effects of climate change.

Early warning systems for floods and droughts must be developed wherever necessary.

A second major advance of the Brasilia Forum is the recognition of the importance of all stakeholders' participation in the definition and achievement of the common objectives for water resources management.

It is especially necessary to use recognized consultation frameworks such as Basin Committees or Councils, Local Water Commissions or River or Aquifer Contracts for this purpose.

Access to information, training and environmental education needs to be improved, especially for the most disadvantaged populations.

With regard to the prevention of transboundary conflicts:

- Cooperation and dialogue between riparian countries on transboundary waters offer important perspectives for their sustainable development, regional integration and improved relations for mutual benefit in all economic, social and ecological fields;
- The establishment and strengthening of International Commissions, Authorities or Joint Organisations in transboundary basins improve dialogue, conflict resolution and the sharing of the cooperation benefits between riparian countries;

- These joint organisations should have clear mandates and human, technical and financial resources to carry out their missions;
- There is a broad consensus to promote joint management of surface and groundwater in the same area and to better protect transboundary aquifers.

Regarding adaptation to climate change:

Mobilisation is essential at global level to urgently implement programmes to prevent and adapt to the effects of global warming on freshwater resources.

The **"Paris Pact on Adaptation to Climate Change in the Basins of Rivers, Lakes and Aquifers"**, launched at the COP21, proposes a set of actions that have proved effective and immediately applicable.

Freshwater must be truly recognised as a priority in the UNFCCC COPs' negotiations, especially by emphasising the importance of adaptation measures alongside mitigation measures.

It is urgent to have a better integration of water policies with those of the other strategic sectors, such as a sustainable city, agriculture and food, health, waterways transport, fisheries, mines or hydropower, in particular.

Stakeholders are encouraged to include **Nature-Based Solutions** in an ambitious way in their policies and strategies for combating climate change, in land-use planning and water resources management.

It is necessary to significantly increase funding for climate action in the water sector in order to support not only infrastructure projects, but also serve to improve knowledge of water resources and climate change impacts, capacity building, governance, monitoring and evaluation of policies.

They should also support river basin organisations for sustainable water resources management, especially when transboundary water resources are concerned.

the 8th World Water Forum of Brasilia



The 16 "Champions" of the commitments made at the Daegu Forum at the time of an analysis of the situation

Regarding education and capacity building:

Education and awareness of water issues and capacity building are essential at all levels to improve the management of resources and services.

Vocational training on water needs to be developed, supported by sustainable financial mechanisms and facilitated by the establishment or strengthening of specialised national or international training centres.

There is a need to promote the experimentation, evaluation and exchange of know-how in vocational training and education, including support to networks for cooperation between existing or developing training centres.

The Ministerial Declaration encourages Governments to establish or strengthen national integrated water resources management policies and plans, including strategies for adaptation to climate change. It supports the strengthening of institutional arrangements, with the participation of all stakeholders in the policy-making process, while fostering the exchange and sharing of information and experiences among public and private stakeholders and the civil society.

It recognises that efforts and initiatives taken at all levels should promote the adequate and inclusive participation of all relevant stakeholders. It recommends developing and sharing solutions, including integrated water resources management, adaptation to the

impact of climate change, and nature-based solutions to address the most pressing water challenges, through research and innovation, upscaling cooperation, capacity building and technology transfer.

The Ministers encourage transboundary cooperation based on "win-win" solutions for all, in accordance with applicable international law, namely relevant bilateral, regional and international instruments.

In addition to the official sessions of the Forum, several side events allowed the presentation of a wide range of field experiences and direct exchanges between field leaders.

The strong mobilisation of partners, especially South American partners, shows that ideas are progressing and that we are seeing a real convergence towards operational solutions that have proven themselves in the field and that can be implemented quickly.

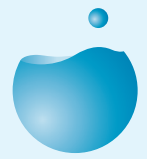
But this requires changing words into action without delay!

All papers and photos of the events organised by INBO, GafWac, INWTC, EMWIS, IOWater and all their partners can be viewed and downloaded on the website:

www.inbo-news.org



World Water Council



IOWater, Governor of WWC

On 30 November and 1st December 2018, more than 250 Members from 35 countries gathered for the 8th General Assembly of the World Water Council (WWC) in Marseille.

WWC gathers water-focused organisations involving UN agencies, the World Bank, governments, NGOs, public and private enterprises and universities. The main mission of the Council is to provide practical answers to the water problems over the world.

The Assembly elected the new Board of Governors, which will serve a three-year term.

The International Office for Water was a candidate for College 5 (professional associations and academic institutions) and was elected Governor by presenting a governor / alternate duo respectful of parity and geographic diversity, resolved to open up new horizons: Mr. Eric Tardieu, Director General of IOWater, and Mrs. Judith Enaw, General Secretary of CICOS (International Commission of Congo-Ubangui-Sangha Basin).

IOWater's participation will focus on two main priorities:

- To catalyse new dialogues: dialogues between different scales (cities, basins, states, transboundary) and between different sectors (water, energy, food, health, etc.).
- To promote education, training and capacity building: technical skills, professional capacities are absolutely needed to properly manage facilities, and all levels of responsibility must be properly trained.

www.worldwatercouncil.org

World Water Week

**26 - 31 August 2018
Stockholm - Sweden**

INBO participated in this event in order to promote and develop international initiatives that it manages or co-manages, in particular the Global Alliances for Water and Climate (GAFWaC) and their incubation programs, including the "100 Water and Climate projects for Africa", the INBO / UNECE platform of pilot river basins for adaptation to climate change, the World Water Data Initiative and the International Declaration on Nature-Based Solutions.

It also met many transboundary basin organisations (Lake Victoria, Senegal and Mekong Rivers) to discuss their work programs, INBO's programme and cooperation projects that could be jointly implemented.

INBO also took part in a side-event to present the National Centre for Space Studies (CNES) work on the use of satellite data and imagery for the assessment of water quality.



Global Climate Action Summit of non-state stakeholders

12 - 14 September 2018 - San-Francisco - USA



Nearly 4,500 participants, representatives of cities, regions, States, companies, public and private investors and associations participated in the Global Climate Action Summit in San Francisco.

INBO participated, in its own right and as the Secretariat of the Global Alliances for Water and Climate (GAFWaC). GAFWaC was also represented by organisations from the Alliance of Megacities for Water and Climate (UNESCO-IHP) and the Business Alliance for Water and Climate (BAFWAC), including Suez, the Pacific Institute, the Water Mandate CEO and the Carbon Disclosure Project).

INBO thus took part in the debate on knowledge, education and public involvement.

It especially recalled the importance of producing reliable data and information as decision making support tools, the usefulness of involving all stakeholders in establishing a shared diagnosis and vision, and the need to properly train professionals in the water sector to optimise the use of the resource.

It also supported the interventions of BAFWAC, insisting on the "security" dimension of water management as a factor of national and economic security, perhaps the only one to be likely a priority topic in international climate negotiations.

www.globalclimateactions Summit.org



Sustainable Development Goals: Water is not very popular!

9 - 18 July 2018 - New-York - USA

The High-Level Political Forum (HLPF) on Sustainable Development, the UN's platform for review of the Sustainable Development Goals (SDGs), took place in New York City from 9 to 18 July 2018, with the objective of sharing solutions to SDGs' implementation.

The first day, the 2018 review of UN Water Sustainable Development Goal 6 "Ensure availability and sustainable management of water and sanitation for all" immediately set the scene by concluding: "Modest progress is being made, but most countries will not meet the target by 2030 at current rates of implementation".

A pessimistic observation, even though the UN Secretary General, HE Mr. E. António Guterres, recalled, in the foreword of this report, that the failure to achieve the objectives on water would also jeopardise the other SDGs.

The HLPF discussions remained very general, as well as the final Ministerial Declaration, which was non-binding and without concrete conclusions, in contradiction with the urgency to act to achieve the objectives!

The management of aquifers was only mentioned in a secondary way and the basin approach and transboundary cooperation hardly appeared.

Solutions do exist and have proven their effectiveness for decades for some of them But strong political will is needed to implement them!

sustainabledevelopment.un.org/hlpf/2018



8th Session of the Meeting of the Parties to the Water Convention

10 - 12 October 2018 - Astana - Kazakhstan

More than 600 participants from around 90 countries gathered in Astana, Kazakhstan for the 8th session of the Meeting of the Parties (MOP8) to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), particularly in relation to SDG 6.5.2. indicator.

This meeting, jointly organised by the United Nations Economic Commission for Europe (UNECE), which is servicing the Water Convention, and the Ministry of Agriculture of Kazakhstan, was the first Meeting of the Parties to be held in Asia and with African Parties.

As global momentum expands towards global cooperation in transboundary waters, more than 15 countries outside the pan-European region have announced their wish to ratify the Water Convention, following the first accessions from Chad and Senegal. These accessions will strengthen cooperation agreements in transboundary basins, with a view to better adapting to the growing water crisis. MOP8 has also adopted a new strategy for the global implementation of the Convention to strengthen cooperation and partnerships and thus promote sustainable development, peace and security.

The meeting also saw the launch of the first report on implementation of the Convention.

States emphasised that regular balance sheets were a means to identify gaps in their cross-border cooperation and to take advantage of them to act.

During a high-level debate attended by INBO, more than 20 representatives (Ministers, Vice-Ministers, Secretaries of State) discussed the role of cooperation on transboundary waters and the Water Convention for populations, prosperity and peace as well as challenges such as increasing water scarcity and climate change, increasing pollution and pressures from various sectors.

Finally, the meeting adopted the Programme of Work for 2019-2021, including a new area of activity entitled "Facilitating the Financing of Cooperation on Transboundary Waters".

IOWater took part in a plenary session to present the "EAST" project, an initiative of the European Union, to demonstrate the benefits of transboundary cooperation.

INBO also organised two side events in cooperation with UNECE, one on climate change adaptation, the other on strengthening transboundary cooperation frameworks.

www.unece.org



Guide on the funding of water and climate projects

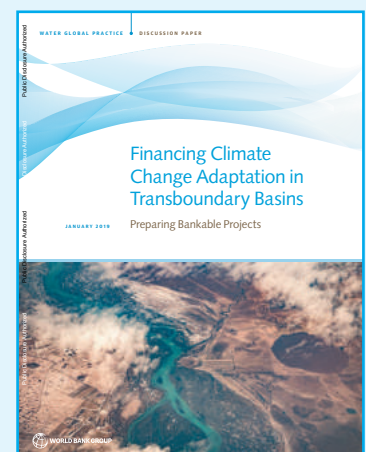
A World Bank, UNECE, AfDB and INBO publication

The World Bank, UNECE, African Development Bank and INBO are jointly publishing a methodological guide on "Financing adaptation to climate change in transboundary basins: Preparing projects that can be funded".

This publication builds on the preparatory work and conclusions of the training workshop "How to prepare bankable projects for financing climate change adaptation in transboundary basins", held in Dakar, Senegal, from 21 to 23 June 2017 as part of the activities of the Global Network of Basins Working on Climate Change Adaptation led by INBO and UNECE.

The guide provides practical answers to the questions asked by donors and climate change adaptation project leaders, for example on the various stages of a project proposal and the associated procedures (different according to the donor), on the criteria for eligibility and how to designate a recipient of funds (the transboundary basin organisation or one of its Member States), the additionality of funding or the sustainability of expected results beyond the life cycle of the project.

www.inbo-news.org/pub/Financing_CC_Basins



“Managing a common asset: universal access to safe drinking water for all”

8 November 2018 - Vatican City - Rome - Italy

The purpose of this conference organised by the Dicastery for the promotion of integral human development with the patronage of the Pontifical Urbaniana University, was threefold:

- Evaluating the progress made as well as the impasses and failures of this fundamental objective: to provide water to thirsty people;
- Reiterating the vision of water as a common good, essential to life and intended for all human beings;
- Making a useful and inspiring contribution to future international commitments on water.

The conference drew on previous contributions of the Catholic Church to the international and interdisciplinary debate and to the efforts made on universal access to water.

Particular attention was paid to the factors that have a positive influence on this universal access and to the causes of the persistence of many problems in this area, and to the difficulty of tackling these causes.

Problems related to pollution and purification, health, infrastructure, participation in decision-making processes, competing uses of freshwater, investments and cost recovery, education and culture, among others, were given great attention.

Mr. Jean-François Donzier, former INBO General Secretary, made a key speech on integrated water resources management in national and transboundary basins.



Forum on “Water Governance in the Rio Grande Basin... towards a common vision”

15 - 16 November 2018 - Monterrey - Mexico

The Rio Grande Basin Council (Consejo de la Cuenca del Rio Bravo - CCRB) has the mission to promote and participate in water management in its local context to preserve water quantity and quality. The main objective of this forum was to raise the users’ awareness to define a common vision on water governance.

Its specific objectives were:

- Knowing global trends and understanding the concepts of water governance and management;
- Increasing knowledge of surface and ground water management in the Rio Grande Basin;
- Identifying the opportunities and challenges of water management in the basin;
- Initiating a process of developing a shared vision for the future of the Rio Grande Basin.

Mr. Jean-François Donzier, former INBO General Secretary, was invited to deliver a key speech. He was able to point out that global trends in water governance are viable for Mexico, and present points of general interest, such as good management strategies at the basin level, the importance of having reliable data, the need for strong citizen participation and the establishment of appropriate and incentive funding systems to save water resources and reduce any kind of pollution.

www.cuencariobravo.org



Water Desalination Alliance

On 16 January, during the Abu Dhabi Sustainability Week, IOWater signed partnership agreements with the Global Clean Water Desalination Alliance (GCWDA).



The Alliance, which currently has 176 Members from 38 countries, was launched at the COP21 in Paris in 2015.

It aims to reduce carbon emissions and improve water resources management in desalination plants.

The Alliance focuses on four key areas: clean energy supply for desalination plants, energy efficiency, systems integration and demand response, R&D and demonstration, training and outreach.

Under the terms of the agreement, a trust fund will be set up to support the Alliance’s activities and innovative projects. The fund will be overseen by both parties and managed by IOWater. It is intended to collect contributions from organisations wishing to support the vision of the alliance to reduce the carbon footprint of water.

Unconventional water resources are becoming increasingly important, including desalination. Sound management of water resources therefore requires innovative and “clean” approaches, in order to sustainably integrate these solutions and reconcile generalised access to water resources, economic and agricultural development on the one hand, and mitigation measures for water production on the other. The partnership must thus allow a better integration of clean desalination in the water strategies of cities, basins or countries.





COP24: INBO's events on water and climate

3 - 14 December 2018 - Katowice - Poland



Ms. Brune Poirson, Secretary of State to the French Minister for Ecological and Solidarity Transition © INBO



Speech by Mr. Eric Tardieu, INBO General Secretary

Measures to halt global warming are generally considered to be one of the most significant civilizational challenges and a prerequisite for implementing the principles and goals of sustainable development. The United Nations Framework Convention on Climate Change (UNFCCC) and its annual Conferences of the Parties (COPs), which are the main decision-making body of the Convention, are the most important instrument of international cooperation on the fight against the effects of climate change.

One of the most important tasks of COP24 was to develop and adopt a set of decisions ensuring the full implementation of the Paris Agreement, in accordance with the decisions adopted in Paris (COP21) and Marrakech (CMA1.1). In addition, COP24 included the Facilitation Dialogue to support the implementation of national commitments.

The International Network of Basin Organisations (INBO), on its own and as Secretariat of the Global Alliances for Water and Climate (GAFWaC), organised and participated in 9 events and a dozen bilateral meetings during COP24 (Katowice, Poland) on the theme of water and climate.

These events dealt with challenges and solutions related to:

- Adaptation to climate change in trans-boundary basins, water security;

- Access to climate funds for adaptation projects in the water sector;
- Capacity building and dissemination of knowledge;
- Dialogue between stakeholders from different sectors;
- Research and innovation to fight against climate change in Africa (AfriAlliance);
- The need for better governance for successful development of the blue economy;
- The value of preserving ecosystems and nature-based solutions for adaptation.

Moreover, during a side event in the French Pavilion, Ms. Brune Poirson, Secretary of State to the French Minister for Ecological and Solidarity Transition, announced that the next "One Planet Summit" will be held in Nairobi (Kenya) on Thursday 14 March 2019. It will address the issue of adaptation and will focus on Africa.

Mr Eric Tardieu, new General Secretary of the International Network of Basin Organisations (INBO), confirmed that he would contribute by presenting the progress made in the "100 water and climate projects for Africa" initiative.

On 8 December, on the occasion of the "Member State and Government" Day, the Global Alliances for Water and Climate (GAFWaC), in collaboration with the Govern-

ments of Senegal, France and the Kingdom of Morocco, organised an event on "Adaptation in the water sector: ensuring water security in a context of climate change".

As 90% of the impacts associated with climate change affect our societies through the water cycle according to the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), droughts, floods, desertification are a threat to water security and, beyond that, to the energy and food security of our societies.

This event aimed to promote the French Speaking World as an opportunity for exchanges between river basins around the world to identify and apply climate change adaptation solutions. It presented actions for adaptation to climate change implemented in the basins worldwide.

www.inbo-news.org/en/events/cop24
www.water-climate-alliances.org/news/cop24-katowice



Two new "INBO Handbooks"

At the Brasilia Forum, the International Network of Basin Organisations presented two new publications, to be added to the INBO Handbook collection, started in 2009.

The first handbook is entitled **"Water Information Systems. Administration, Processing and Exploitation of Water-Related Data"**.

Access to data and information on the status and evolution of the water resource and its uses is a crucial element for any water policy implementation.

Unfortunately, the necessary data are often produced and managed by several organisations in different sectors, with little coordination among themselves and in many cases the information available for decision making and public information is not fully adapted to the needs.

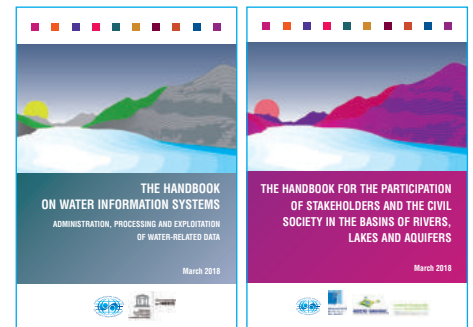
Resulting from a collaboration between INBO and UNESCO, with the World Meteorological Organisation (WMO), the Australian Bureau of Meteorology, coordinating the World Water

Data Initiative (WWDI), and the International Office for Water (IOWater), with the support of the French Agency for Biodiversity (AFB), this document highlights why the management of water data is so important for the effective management of water resources and presents the main processes to be taken into account when implementing a Water Information System (WIS).

The second is entitled **"Participation of Stakeholders and the Civil Society in the Basins of Rivers, Lakes and Aquifers"**.

The implementation of many decisions needed for water resources management is only possible when there is a strong commitment and if all public and private, collective or individual stakeholders concerned are mobilised.

This document, jointly written by INBO, the Brazilian Network of Basin Organisations (REBOB) and IOWater, with the support of the French Agency for Biodiversity (AFB), highlights why participation is so significant in water resources management.



It describes the key elements of the participation in water management and it gives many practical examples from basins around the world which show what can be done to make the participation of stakeholders and the civil society a reality and an added-value in the decision-making process at basin level.

These handbooks are available in English on INBO website ("Network publications" section).

www.inbo-news.org



Water and Climate

The French Water Agencies are committing themselves

The French Water Agencies are committed to fight against the impacts of climate change in the water sector, in France and internationally. In 2015, on the occasion of the COP21 held in Paris, these Basin Organisations had signed INBO's "Paris Pact" to promote and implement the principles and tools needed to adapt to climate change in the basins of rivers, lakes and aquifers.

With the 11th 2019-2024 Action Plan that the Basin Committees and Board of Directors of the Water Agencies adopted at the end of 2018, 3 billion Euros (500 million Euros per year) will be invested for the adaptation to the effects of climate change in France. By 2070, climate experts estimate, among other things, that decreases in French groundwater level and large river flow could reach 30% and 50%, respectively, with a direct impact on water quality: higher concentration of pollutants in aquatic environments.

At international level, the French Water Agencies have also launched a collective dynamic for climate action with their "20 water and climate projects for Africa" program.

This plan meets priority adaptation needs, particularly in the Sahel (among the target countries: Benin, Burkina Faso, Cameroon, Madagascar, Mauritania, Morocco, Senegal, Togo) and the thematic and geographic priorities of the Water Agencies in Africa.

It will especially aim at:

- Building capacity and knowledge;
- Planning for adaptation;
- Improving governance;
- Establishing sustainable financing mechanisms;
- Implementing "no-regret" measures such as Nature-Based Solutions (NBS).

The plan is an ambitious contribution to the Paris Climate Agreement as well as to the "100 water and climate projects for Africa". This initiative was launched as part of the Incubation Platform of the Global Alliances for Water and Climate (GafWaC), by the "One Planet Summits" (OPS) held in Paris (12 December 2017) and New York (26 September 2018) at the invitation of the President of the French Republic, the President of the World Bank and the UN Secretary General. It should mobilise financial support amounting to 20 million Euros over a period of 5 years for the incubation of adaptation projects.

The next "One Planet Summits" (14 March 2019 in Nairobi, 25-27 August 2019 in Biarritz) will take on a strategic character for the Water Agencies: they will allow for a better political value of this structuring program, especially for major international donors of climate funds.

www.lesagencesdeleau.fr



Africa

ECCAS

Creation of a Transboundary Organisation in Central Africa

The group comprising BRL Ingénierie and IOWater was selected by the **Economic Community of Central African States (ECCAS)** to carry out a study on the creation of a Transboundary Basin Organisation.

With the aim of making Integrated Water Resources Management (IWRM) more effective over its entire territory, ECCAS decided to set up a body grouping four of its member states (Cameroon, Congo, Gabon and Equatorial Guinea).

The IWRM project involves the shared waters of the Ogooué, Ntem, Nyanga and Komo basins.

On these basins, issues like common hydrological monitoring and hydroelectricity development require good coordination between all states concerned.



Launch workshop – December 2018

IOWater's contribution to the study is to provide technical guidance for IWRM.

The project kicked off in the last quarter of 2018 with a launch workshop gathering representatives from all countries involved.



AfriAlliance



Innovative solutions for water and climate in Africa



Participants in the Afri-Alliance project

The European project AfriAlliance (2016-2020) has reached the half-way point and finished its third year with very positive results on its activities.

The aim of the project is to boost Africa's capacities to respond to the challenges of climate change by working together and sharing innovative solutions between existing networks in Africa and Europe.

IOWater and INBO are both partners in the consortium, which includes 14 other networks on both continents.

New workshops in Mali and Kenya took place to exchange on needs and social innovation related to water and the impacts of climate change. They wrapped up the first round of meetings between basin organisations, researchers, civil society organisations and water services.

The results of these workshops fed into reflections on the state of research and the availability of results, and led to proposals for new strategic directions in terms of research funding.

The first step was to draw up a list of social innovation requirements. The partners then collected data on existing solutions in response to the needs identified. The needs and research results are then entered into a database managed by IOWater, which is also responsible for producing a report presenting the general state of play.

In terms of communication, a new series of themed fact sheets on social innovation is to be published soon.

A first series, available in English and French, is available on the project's website and covers the general theme of surveillance. This second series focuses on water resource management in the face of climate change.

The project is starting a new phase of events, this time centred on the transferability of solutions. Players from the field and suppliers are invited to meet at transfer workshops and travelling workshops demonstrating innovative solutions across Africa.

All of this information is available on the website:

www.afrialliance.org



Africa

Lake Chad Basin Commission (LCBC)

Governance of the Lake Chad Basin: Annex to the Water Charter



Lake Chad

The Lake Chad Water Charter was adopted in N'Djamena on 30 April 2012 by the 14th Summit of Heads of State and Government of the member states of the Lake Chad Basin Commission (LCBC). The Charter comprises one hundred articles and six Annexes.

A seventh Annex relating to an update on the missions, attributions and operations of LCBC bodies must be finalised to guarantee the Water Charter's operationalisation.

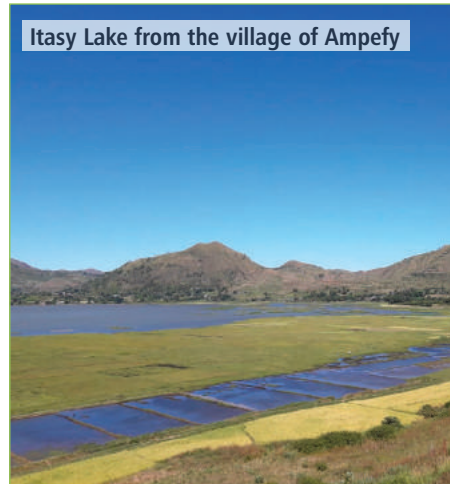
It needs to include the specific institutional details of each LCBC member state to ensure the involvement and coordination of all parties concerned in the countries.

IOWater is supporting LCBC in writing up this Annex by mobilising specialist legal experts and holding a regional workshop to validate its final version. The Annex will then be adopted by the LCBC Council of Ministers.



Madagascar

IWRM in Itasy: a field project centred on dialogue



Itasy Lake from the village of Ampefy

The project to support Integrated Water Resource Management in Madagascar, launched by IOWater and supported by the Rhone-Mediterranean and Corsica water agency, started in spring 2018 with a pilot project on the Lake Itasy water basin.

An ad hoc group was created bringing together the different ministerial representations in the zone (Services Techniques Déconcentrés - STD), the Itasy regional authorities, and the technical support unit of the Nouvelle-Aquitaine decentralised cooperation. This group prepared the timetable, legal framework, statutes, priorities, bodies, and expected representation, etc. with a view to **creating the future Lake Itasy Management Committee (COGELI)**. The proposed method put the emphasis on integration and participation of competent institutions with the aim of defining a suitable strategy to respond to needs on the field and the current legal framework.

The ad hoc group also organised and ran several debates with basin users (municipalities, community stakeholders, people involved in agriculture, fishing, tourism, associations, etc.). The idea was to gather their expectations in terms of management, and facilitate their integration in the process. This is because the representation rules of COGELI aim to involve them as stakeholders.

To this end, a founding "IWRM" workshop focused on Lake Itasy took place in September 2018.

To kick off the debate, students from the Soavinandriana Itasy Institute of Higher Education presented their first work on the basin's characterisation.

During the second half of 2018, exchange workshops and common training sessions and sessions for the different groups (users, local communities, the state) were an occasion to formalise shared expectations from the future COGELI.

Following on from this ground work, both for the legal and technical organisation and for social mobilisation, COGELI must be officially created in 2019 and start a participative planning process. The latter should generate a programme of action including concrete measures.

Working with feedback from the experience of national institutions at basin level, the project communicates closely with the ministry of water, sanitation and hygiene (MEAH). It also participated in different events organised by the MEAH to prepare the island's framework instruments (e.g. the EAH sectoral programme) with a view to supporting an integrated management approach in public policy instruments.

In parallel, work on water information systems (WIS) has started, in connection with the platform SE&SAM (Suivi Eau et Assainissement à Madagascar - Water and Sanitation Monitoring in Madagascar) and ministerial tools, i.e. training on managing metadata, diagnosis of available information and its organisation, initial institutional proposals for a WIS.

Lastly, a key component of the project, linked to the Ran'Eau network and the Solidarité Eau programme (PS-Eau), involves compiling IWRM experiences. By contacting parties who have developed similar actions, the project showcases good practices existing in the country and encourages sharing of local experience and development of suitable solutions based on concrete achievements.



Africa

OMVS

Forthcoming overhaul of the institution

The 45-year history of the Senegal River Basin Development Organization (OMVS) illustrates the willingness of the four riparian states (Guinea, Mali, Mauritania and Senegal) to not just coexist as good neighbours, but above all to cooperate in order to rationally and jointly make use of the international waters of the Senegal River. Its objectives are:

- Establish a remarkable tool for cooperation that is capable of mobilizing OMVS partners to design and build large-scale projects (dams, hydroelectric power station with Manantali with a capacity of 800 GWh/year and Félou of 320 GWh/year, high-voltage lines, a fibre optic network, roads to access installations, dikes, support for developing irrigating perimeters and a drinking water supply with Diama, etc.). None of the countries could have achieved this so quickly on their own.
- Support national food security and social development policies.
- Facilitate the implementation of the OMVS's Common Energy Policy to increase, improve and integrate energy production for member states and plan exporting energy to the sub-region.
- Reduce recurrent risks of famine and natural disaster related to uncertain drought and flooding cycles, and other handicaps - known to all - in the Sahal region.
- Set up technical tools to continuously monitor the environment and its flows.
- Establish an effective dialogue framework to guarantee political stability and peace.

The OMVS is currently unanimously recognised as an exemplary river basin management organisation with few equivalents in the world in terms of regulations, achievements and member state commitment.

Yet this strong regional and international reputation should not disguise the fact that the current governance is subject to some fragilities and imperfections that could in the long term challenge the foundations of solidarity, equity and fraternity between riparian states.

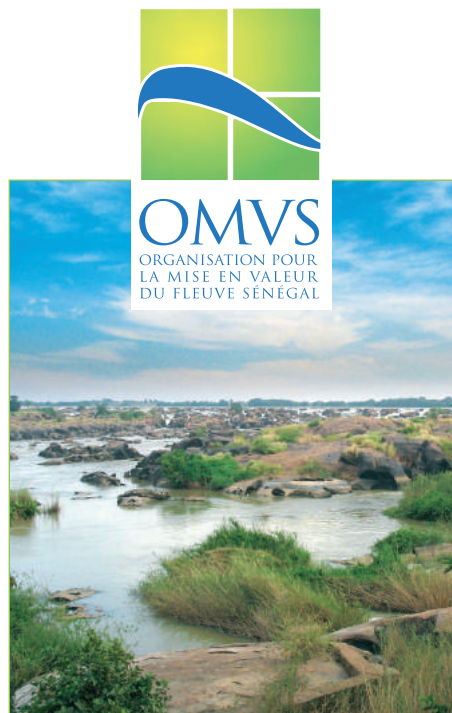
These observations reveal an OMVS system that needs an overhaul to update its performance. The states opted for this approach when they set up a first project featuring four major priorities decided at the 17th ordinary session of the Conference of Heads of State and Government on 17 May 2017 in Conakry.

A study funded by AFD was led by IOWater - with the support of Jacques de la Rocque from the Cereg firm and Pierre-Frédéric Ténrière-Buchot and the Société du Canal de Provence (SCP) in 2018. The aim was to come up with scenarios to completely overhaul the OMVS itself, its operating mechanisms, organisation and financing.

The plan does not break with the history of the organisation and its achievements, in particular that of bringing together four states.

The overhaul will draw on current bodies to improve its organisational practices, management modes and operational, technical, human and financial management methods.

www.portail-omvs.org



Congo Basin / CICOS

Hydraulic monitoring and spatial application

The working group on spatial hydrology, which gathers eight French institutions (CNES, AFD, IRD, IRSTEA, IOWater, BRL, CNR and CLS) was created in 2014 to prepare the exploitation of the Franco-American satellite SWOT (Surface Water and Ocean Topography) in 2021. It is pursuing its activity on the Congo basin with the International Commission of the Congo-Oubangui-Sangha Basin (CICOS).

On this project, for which IOWater provides technical assistance, several activities have been finalised.

In particular, the following actions were achieved in 2018:

- Operational development of the Hydrological Information System of the Congo Basin, with support from BRL and IRD.
- Development and testing of a method to calculate flows from altimetric satellite measurements on the Congo and Oubangui (IRSTEA and IRD).
- Development of applications for hydroelectricity and navigation in the Congo Basin (CNR).
- Organisation of a regional workshop on hydrological monitoring and spatial applications in the Congo basin at Yaoundé.

Following on from the international declaration between the CICOS and the French government to set up water information systems to adapt to climate change on the Congo basin, signed at the COP22, French cooperation is preparing new support measures for the CICOS.



Africa

Mono Basin Authority (MBA)

A duo for Mono



The Mono River

The 470-km long Mono River occupies a basin of around 25,000 km², taking its source in Togo and then traveling south to flow into the Bay of Benin.

The Mono Basin Authority (MBA) brings together Togo and Benin to apply IWRM in the transboundary basin. Armed with a Strategic Plan, the financing keys, and its headquarters in Cotonou, the MBA set out to recruit a Togolese managing director and a deputy manager from Benin.

The project set up by IOWater, which is partly funded by the Rhone-Mediterranean and Corsica Water Agency, is now in its third phase.

It contributes to making the MBA operational, builds the capacities of the competent ministers in both countries (on themes like planning, inter-service coordination, water police, levies and water information systems) and advises it on designing and setting up decentralised cooperation projects (support to French authorities and local project leaders).

What is original about the project is that it closely associates institutional cooperation and decentralised cooperation with the joint support of IOWater and pS-Eau experts and exchanges between stakeholders in the sub-region.



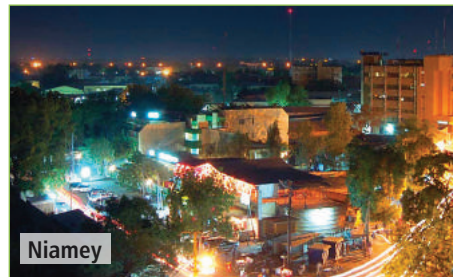
Niger

Reinforcement of Niamey's water supply system

IOWater is helping the group comprising ANTEA France – BERIA Niger commissioned by the Soci t  de Patrimoine des Eaux du Niger

(SPEN) to set up project management assistance to reinforce the water supply system in the city of Niamey.

An IOWater expert went to Niamey from 2 to 6 July 2018 to define a training plan to build the SPEN's capacities.



Niamey



Management organisation for the Kandadji Dam

The first large dam in Niger, Kandadki, is one of the three installations whose construction was decided in 2008 by the heads of state of the nine countries in the Niger Basin Authority.

The dam, whose normal volume will be 1.5 billion cubic metres, has three priority functions: to support low water flows, followed by irrigation and hydroelectricity.

Thanks to funding from the World Bank, the Kandadji Dam Agency entrusted the Nodalis - IOWater - ISL group with producing a study to define the future management organisation of the dam.



Ghana - White Volta

Transboundary cooperation

To improve transboundary management of water resources in Ghana, upstream from the Nakanb  Basin in Burkina Faso, the support project for the pilot White Volta basin is being implemented by IOWater with the Water Resources Commission and the White Volta Basin Authority (VBA), with support from the Loire-Bretagne Water Agency.

A joint workshop was organised in Ouagadougou in February 2017 in the presence of partners from both countries, IOWater and experts from the Loire-Bretagne Water Agency.

The topics were planning, funding and combatting invasive aquatic plants.

A training session was organised for Ghanaian experts at the IOWater training centre in Limoges at the end of 2017 on diagnosing water courses.



Field visit in Accra - July 2018

Specific support for developing a Directive on waste water discharges and connected legislation was provided by IOWater in Accra in July 2018.



Africa

Burkina Faso



Volta Basin - Nakanbé Water Agency: operational phase for the SDAGE

August 2018 saw the launch of the 4th phase of the IOWater project to support the Nakanbé Water Agency (AEN), backed by the Loire-Bretagne Water Agency (AELB). After eight years of partnership, the support has now moved towards a more operational target, i.e. finalising and implementing its Water Development and Management Masterplan (SDAGE).

During phase 3 in 2018, the AEN made a priority of intensifying work to put together the SDAGE. IOWater's support missions included the following:

- Consolidating SDAGE scenarios to make it easier to grasp the document's rationale and framework and to define measures.

- Writing up the legal and institutional sections of the SDAGE.
- Building a monitoring and evaluation dashboard.
- Setting up Thematic Commissions on the Basin Committee.
- Improving capacities of AEN agents and the Mouhoun Water Agency in terms of hydraulic modelling and decision-making.

In March 2018, the Managing Director of AELB, the Chairman of the International & Communication Commission of the Loire-Bretagne Basin Committee and the International Manager visited Burkina Faso.



Mouhoun Water Agency: the Samendéni-Sourou SAGE



Modelling workshop, June 2018

IOWater has provided institutional and technical support to the Mouhoun Water Agency (AEM) since 2013, with the backing of the Seine-Normandie Water Agency (AESN).

In a continuation of its previous activities, in 2018 the priority was to support the future Samendéni-Sourou Water Development and Management Plan (SAGE). The plan covers part of the Mouhoun river bend, the "bread basket of Burkina", and includes the new large Samendéni Dam. The operation of two dams, upstream and downstream, is likely to come up against significant economic, environmental and societal challenges.

By building capacities and technical assistance, the support takes a cross-cutting approach to problems on the SAGE territory. This includes providing tools for hydrological modelling and data enhancement, mobilising stakeholders and Local Water Committees, and establishing a logical and structural framework for the SAGE.

Different missions have involved:

- Support to produce a methodological guide on putting together a SAGE in Burkina Faso.
- A workshop to reinforce the role of SAGE stakeholders - Local Water Committees and AEM.
- Support to draw up the SAGE with a French coordinator from AESN.
- Capacity building for AEM agents (together with Nakanbé agents) on modelling involving using free software and formulating recommendations.

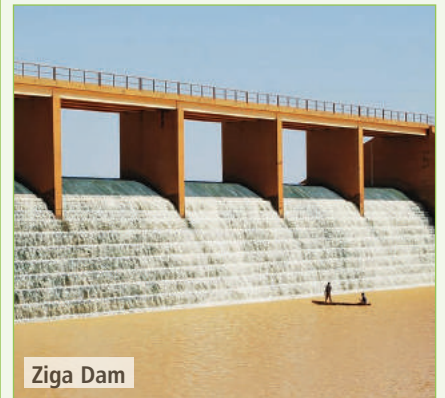
With the aim of building on and disseminating feedback, a study trip was organised in Burkina Faso to visit homologues on the Mono Basin (Togo-Benin). It was an occasion to exchange experiences and make closer ties.

In partnership with pS-Eau and the ACTEA network devoted to decentralised cooperation, a workshop was organised on IWRM and water usage in Burkina. It gathered people working in IWRM and water sanitation and supply to focus on issues together.



ONEA

Ziga Dam Water Supply Project



Ziga Dam

ANTEA and IOWater are working on a Project Management Assistance plan with the National Office for Water and Sanitation (ONEA) in Burkina Faso, funded by AFD.

Following the adoption of a new strategic plan for 2016-2020 in early 2017, IOWater experts accompanied ONEA in reorganising its structure.

Several scenarios were suggested to ONEA's general management, which selected the options that it considered most pertinent and officially launched the new organisation in July 2018.

IOWater provided additional support in 2018 by defining and implementing a training plan.



ONEA water treatment plant



Africa

DR Congo - ICRC

IOWater trains REGIDESO staff in Goma



ICRC



As part of the technical support provided by the International Committee of the Red Cross to REGIDESO, the International Office for Water was asked to organise a new training course.

The course was devised for technicians and engineers in REGIDESO maintenance services and took place from 16 to 20 July 2018 in Goma (North Kivu province), a border town with Rwanda in the east of the country on Kivu Lake. The ICRC ensured its material organisation on site.

The session followed a first training course on operating pumping stations, also in Goma, in 2017.

The 2018 session focused on a technological study of four surface pump models manufactured by KSB (Etanorm, Omega, Multitec & WKL), which are widely used on REGIDESCO installations.

On each machine the following points were covered:

- Structure of the machine.
- Parts and zones subject to wear and tear.
- Dismantling and reassembling procedures.
- Replacement of bearings and repair of water-tightness.
- Repair of internal looseness and possibilities to rework some parts with machining.

This 2018 session closely focused on mechanics, while the previous year's session had looked more at hydraulic aspects. The complementary nature of the 2017 and 2018 training courses provided an exhaustive treatment of pumping station maintenance.

The ITIG (Industrial Technical Institute of Goma) provided tools for the workshop attendees to carry out practical exercises.

The workshop was equipped with numerous machine tools (milling machines, turning machines, shaping machines, etc.), which made it possible to illustrate the notions of reworking pump parts, adjustments, and more generally, different repairing techniques.

Apart from the twelve REGIDESO members, the training course was attended by three ICRC delegates and technicians. Like last year, the participants came from different towns around the DRC: Kinshasa, Goma, Bakavu, Kisangani and Kindu.

This new on-site collaboration brings a reminder that IOWater is referenced at the ICRC for "training" and "technical expertise" missions.



Senegal

Start of a new collaboration

In November 2018, a new project was launched to support Integrated Water Resources Management (IWRM) in Senegal, implemented by the International Office for Water (IOWater) and financed by the Seine-Normandy Water Agency.

Following the development of water resources management in Senegal and the reform of its water code and planning per basin through Planning Units and General Planning Sub-Units (UGP) now in place, IWRM tools are increasingly implemented.

Following a cooperation request at the World Water Forum in Brasilia made by the Water Resources Planning and Management Department (DGPRES) at the country's Hydraulic and Sanitation Ministry (MHA), IOWater submitted a funding request to the Seine-Normandy Water Agency, which agreed to provide institutional support until the next Forum due to take place in Dakar in 2021.

Following high-level exchanges between the directors of the DGPRES and IOWater, joint working directions were defined to lead to

the creation of a consultative body on the pilot river basin of the Somone sub-UGP. A first technical mission took place in November 2018 to this end, and set the foundations for the project, which will be coordinated by a permanent international volunteer in Dakar from January 2019.



North America - Caribbean

QUÉBEC'EAU pursues its activities



Québec'eau "meter" training session

Québec'eau is a Canadian non-profit-making organisation that was created in 2015 and officially launched at the AMERICANA environmental forum that took place in Montreal in spring 2015.

The association results from a strong partnership between the International Office for Water (IOWater) and the Réseau Environnement, which is the biggest gathering of environment specialists in Quebec and includes over 2,700 members from all areas.

The network has been active for over 50 years and works to promote good environmental practices and innovation.

Québec'eau is a continuous training organisation that works with companies in Quebec to offer the widest possible range of educational courses.

The association benefits from the cross-cutting experiences of IOWater and its Quebecois partners.

In 2017-2018, a dozen courses took place in diverse regions in Quebec, with a focus on water meters and strategies to reduce leaks in the water supply.

The courses were launched in June 2017, resulting from support from the Quebecois water-saving strategy deployed by the region's ministry of municipal affairs and land occupancy (MAMOT).

Dozens of municipal water operators took part in training courses across Quebec.

A course on fire hydrants also took place for a major paper mill in the region.

In 2018, Québec'eau participated in the 12th Environmental Technology Show (TEQ) in Quebec in the month of March, and a symposium on water management in October at Saint Hyacinthe. It will be present at the AMERICANA environmental forum in Montreal due to take place in spring 2019.

www.quebec-eau.org



Haiti

Pedagogical engineering project

Haiti faces huge challenges to provide drinking water and sanitation. Only 10% of households on the island are connected to the water supply, and 26% use so-called "non-shared improved" toilets.

A shortage of technical skills among water and sanitation professionals partly explains the difficulties in developing the sector (to maintain facilities, carry out and monitor works, ensure operations, etc.).

To promote employment for young people, the National Institute of Vocational Training (INFP) in Haiti has launched a project to develop these training tools, supported by the Agence Française de Développement (AFD).

IOWater, in collaboration with the Haitian NGO, CRESFED, is involved in the "water and sanitation skills" component of the project.

After analysing the sector's training needs, the project is now in the process of producing pedagogical documents: 11 continuous training modules have been produced in line with the national competence-based approach (APC). The modules cover several areas, ranging from works on the water supply to the Haitian water regulations.

During 2019, initial training programmes will be set up for professional qualifications and technician diplomas, along with training of future local trainers. The objective is to get the first courses up and running by autumn 2019.

This project is part of a series run by IOWater in Haiti, including a feasibility study for a school for water professionals, and training courses and pedagogical platforms for the Technical Operation Centre (CTE) of the metropolitan region in Port-au-Prince.



Field trip on a drilling site in Port-au-Prince



AFD
AGENCE FRANÇAISE
DE DÉVELOPPEMENT



CRESFED
Centre de Recherche et de Formation
Économique et Sociale pour le Développement



RÉPUBLIQUE D'HAÏTI
DINEPA
Direction Nationale
de l'Eau Potable
et de l'Assainissement

Cuba



Fruitful cooperation with Cuba

The Memorandum of Understanding between IOWater - Adour-Garonne Water Agency (AEAG) and the Republic of Cuba for technical cooperation on integrated, sustainable water resources management was signed in March 2017. It was rapidly implemented, with seven on-site missions running from June 2017 to end 2018, in partnership with the National Institute of Water Resources (INRH).

IOWater has involved the Martinique Water Office and BRGM in numerous exchanges with its Cuban partners, given the Caribbean aspect and the strategic importance of ground water resources in a karst environment.

The island of Cuba features 642 water basins, most of which are smaller than 200 km².

The Almendares-Vento basin, which provides most of Havana with water, was selected as a pilot basin for this cooperation programme.

Exchange themes relate to: institutional support for the National Council of Hydrographic Basins (CNCH); consolidation of the Almendares-Vento Basin Committee (Havana) and its Executive Secretariat; characterisation of this basin (observation networks, management indicators); its Development and Management Plan (participative planning, integration of climate change) and the Information System on integrated management in the basin (water observatory, modernisation of quality-monitoring technology, management of data and publication of summary reports).

In conformity with the Inland Waters Act, voted in September 2017, and based on previous exchanges, several priority themes were identified, including:

- Protection of catchment areas in karst zones (67% of the national territory) with the RISKE-PAPRIKA method (BRGM);
- Non-state management of water supply and sanitation services;
- Optimisation of the hydro-climatic measurement network on the Almendares-Vento basin;
- Establishment of an inter-institutional, supervisory Technical Basin Secretariat for the water observatory, linked to the set-up of an information system;



Participants at the IWRM seminar in Havana from 5 to 7 June 2018

- Operating mode of the IWRM Plan for the basin in its different stages (inter-institutional steering, stakeholder training, public awareness campaign, integration of climate change, implementation of an economic approach);
- Development of biological quality indicators for tropical environments (Martinique).

The first three of these themes were the object of a first Franco-Cuban seminar on IWRM in June 2018 in Havana, featuring Cuban specialists and representatives from the Adour-Garonne Agency, BRGM and IOWater.

This cooperation programme is proving particularly effective thanks to the determination of the Cuban government to make operational reforms (autonomy and regionalisation for INRH companies, promotion of local initiatives for water supply and sanitation management, rational management of water resources in a context of climate change, etc.).

The cooperation themes selected have great potential for effective implementation as part of the recent Inland Waters Act and with guaranteed continuity.

IOWater has also observed progress made in adaptation efforts so far, thanks to its very good relations with its Cuban partners, bearing in mind the economic limitations and sociological obstacles.



French Guiana



BIO-PLATEAUX project



Maroni River

The BIO-PLATEAUX project is a trans-boundary cooperation initiative on the river basins shared between the Maroni River (French Guiana/Suriname) and Oyapock River (French Guiana/Amapa). The project profile was prepared by IOWater in very close collaboration with political and technical stakeholders in the country, i.e. the Water and Biodiversity Committee, Territorial Authority of Guiana, which requested funding from the Interreg Amazonia cooperation programme, the Guiana Water Office, and DEAL, which will be the technical and financial partners, and also Brazilian and Surinamese stakeholders.

The project's aim is to promote water resources and biodiversity in aquatic environments by progressively integrating the available information.

The initiative will thus lead to the drawing-up of a water basin characterisation, and management of data and information systems in each basin concerned. It will come up with concrete solutions to the challenges (heterogeneity, fragmentation, absence of common language, disparate data, etc.). The project will take a progressive approach to foster adoption and sufficient impetus to build trust between stakeholders in the different countries.

An international conference will be organised in 2019, with the objective of gathering stakeholders and setting goals for both political and technical aspects.

Lastly, and still with the aim of disseminating and opening up access to knowledge, the project will give significant space to training on integrated water resources management, and environmental education, starting with water classes in schools.



Latin America

Colombia

Integrated Water Resources Management: third stage of the Cooperation Programme



Visit to the Adour-Garonne Water Agency

This institutional support project, which is supported by the Adour-Garonne Water Agency, was developed by IOWater for the Colombian ministry for the environment and sustainable development (MADS). It is pursued at central level in cooperation with the General Directorate for Integrated Water Resources Management (DGIRH) and at pilot basin level with the Regional Autonomous Corporation of Boyacá (CORPOBOYACA).

Following a request from MADS, IOWater provided methodological advice to evaluate the National Policy on Integrated Water Resources Management (PNGIRH).

The IOWater team suggested tools for the operational process of this evaluation, centred on measuring results with quantifiable indicators at national scale.

A study trip was organised in June 2018 in the Adour-Garonne Basin. It was an occasion to illustrate the themes that have punctuated the cooperation project.

Among these themes, the Colombian partners chose in particular to develop the mechanisms in force for managing water risks. The specific climatic conditions in the country (high precipitation levels concentrated during the rainy season) mean that flood risk management faces challenges of social acceptance (question of mobility areas on water courses to meet with needs of riparians); institutional issues (organisation of responsibilities in the risk management cycle); technical challenges (grey options and green/hydromorphological infrastructures), and cultural ones (development of a prevention culture).

The visit thus featured actors in France who had solved this type of challenge in the Adour-Garonne Basin (state services in the region, hydrometeorological services, Water Agency, French Agency for Biodiversity, public territorial basin units). The result was fruitful exchanges on the field and discussion of shared problems.

Following an official request to pursue the cooperation, phase 3 of the project started in late 2018. The anticipated work areas are: connections between planning levels; proposals for the institutional organisation of IWRM at sub-basin, basin and macro-basin level; and public political instruments for the concrete implementation of the principles set out in legislation.



Ecuador

IWRM planning at the heart of exchanges

This cooperation programme jointly financed by the Adour-Garonne Water Agency (AEAG) for the project "support for developing IWRM through SENAGUA" pursued its second phase during 2018.

The work began in 2016 following a Memorandum of Understanding signed by the different parties, including the Ecuadorian Water Secretariat (SENAGUA), the French Embassy, AEAG and IOWater, and the Technical Secretariat of INBO. 2018 was marked by significant institutional developments in the country in terms of water resource management, with a rapprochement between the ministry of the environment and SENAGUA.

Following a list of needs formulated by the Ecuadorian partners, exchanges focused on the instruments of public water policy, in particular support for the National Water Resources Plan (PNRH). The new PNRH approach was thus at the heart of the exchanges: water information system; development

of green infrastructures and nature-based solutions; monitoring of the quality of water-courses using bio-indicators; links between national planning and basin planning; protection of catchments; and management of flood risks and mobility areas.

These expectations from the Ecuadorian partners also motivated IOWater to organise a study trip to France, from 11 to 15 June 2018, in Paris and the Adour-Garonne basin. The visit was an opportunity to meet various IWRM stakeholders in France: DREAL Occitanie, the Water Agency, the Adour Institution, the Central Service for Hydrometeorology and Support for Forecasting Floods (SCHAPI), the Company for the Development of the Coteaux de Gascogne, and the French Biodiversity Agency (AFB). These stakeholders presented their work and the historical development of IWRM in France based on their respective expertise. The visit was punctuated by technical and institutional exchanges on concrete



Field visit with Adour Institution

management mechanisms. It also highlighted numerous challenges common to the Ecuadorian situation (quantitative management issues, management of critical situations like low water levels and flooding, social perspectives for IWRM, etc.).

In addition, activities continued with the Manabi Hydrographic Demarcation, including the driving work of Marie de Santa Ana to develop a water fund, and the activities of the Rio Portoviejo Basin Committee (inter-university cooperation, institutional exchanges, diagnosis stages of the plan).



Latin America

Brazil - Federal District of Brasilia - ADASA



Training programme on waste management



Personnel from ADASA with the IOWater trainer

Brasilia's Federal District Water, Sanitation and Energy Regulator Agency, ADASA is responsible for regulating and supervising public urban cleaning services and solid waste management. This includes collection, transfer, transportation, sorting, processing and final elimination of household waste and of residues from sweeping and cleaning public areas and roads.

ADASA selected IOWater, as part of a cooperation programme with UNESCO, to help train its personnel and public bodies responsible for managing waste in the Federal District.

This programme, which ran for 9 months and ended in 2018, included running a

training session and workshops in Brasilia on the components and instruments of urban waste management, and technical visits to establishments that regulate and set up solid waste management in France (Paris and Alpes-Maritimes) and Germany (Berlin).

The lessons learned over the space of the project will act as a reference for the Federal District, in particular the following modules:

- Solid waste management policies: Europe, France, Germany;
- Composition and flows of waste generated: challenges, types of waste, waste production, environmental impact;

- Treatment and recycling of waste: procedures, technologies and reference projects;
- Energy recovery and waste elimination: procedures, technologies and reference projects;
- Case studies of metropolitan regions: evaluation of alternative experiments to treat solid urban waste.

The training programme carried out by IOWater exceeded participants' expectations and largely achieved its objective of mobilising ADASA teams and public partners to accompany Brasilia in its transition towards a new model of urban environment management. This model takes into account adaptation to climate change and in particular European experiences of energy and organic recovery.



Governance of municipal Public-Private Partnerships in Brazil

The Brazilian ministry of planning, budget and management (MPDG) called on French expertise to support its programme to develop infrastructure projects in Public-Private Partnerships (PPPs) involving local authorities.

The chosen sectors were solid waste, water and sanitation, public lighting, and urban mobility.

On the French side the cooperation is led by the Agence Française de Développement (AFD) and implemented by Expertise France, the French Agency for Technical Cooperation.

Expertise France developed support aimed at building the capacities of municipalities and stakeholders through seminars, study

trips and training courses, combined with coaching for teams to set up one or two pilot projects. The support will mainly consist of defining a regulation framework for the solid waste sector in Brazil. This framework does not currently exist in the country, which hinders the development of PPP projects in the sector.

Expertise France asked IOWater to coordinate the project and capitalise on all of the deliverables to set up an institutional PPP framework adapted to local authorities in the priority sectors, and with the following objectives:

- 1 Coordination of the project;
- 2 Elaboration of guidelines and institutional mechanisms;

- 3 Building of stakeholder capacities in analysing sectorial channels through sharing experience;
- 4 Stakeholder training in one of the project's sectorial domains;
- 5 Coordination of the establishment of a framework to regulate PPPs in the waste sector;
- 6 Support for the emergence of one or two target projects.



Brazil



France-Brazil exchange event on solid waste management



France-Brazil exchanges on solid waste management with PPPs at the Brazilian Ministry for planning, budget and management

Since 2015, IOWater has reinforced its presence in Brazil by coordinating the European project Ecocuencas, and carrying out training programmes on integrated water resources management, integrated waste management, and adapting water basin management to climate change (2016-2018).

Following these programmes, Expertise France, the French international technical cooperation agency, asked IOWater to prepare and run an exchange event involving France and Brazil on solid waste management in Public-Private Partnerships (PPPs) in February 2018.

The event covered several days and contributed to:

- Improved understanding of the waste sector in Brazil and setting up PPP projects;
- First pedagogical exchange on waste management and the French approach to setting up PPPs, to build stakeholder capacities;
- Detailed definition of needs requiring French support to develop PPPs at municipality level;
- Preparation of a first technical assistance programme project;
- Preparation of terms of reference to draw up evaluation studies and propose models to regulate the management of solid urban waste with PPPs in diverse Brazilian towns.



Three-way cooperation for better basin management

Since 2014, IOWater has been implementing three-way cooperation involving the Loire-Bretagne Water Agency (AELB), the Basin Organisations of the Piracicaba, Capivari and Juniaí Rivers (PCJ), and the Brazilian state of Rio Grande do Sul, with technical and financial support from AELB. The objective is to help Basin Committees in the state create Basin Agencies to finance the combat against pollution and preserve water resources.

The three-way cooperation means that partners can benefit from the experience of other regions in Brazil, which vary significantly from one state to another, and from French experience based on fifty years of action by Water Agencies and Basin Committees, but which is difficult to reproduce in emerging countries.

The exchanges resulted in [a comparative analysis document](#) of the French and Brazilian experiences, available in IOWater's document base, that can be used by other Brazilian basin organisations.

In Rio Grande do Sul, an innovative basin agency model has been put together, but older decision-making bodies are concerned that setting up agencies, and in particular water-usage levies, will involve greater state



Plenary meeting - CEIVAP - October 2018

intervention in operations currently largely managed by civil society.

Cooperation efforts have centred on a pilot project led in partnership with the Rio Ibicui Basin Committee, one of the biggest in Rio Grande do Sul. Projects on waste treatment using alternative technologies and payment for environmental services are being developed, based on a methodology directly inspired from the experience of territorial contracts existing in the Loire-Bretagne basin.

Exchanges made in the frame of this three-party cooperation have involved technicians from the PCJ Water Agency for several years, and from another Agency located in the state of Rio de Janeiro (AGEVAP).

These fast-growing organisations are pioneers in Latin America and share similar needs for support to: consolidate information systems associating multiple partners; set up financial engineering adapted to increasing levies and aids; and strengthen tools to implement projects (coordination and contracting projects), in continuation of experiences led with partners from Rio Grande do Sul.

Both Agencies expressed their willingness to intensify experience exchanges with AELB.



Latin America

Mexico



Support to consolidate the Valley of Mexico Metropolitan Drainage Commission

IOWater is coordinating the implementation of a project providing "Technical Support to consolidate the Metropolitan Drainage Commission of the Valley of Mexico (OMVM)", backed by the Greater Paris Inter-Departmental Sanitation consortium (SIAAP) and the Seine-Normandy Water Agency (AESN).

The aim is to accompany the Metropolitan Commission, created in 2013, to reinforce cooperation and competencies between three actors involved in the urban area's drainage system: the National Water Commission (CONAGUA), the Mexico City Water System (SACMEX), and the Water Commission of the State of Mexico (CAEM).

After a first year devoted to building up mutual knowledge of institutions, their operating methods and flooding problems encountered, and thanks to an IOWater focal point set up at CONAGUA, two monographs

were produced featuring the respective drainage systems of the Valley of Mexico and Greater Paris. Each presents the institutions, infrastructures, operation protocols, monitoring techniques and challenges involved.

These documents have been translated into French and Spanish to be used as references by public and private stakeholders.

Two missions in Mexico by French experts took place in February and April 2018 to analyse the system of stakeholders, their relations, and problems encountered in operating the complex drainage system in the Valley of Mexico.

In autumn 2018, an institutional diagnosis was produced and presented to all stakeholders during an expert mission to propose different scenarios to reinforce the Metropolitan Drainage Commission of the Valley of Mexico.



This diagnosis could serve as a base document for the new administration in place since the presidential and legislative elections of summer 2018, and sets the foundations for a second phase in the cooperation project.



Peru - FEXTE Technical Expertise Fund



Technical and institutional support for better IWRM



A technical visit was carried out in Arequipa (annual rainfall of 75mm), the second largest town in southern Peru, perched at an altitude of 2,335 m in the Andes.

The second objective will be to formalise and support projects integrating different aspects of a comprehensive water supply and sanitation system, such as extending coverage or creating water treatment plants. Action has already been put in place with the water supply company in Cusco. This historical town located at an altitude of 3,310 m is the entrance to the Machu Picchu and subject to rapid growth due to tourism. The aim is to increase the water supply system and extend the sanitation network.

Lastly, to participate in the national policy to upgrade the competencies of water stakeholders, specialist training modules will be set up by IOWater. The themes will include technical aspects, project management, and piloting water company performances in Peru.



In a country two and a half times larger than France and divided between an arid coastal region and a capital with over 8 million inhabitants and an annual rainfall of 6 mm per year (Paris: 630 mm/year), and featuring a mountain range and an Amazonian rainforest, managing water access is a priority for the state of Peru.

A three-party cooperation (FEXTE) was signed on 3 July 2018 by the Peruvian ministry Vivienda, the Agence Française de Développement, and IOWater to accompany water management in the country.

A volunteer on a two-year international programme initiated the work for IOWater by acting as coordinator and technical advisor. A first mission by a French expert took place in August 2018 to identify three work areas to implement the cooperation.

Institutional reinforcement draws from French experience of managing hydro-climatic risks (prevention of flood risks, management plans for rivers and rainwater, and support for emergency management).

Asia

Laos



Fourth phase of the Nam Ngum pilot basin project



The delegation took part in the Loire-Bretagne Committee

The fourth phase of a project to strengthen IWRM in Laos, funded by the Loire-Bretagne and Rhine-Meuse Water Agencies, kicked off in early 2018.

Main activities to date:

- A mission involving experts from the Water Agencies and IOWater, supporting the provincial division of MoNRE (ministry of natural resources and the environment) in Vientiane (Nam Ngum basin). The aim was to update and complete action sheets describing the pilot measures selected from the Programme of Action in order to implement them. These action sheets define each objective, the necessary tools to achieve it, and an estimated budget. They were suggested to the World Bank as part of a funding request.
- Finalisation of a summary of the characterisation report of the Nam Sa-Nam Kadan, which was prepared with a team

from the DWR (Department of Water Resources). GIS maps were updated and the report will be finalised in early 2019. This work carried out by the DWR team enabled direct handling of the tools and methods present in the project's previous phases. The next step comprises various phases to develop a Water Basin Management Plan.

- Following hacking, the Lao Water Information System (LaoWIS) server was reset. The project financed the installation of new software (a Windows server licence and an antivirus) by a specialist company to protect the server from new attacks. LaoWIS is now operational once again.
- A study visit by the Lao delegation to France took place from 2 to 6 July in Paris and Orleans. The delegation, led by the vice-minister of MoNRE, participated in the Assembly of the Loire-Bretagne Water

Agency Basin Committee and went on a trip to the Ile Arrault waste water treatment plant. The sharing of experiences on technical aspects (management and prevention of floods by CNR, Sandre tool by AFB) and institutional tools (Basin Committee, Water Police) fed into discussions throughout the week and could provide examples for developing new tools in Laos.

Water-Energy Nexus

In parallel with a project to strengthen IWRM on the Nam Ngum basin, IOWater is working with the Compagnie Nationale du Rhône on the Water-Energy Nexus.

This project, funded by the World Bank, aims to increase exchanges between the MEM (Ministry of Energy and Mines) and MoNRE on IWRM principles in the hydroelectricity sector. Demonstration work is based on a study of two pilot basins: Nam Ou and Sekong.

Improving the governance of hydroelectricity and connecting it with IWRM is crucial!

Myanmar



Management of the Balu River and Inle Lake Basins

A project to provide technical support for implementing IWRM on the River Balu pilot basin in Myanmar was relaunched in 2018.

A mission in Naypyitaw took stock of the situation with partners from the forestry department of the ministry of natural resources and environmental conservation (MoNREC), including:

- Institutional developments.
- Data collected by the partners.
- Preparation of a workshop that took place in late 2018.

A field trip to Nyaung Shwe and several floating villages on Inle Lake was an occasion to meet local stakeholders familiar with the challenges of ensuring water quality and quantity on the lake and the Balu River basin. These stakeholders took part in the workshop.

The first phase of the project implemented by IOWater with support from the Loire-Bretagne Water Agency is coming to an end but work will continue with a new phase in 2019.



Meeting with local stakeholders



Asia

China



China-Europe Water Platform, a partnership to showcase European experience

As part of the China-Europe Water Platform (CEWP), which receives funding from the European Union through the Partnership Instrument (PI), the International Office for Water has coordinated the first work package since January 2018. This package is centred on developing knowledge and recommendations, building capacities to manage by basin, and ensuring ecological security. It is run in partnership with the Finnish institute for the environment (SYKE) and the University of Evora in Portugal.

The first phase, which came to an end in June 2018, focused on programming the activities and setting up the project's general coordination system (including communication and reporting).

The project is based on a comparative study of good practices of governance, participative management, and preparation of online management plans following the principles of the Water Framework Directive. Feedback is based on three bilateral pilot projects (Hai River basin, an activity developed by France in partnership with the Seine-Normandy Water Agency, Taihu Lake basin by Finland, and Nanxi River basin by Portugal).

Since 2009, IOWater has coordinated the project for integrated management of the Hai River and its tributaries, Zhou and Luan.

The Finnish partners have started research to evaluate governance structures, and water quality monitoring techniques and practices (especially on lakes), and to analyse Private-Public Partnerships (PPPs) in Europe and China for water protection.

The University of Evora, Portugal, has launched various actions on its pilot project devoted to ecological restoration in the Nanxi basin and, more specifically, ecological and sedimentary continuity, including economic and biological issues. It will also investigate innovating means to control pollution and improve ecosystem services (development of payments for environmental services).

The kick-off phase ended in late June with participation in a seminar organised by the CEWP in Qingdao at the international congress on desalination and reuse of treated wastewater. The aim of the seminar was to present the ambition, action and results expected from the different work packages of the Partnership Instrument in the presence of high-level Chinese partners and in a context of structural reforms in the country. Political ambition and hopes for economic benefits were highlighted at the event. Each package then held its own kick-off meeting. IOWater, the Finnish institute for the environment and the University

of Evora discussed the progress made in their respective basins, shared information and discussed future perspectives in the company of their Chinese partners, who praised this constructive working meeting.

Lastly, the CEWP's annual high-level conference took place in November in Beijing. Apart from the positive European framework for bilateral projects developed with Chinese partners, this event was an occasion to showcase French expertise in participative basin management at a time of significant institutional and political reforms in China.

www.cewp.eu



The FEXTE technical expertise fund

From 2016 to 2018, the institutional cooperation project between China and France took on an economic dimension with a project financed by AFD through the Fonds d'Expertise Technique et d'Echanges d'Experiences (FEXTE). As a reminder, this programme aimed to provide additional technical support to the institutional IWRM project. The ambition was to promote and foster solutions found by French companies in the water sector to implement pilot basin management plans on the Zhou and Luan rivers. FEXTE led to the construction of a directory of French and Chinese organisations interested in economic cooperation, on themes identified in management plans, to consolidate with competitiveness clusters, their SMEs and other Chinese economic stakeholders.

The project has received positive feedback from all partners thanks to the opportunity it has created to successfully bring together institutional and economic dimensions.



Kick-off meeting: Management per basin and ecological security

Asia

China

Franco-Chinese cooperation for integrated management of the Hai River Basin



As part of an agreement signed between China and France in 2009, a pilot project for integrated management of the Hai River basin was launched in 2011 with support from the Seine-Normandie Water Agency (AESN), and participation from the SIAAP and Seine Grands Lacs.

Phase 3, which has been running since 2016 and will come to an end in spring 2019, aims to pursue activities carried out on the Zhou basin (implementation and monitoring of a programme of measures) and to develop a management plan in the Luan River basin.

All activities are carried out with an emphasis on adapting to climate change.

The phase 3 steering committee was held last September in Beijing and gathered local stakeholders to determine the progress and general directions for the continued work.

The meeting was attended by the managing director of AESN, Ms Patricia Blanc, and covered key areas. These included a summary of work to date, an analysis of its impact, and a discussion of problems encountered, leading to responses and a new focus for action. High-level representatives from the French and Chinese sides also participated in the meeting.



Members of the steering committee

An evaluation process of phase 3 of the cooperation project was also carried out late last year.



Cambodia

Ongoing Programme of Measures for the Stung San Basin



The third phase of this project, backed by the Loire-Bretagne and Rhine-Meuse Water Agencies, strengthened support for the Cambodian government (MoWRAM) and the Tonle Sap Authority (TSA) in setting up a management plan for the Stung Sen River pilot basin.



Water tower and water treatment station in Ngorn

Sessions to build capacities and train trainers were held in France and Cambodia for the Cambodian partners of the project at TSA and MoWRAM:

- The teams were trained in February 2018 on analysing the quality of water at Phnom Penh and on the field. The training involved learning good measurement practices, using analysis kits, and interpreting results. A one-day field trip was carried out to make a first analysis in real-life conditions.
- A mission in June worked on developing several communication tools and more broadly on starting to put together a communication plan suitable for the TSA's activities. A typical warning flood report was developed for publication on the MoWRAM Facebook page. The design and architecture of the TSA website were reworked, and a web mapping was produced to indicate in real time weather and hydrological conditions on the basin.

- In France, a training course on analysing water quality took place in November. This followed a mission on the same theme that had been organised in February. The course centred on analysing organic and non-organic pollution and on presenting different dosage methods of metals and heavy metals.

Action focused on coordinating and developing access to potable water for inhabitants in the basin. This involved developing decentralised coordination projects (supported by the Water Agencies and implemented by NGOs like AREED and Safe Water Cube), and setting up an inter-community management initiative for basin waters gathering potable water producers.



LES
AGENCES
DE L'EAU

Kyrgyzstan / Kazakhstan



Chu and Talas Transboundary Basins: water accountability



Using a tablet to operate services at Chu basin level

The project on “Water Accountability in the Chu-Talas Transboundary Basins” funded by the SDC (Swiss Development and Cooperation Agency), aims to promote modern, sustainable, transparent management of water resources in the Chu and Talas basins (Kazakhstan, Kyrgyzstan).

One of the specific targets of the project is the modernisation of processes to manage

demand and distribution of water for irrigation on the entire Chu and Talas basins.

The existing system involves communicating data on water demands by fax or telephone between services. The Water Information System (WIS) currently being installed will be used to securely communicate and interrogate data in almost-real time from work stations and tablets.

Data are available for operational use and to write up reports, and are prepared to make them easy to access and understand by all stakeholders, from water user associations right up to national and transboundary level.

Thanks to this system, local bodies responsible for distributing water for irrigation can now use a tablet to follow online the everyday status of this distribution on the entire network.

In addition, new information services (reports, indicators, newsletters, maps) will be developed for national and basin authorities to make it easier to monitor distribution on each irrigation sector and canal.

At transboundary level, the system will also facilitate production and exchanges of information, thanks to the regular publication of transboundary newsletters on the situation of water resources and uses.

Lastly, the system should also serve as a model for effective management of transboundary waters at national and regional levels.



International Conference on “Water for Land Reclamation, Economic Sectors and Natural Environment in the Context of Climate Change”

6 - 7 November 2018 - Tashkent - Uzbekistan



Participants in the conference

An International Conference on “Water for Land Reclamation, Economic Sectors and Natural Environment in the Context of Climate Change”, organised by the International Network of Basin Organisations of Eastern Europe, Caucasus and Central Asia (EECCA- WMO), took place on 6 and 7 November 2018 in Tashkent.

Throughout the workshop, key stakeholders and participants were able to exchange views on current issues regarding water resources management, use and protection in Central Asia in the context of climate change. They especially emphasized the current challenges facing countries in the region, including climate change, the potential increase in water demand of neighbouring countries (Afghanistan, China, Iran), population growth and economic and social changes, that require appropriate adaptation measures. In this context, it is considered important to elaborate long-term water strategies (2030-2050) for each country and to develop a regional action plan for sustainable and peaceful development.

Other issues were also addressed and discussed in detail regarding the role and future development of water and environmental sciences, key stakeholders’ capacity building, and continuing and systematic training of water management staffs, and, not to forget, public awareness.

The next conference of the network will be held in 2019 on the theme “Science and innovations for water security” as part of the XV International Scientific Congress and Exhibition “Water of Russia 2019”, to be held in Yekaterinburg.



“EUWI+ for Eastern Partnership”

Basin management in 6 countries in Eastern Europe and the Caucasus



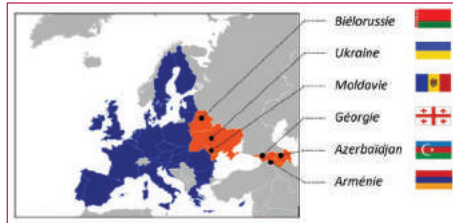
This four-year project (2016-2020) is one of the European Commission’s flagship measures in water resource management. It is part of the Eastern Partnership (EaP), which concerns six countries: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine.

The project was initiated by the European Commission’s Directorate-General for Neighbourhood Policy and Enlargement Negotiations (DG NEAR), which provides the main funding, supplemented by co-funding from participating Member States (Austria and France).

For France, the Artois-Picardie Water Agency, which is the country’s reference agency in this region, provides the French financial contribution to this ambitious project.

One of the original features of the project is that it combines the efforts of four major cooperation partners in the field, i.e.:

- IOWater, which represents the French ministry for ecological and inclusive transition and the Artois-Picardie Water Agency. This involves: planning in 10 river basins in 6 countries, covering a total area of over 450,000 KM²; setting up basin organisations and stakeholder involvement; deploying/reinforcing Water Information Systems.



- The Austrian environment agency (Umweltbundesamt), which is responsible for delimiting water bodies, monitoring surface and groundwaters, and supporting accreditation and equipment of laboratories.
- OECD and the United Nations Economic Commission for Europe (UNECE), which are running a more institutional component aimed at reinforcing the convergence of each national regulation with the European Union Water Directives, and leading inter-ministerial processes of National Dialogue in each country.

The project’s progress is followed at high level at the ministries responsible for water and the environment in each of the six beneficiary countries. To ensure its concrete and sustainable progress, the project works to build the capacities of the administrations and bodies in charge of water management, set up sub-contracting and local expertise, and supply laboratory equipment.

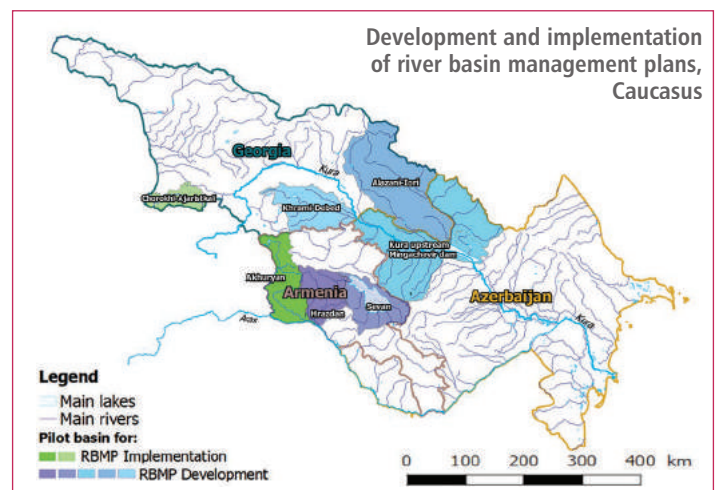
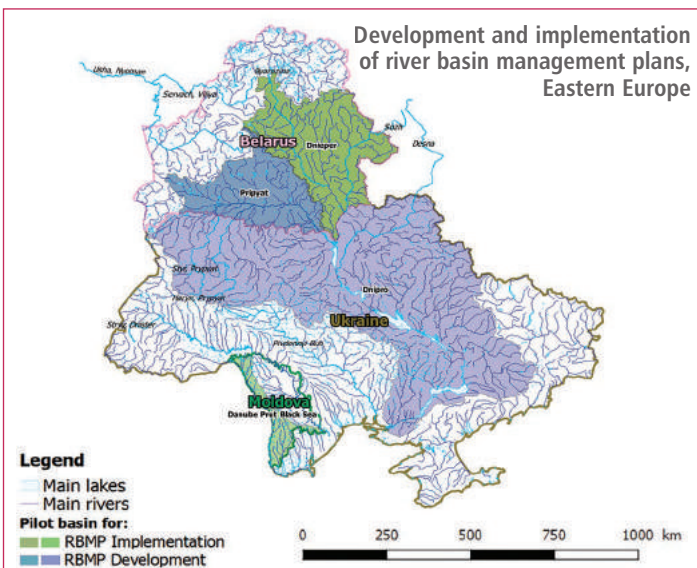
It takes an innovative approach that combines technical assistance with institutional twinning. This has involved developing the following:

- Analysis per country followed by initial recommendations for planning by basin, data management and stakeholder involvement.
- Mobilisation and support for local experts to acquire knowledge on planning at basin level.
- Training seminars on the different planning stages to build the skills of specialist teams.
- Communication tools (including the project’s website www.euwipluseast.eu), video clips to raise public awareness, and specific general public events (like Dniepur Day in Ukraine and Belarus).

www.euwipluseast.eu



Action funded by the EUROPEAN UNION



16th "EUROPE-INBO 2018" Conference



237 participants coming from 42 countries © INBO

The 16th conference of the "EUROPE-INBO" group took place in Seville, Spain, from 17 to 20 October 2018.

It gathered 237 participants coming from 42 countries.

The work of this conference was organised around a workshop on Invasive Alien Species (see page 40) and 4 roundtables on current issues, such as the prevention of drought: the interest in Nature-Based Solutions, international cooperation and the review of the Water Framework Directive (WFD).

Prevention of drought is required especially due to climate change. It involves the adaptation of water resources management at basin level, through short, medium- and long-term planning of measures, as part of the implementation of the WFD and Flood Directive.

The Paris Pact on "Water and Adaptation to the Effects of Climate Change in the Basins of Rivers, Lakes and Aquifers" and the INBO publication on "Water and Adaptation to Climate Change in Transboundary Basins" provide valuable recommendations for carrying out adaptation in basins.

Based on a shared knowledge of the basin's vulnerability to drought and floods, preventive actions should be carried out: water storage, reduction of water flow, water retention, con-

trol of the waterproofing of soils, recovery of rainwater and runoff water, groundwater recharge, reuse of treated wastewater, conservation of floodplains.

The establishment of desalination units is necessary in some cases

Actions for rationalising and reducing the use of water resources are to be developed, e.g. reasoned irrigation, water saving and recycling techniques or processes without water in industry.

Suitable and effective monitoring networks for surface and groundwater, the exchange of "best practices", a "drought crisis" or "water scarcity" management plan should provide a proportionate, coherent and prioritised response.

The Basin Management Plans and Programmes of Measures of the 3rd WFD cycle should integrate this set of actions in consistency with the other components of these management plans and with the implementation of the Directive on Flood Risk Management. The approach must be multisectoral involving all economic stakeholders and the civil society.

It is also of interest to combine conventional hydraulic structures, called "gray" infrastructure, with Nature-Based Solutions (NBS) to face the challenges of climate change in a context of scarcity.

These NBS can improve their resilience, optimise performance and reduce costs.

The restoration of wetlands, ponds, marshes, preservation and management of floodplains, actions enabling the infiltration of rainwater, the reduction of runoff are all examples that have shown the relevance of NBS.

This approach should be fostered by the WFD, especially to achieve the objective of Good Ecological Status of Water Bodies. The European Commission's Blueprint of 2012 indeed proposed **the Natural Water Retention Measures (NWRM)** for better WFD implementation. They have been defined and structured through a European web platform (nwrms.eu).

The participants in the conference recommended that the European Union (EU) provide support for disseminating guidelines on the use of NBS in sustainable water resources management, to enhance knowledge in this field and to improve their technical implementation and their financing mechanisms.

The importance of transboundary waters in Europe calls for the development of international cooperation for the implementation of the European Water Directives.

The European Union and the Member States should develop these coordination and cooperation structures to ensure more coherence and transboundary efficiency and better solidarity both within the EU and with the neighbouring countries, like the International River Commissions already created by treaties between European riparian countries.

International cooperation for the development of IWRM and the improvement of water governance in the basins is a major factor of progress. The participants in "EUROPE-INBO" Conference recommend developing common databases and tools, mobilising European funds for transboundary cooperation projects, promoting the participation and education of young people, developing agreements on transboundary aquifers.

They also recommend supporting international river commissions, which have proven their effectiveness, and promoting the exchange of data and know-how.

17 - 20 October 2018 - Seville - Spain

"Twinning" programmes between countries and basins have proven their worth in previous years and should be redeveloped.

Structuring partnership projects are also to be developed, such as the EUWI+ East project, as well as exchanges among practitioners of Member States (the "Peer-to-Peer" project).

In anticipation of the WFD review, the European Commission proceeded with the evaluation of the Basin Management Plans.

Before the end of 2018, the Commission will present to the European Parliament an assessment report on the second management cycles of the WFD and the first cycle of the Flood Directive. This report will underline the need to re-examine the WFD.

The first results show progress in stakeholders' participation, knowledge of the status of water bodies and in the results' level of trust.

The deterioration of the water status has stopped everywhere in Europe, but the link between pressure and impact needs to be better understood and the monitoring of polluting substances remains a major challenge.

Progress is also expected in the definition and implementation of the ecological (environmental) flow, the economic analysis, the protection and management of protected areas as well as in drought management plans.

Challenges are still to be met in the implementation of the Flood Directive, e.g. the definition of more measurable objectives, a more complete cost estimate, ecological continuity or links to be created with Climate Change adaptation.

The participants in the conference stressed the need to involve the Member States and basin managers as closely as possible in reviewing the WFD.

Taking into account the first conclusions of the Commission, they questioned the operational and pragmatic implementation of the Directive. It seems essential to rely on the experts of basin organisations, keeping in mind that success also depends on the support of basin organisations, local authorities, economic stakeholders and all European citizens in the field.

Better involvement of field stakeholders is thus necessary in the review of the Directive.

The Conference participants believe that there is also a need to highlight the progress made that should be widely publicised. The very penalising "one out - all out" principle should be reviewed as it masks the very real progress that has been made.

The participants recalled the urgency of taking new pollutants into account.

They reminded the need for greater coordination and even compatibility between the European water policy and other EU economic and sectoral policies, such as the CAP, the transnational transport policy or the renewable energy policy.

An adaptation of quality or discharge standards in relation to the environments is to be sought for, especially for the specific situation of outermost regions of the EU.

It was also suggested that support to enterprises be increased for projects that aim at meeting the goals for discharges into the environment, whose payback rate is long.

Finally, adaptation to climate change needs to be prominent in future work and becomes a priority.

More generally, the participants in the "EUROPE-INBO" conference consider that **we should pass from the WFD "virtuous and theoretical concepts" to a practical approach based on real local situations.**

They considered that the efforts made to implement the WFD need to be increased and supported so that all EU Water Bodies get closer to "Good Status" within a reasonable and realistic time frame.

The next "EUROPE-INBO" conferences will be organised in Lahti, Finland, from 11 to 13 June 2019 and in Malta in 2020.

www.inbo-news.org

✓



Closing ceremony © INBO



The 16th conference ended with a warm tribute to Mr. Jean-François Donzier, INBO General Secretary for 24 years, for his constant and effective commitment to the network with dynamism and enthusiasm.

The members conferred him the title of Honorary General Secretary of the Network.

He has now passed on the torch to Mr. Eric Tardieu, new INBO General Secretary.

✓

"To facilitate the implementation of European Water Directives"

Information: Fax: +33 1 44 90 88 60 - E-mail: secretariat@inbo-news.org

Europe

“EnergyWater”

A MOOC for even more “Energy Angels”!



The “Energy Water” project, funded by the European Union as part of the H2020 programme, is devised to help European manufacturing companies reduce their energy consumption from process water. The project began in February 2016 and is due to end in March 2019.

IOWater’s mission is to create and develop a European “Energy Angels” network of energy optimisation experts willing to get involved in a long-term economic activity.

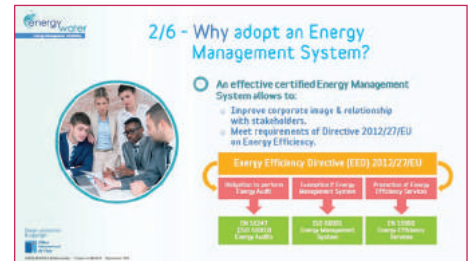
The objective of the consortium of partners, all of them energy-saving experts, is twofold.

The first goal was to develop a free tool that can be accessed online - the Energy Management Self-Assessment (EMSA) web-tool, which all European companies can use to assess their energy efficiency. The second is to create an energy-saving network of experts called the “Energy Angels Network” to advise and help companies reduce their energy consumption.

The tool, which is continuously improved by partners, is now accessible online for anonymous, secure use by any European company.

To complete the Energy Angels network, which already features 90 experts, IOWater put together a MOOC (Massive Open Online Course), which has been freely accessible since October 2018.

In addition to numerous training sessions organised across Europe by IOWater and its partners, the MOOC will take the number of experts trained during the project to over 200.



It will remain accessible after the end of the project, to guarantee the sustainability of the EMSA tool and the Energy Angels network.

To access the tool:

<http://energywater-ems.eu>



“TWIST”

Transnational Water Innovation Strategy project

“TWIST” is the acronym for the Transnational Water Innovation Strategy project, which was set up to create an open innovation model in the water sector by promoting the circular economy and respect for the Water Framework Directive.

The main objective of “TWIST” is to develop a transnational innovation strategy in the water sector over a three-year period (April 2018 to March 2021).

The project received co-funding from the European Union’s Interreg Sudoe programme to the tune of 1.25 million euro for a total budget of 1.67 million euro.

The “TWIST” consortium is coordinated by the Fundación Centro de las Nuevas Tecnologías del Agua (CENTA - Centre for New Water Technologies Foundation).

It gathers 11 partners representing the three participating countries: Spain, Portugal and France.

IOWater is one of the three French partners on the project, along with the Institut de la Filtration et des Techniques Séparatives (IFTS) and the multi-disciplinary research cluster PEIREINE at the University of Limoges.

IOWater’s mission is to coordinate the group of French partners and to develop a French living laboratory in collaboration with IFTS.

It also leads action No. 4 on capacity building for regional development and job creation.

“TWIST” will therefore create living labs, which can be defined as physical and virtual spaces for co-creation, experimentation and assessment of innovative projects for treating and managing waste water.

Three living labs will be set up, one in each participating country (France, Spain and Portugal).

At these sites, innovation activities will be fostered for treating and reusing waste water and recovering precious resources (e.g. nutrients).

“TWIST” will also promote other innovative tools applied to the waste water treatment sector, such as public markets for innovative solutions, the creation of a transnational business school to train SMEs and entrepreneurs, and the “TWIST Market Place”: a virtual catalogue featuring all of the innovative products developed in the living labs.



Europe

eurostat

Water statistics training for statisticians from 13 countries



Participants in front of the Seine Centre water treatment plant

Eurostat, the European Commission's statistics service, collects national and regional statistics on small and large water cycles from European Union Member States. The data are collected by national statistics institutes in the Member States, which fill in a common questionnaire.

To help national statisticians understand the key concepts of the water domain and the rules for aggregating data to obtain accurate, representative statistics, Eurostat offers training courses taught by a panel of external specialists.

As part of this programme, IOWater, in partnership with Sogeti and the Austrian institute UBA, received 13 statisticians of 11 nationalities for a course at its Paris headquarters from 4 to 6 June 2018, along with the Eurostat representative for water statistics.

The course, which has taken place since 2012, combines theoretical information, practical exercises and maximum interactivity, leaving ample room for exchanges between participants.

To improve understanding of the key concepts of sanitation, a field trip was organised to a water treatment plant at Seine Centre following an invitation from SIAAP.

Thanks to the efforts of three staff from the presentation team at the Cité de l'Eau, attendees were shown the different stages of the treatment process applied to a concrete case.

To make the training even more concrete, it was supplemented by a presentation from an expert from the Seine-Normandie Water Agency to show how the Water Framework Directive is implemented on the basin.



Meuse & Escaut

20th anniversary of the two International Commissions: participative workshops

To celebrate twenty years of international agreements to protect the Meuse and Escaut rivers, members of the two commissions gathered on 13 September 2018 in Charleville-Mézières.

They looked back over the two decades of international cooperation and towards the future of the two districts.

During the afternoon, two workshops took place led by IOWater on the key subjects of qualitative and quantitative management.

The workshops were a chance for members of the commissions to express their opinion, using participative methods, on the future of the districts. The result was a list of recommendations for more efficient water management in the Meuse and Escaut basins.



UWWT Directive

Implementation evaluation

Every two years, EU Member States must provide the European Commission (EC) with data on their sanitation systems. These data are exploited to evaluate whether sanitation agglomerations are in conformity with the Waste Water Treatment (UWWT) Directive. In case of non-conformity, the data are then used in infringement proceedings.

In 2012, the Commission published a communication calling for the modernisation of the water information system to target conformity with European legislation on water and to make it easier to access data and results.

In response to this challenge, IOWater has been supporting the Commission for five years to modernise the information system of data on water treatment. This involves websites for each country, an associated European website, and a set of functions aimed at standardising and automating some of the treatment processes. The tool, called UWWTD SIFF (Urban Waste Water Treatment Directive - Structured Information and Implementation Framework) can be used to access information supplied by each European country by built-up area, by water treatment plant, and on country scale, and features several European maps.

Over the period 2018-2020, IOWater worked with Ramboll to support the EC's Directorate General for the Environment. IOWater produced an assessment report reviewing the situation in each country and the European summary report for 2016 (10th reportage). It will disseminate the results of the operation and conformity of waste water treatment via different UWWTD SIFF platforms. Ramboll will be responsible for supporting the EC on infringement procedures underway for 11 European countries.

<https://uwwtd.eu>



The Mediterranean

Algeria



Capacity building for water stakeholders



Sludge dehydration training

The Algerian-based company Chiali Services Spa, a 100% subsidiary of the Chiali group, has operated for several years in the engineering domain, carrying out public works, hydraulics, irrigation and environmental projects. As part of an established, long-term partnership between IOWater and Chialai group through its training subsidiary "Chiali Académie",

in 2018 Chiali Services called on IOWater to train some of its teams in Sidi Bel Abbès on the following:

- Operation of hydraulic potable water networks.
- Civil engineering applied to water treatment stations.

In addition, SUEZ-Environnement, as part of its management contract with the Algerian water company (SEAL), asked IOWater to train personnel from SEAL and the National Sanitation Office (ONA) on the following topics:

- Maintenance of pumping stations.
- Impact of industrial waste and malfunctions on urban STEP.
- Technical perfecting of operators on instrumentation, sensors and tele-managed systems.
- Operation of sludge dehydration systems using band filters.

These training courses were carried out in France, in Limoges and La Souterraine, to take advantage of the IOWater learning platforms for carrying out practical exercises.



Water resource governance

The twinning on "Governance and Integrated Water Resources Management in Algeria" led by the Société Wallonne des Eaux (SWDE) in collaboration with IOWater, involves support for implementing participative planning.

This includes establishing a plan of action to reinforce the role of Basin Committees in Algeria with:

- Official launch of the five Basin Committees by the Minister of Water in Algeria in January 2018.
- The development by IOWater of a typical structure and a review guide of water management master plans, including a roadmap for consultation of Basin Committees at key stages of its production.



- Hosting of the Algerian delegation at the Artois-Picardie Water Agency to look at how basin organisations work and share output connected to the Water Agency's adoption of the 11th Programme of Interventions (2019-2024).



Information: Tel.: +33 5 55 11 47 70 - E-mail: communication@oieau.fr

Tunisia



Recovery of organic waste in Sfax

Thanks to support from the Provence-Alpes-Côte d'Azur region and the Nice-Côte d'Azur Metropolis, a partnership was established between IOWater, the Euro-mediterranean city network, the University and city of Sfax, and EMWIS, to exploit the results of the Med-3R project on suitable management and recycling of solid urban waste.

A co-composting channel was defined based on the organic share of household waste and waste from the agrifood industry (poultry droppings, spent olives) highly present in the Sfax region.



Compost in the process of formation

This method leads to compost of very good quality from local resources and meets with amendment requirements for farmland. Following recent municipal elections in Tunisia, a project to extend the measure to an industrial scale is currently being examined.



www.iowater.org

The water world on the Web



EMWIS



Better management of water knowhow in the Mediterranean

Focus on innovation

In March 2018, EMWIS acted as the voice of the Mediterranean at the World Water Forum in Brasilia (sessions on restoring ecosystems, re-use and data management) and participated in launching some innovative new projects to:

- Revolutionise value chains involving production, usage and recycling of water using **nature-based solutions for the Mediterranean islands**. This is the ambition of the **HYDROUSA** project for the next four years. EMWIS is responsible for exploiting the results for replication in the Mediterranean.

www.hydrousa.org

- Work towards a **Mediterranean cluster for innovation in greenhouse crops (MED Greenhouse)**. EMWIS gathers actors from the Provence-Alpes-Côte d'Azur region to pool and foster knowhow to give this sector impetus, with a Mediterranean approach based on water-energy efficiency, production with high added value, and short circuits.

medgreenhouses.interreg-med.eu

- Creation of a global network of excellence on **nature-based solutions for agriculture and urban regeneration** as part of the **EdiCitNet** project.

cordis.europa.eu/project/rcn/216082_de.html



Mediterranean Water Knowledge Platform

Following training and exchange activities in 2017 as part of the Mediterranean Water Knowledge Platform, guides on setting up National Water Information Systems (NWIS) and white papers on countries in the region were produced by the platform partners (IOWater - IME - SEM - IDE - REMOB) with support from the Prince Albert II Monaco Foundation.

In parallel, support to define NWISs was put in place in the two countries of the Union for the Mediterranean.

In **Mauritania**, as part of the Global Water Partnership programme, "Water, Climate and Development (WACDEP) for Africa", a 10-year action plan with a € 3.3 M budget dedicated to data management on water resources, was jointly defined with UNICEF and integrated into the national action plan for water and sanitation.

In **Lebanon**, with support from FAO, a plan to develop an NWIS was prepared as part of an initiative of the national centre for water information and training (CNIFE). Staggered over five years, and with a budget of € 6.5M, it includes long-term surveillance of water, archiving, and data processing and dissemination. An amendment to the new Water Code was proposed to guarantee the cooperation of all stakeholders.

On the regional level, a training course was organised in Vienne as part of the EU support mechanism for sustainable integrated water management (SWIM-H2020-SM) on data requirements for planning and integrated management of hydrographic basins.

www.semide.net/initiatives/MWKP



Support in Morocco, Algeria and Tunisia

As part of SWIM-H2020-SM, EMWIS carried out technical assistance missions: in **Algeria**, to define a strategy to implement protection perimeters for water catchment zones; in **Morocco**, to prepare application decrees of the 2016 Water Act concerning the management

of drought, delimitation of protection zones, and desalination; in **Tunisia**, partly to define a strategy to implement rural sanitation, and partly to improve the management of groundwater.



Integrated, Sustainable Management of Water Resources in North Africa (GIZ programme)

In the frame of its programme "Regional Cooperation in the Water Sector in North Africa - CREM", GIZ asked IOWater to provide expertise on IWRM and in setting up information systems in the Mediterranean.

The idea was to initiate reflection between decision-makers in Algeria, Morocco and Tunisia on the situation, and on directions for improving information to make IWRM decisions. The Observatory of Sahara and Sahel (OSS), which partners the CREM programme, ensures exchanges between water managers in the three countries.

Faced with the growing gap between water resources and demand in the region, this exploratory action is aimed to help political and technical decision-makers become aware of the need to employ reliable, exhaustive knowledge that is regularly updated and shared in order to guarantee sustainable management of water resources.

Bilateral meetings in each country were organised in collaboration with EMWIS.



The Mediterranean

Palestine



Capacity-building programmes



Practical exercises on operating STEPs

The West Bank has seen a significant expansion of its water supply and sanitation infrastructure in recent years.

Thanks to funding from the international community, several towns are now equipped with modern treatment plants that conform to new regulations. This is the case, for example, for the municipalities of Ramallah (Al-Tireh), Al-Bireh, Jericho, Naplouse and Taybeh. Other projects are under way for Tubas-Tayasir and the large city of Hebron.

Through the long-standing support to Palestine provided by the Adour-Garonne Water Agency (AEAG), the International Office

for Water worked on devising a multi-year training plan for professions relating to governance, design and operation of water treatment plants in the West Bank. This training plan is aimed in particular at staff from the Joint Water and Sanitation Service Councils (JWSSCs) and the Palestinian Water Authority (PWA).

The training programme was designed on the basis of an exhaustive identification of training needs and a diagnosis of urban water treatment plants operating in the West Bank.

In parallel with designing the training plan, the Adour-Garonne Water Agency supported the organisation of training sessions to build the skills of water treatment plant operators in Tayassir (in the final construction phase) and Tubas (reinforcement and organisation of the sanitation service).

In addition, IOWater and the Palestinian Hydrology Group (PHG) devised and produced a training plan to build skills to produce and distribute potable water in the north of the West Bank (Jenine and Alyamoon).

The project was funded by the Agence Française de Développement (AFD) and run by the Palestinian Water Authority (PWA).



The training sessions carried out for several Joint Water and Sanitation Service Councils (JWS-SCs) and the Palestinian Water Authority (PWA) related to the following themes:

- Procurement of markets financed by AFD.
- Procurement of markets according to Palestinian legislation.
- Rules and procurement of FIDIC (International Federation of Consulting Engineers) markets.
- Management of water quality.
- Improvement of efficiency of water supply networks.
- Metering of drinking water distribution.
- Optimisation of operations and maintenance.
- Asset management.



Lebanon



Treatment of industrial effluent: training for staff from the Aquarius Company

Aquarius, established in 1963, is a leading water treatment company in the Lebanon and Saudi Arabia.

Its activity involves equipment for swimming pools, drinking water production (including desalination) and, for the last few years, treatment of urban waste.

Aquarius is currently looking to extend its activity into treatment and recovery of industrial effluents.

The International Office for Water provided a training course for the company's engineers and management team in Beirut.

The teams had a good initial level, meaning that the ambitious training targets could be achieved:

- Knowledge of industrial effluents and appropriate physico-chemical and biological treatment to reduce their impact.
- Understanding of the main design and sizing criteria.
- Characteristics of effluents and case studies: refineries, paper mills, tanneries, abattoirs, leachates, olive water, vegetable washing, surface treatment, distilleries.
- Sludge treatment and recovery processes.

The training course was judged to be "highly satisfactory" by the Aquarius staff, who said that it would enable them to pursue their development in the industrial waste sector.

Aquarius is now responding to markets for the treatment of industrial effluents and has asked IOWater for advice on the matter.



Pascal BERTEAUD

New President of the International Office for Water



Pierre Roussel transferring the presidency to Pascal Bertheaud © IOWater - C.Runel

Pascal BERTEAUD, 53, is a graduate of Ecole Polytechnique and a qualified engineer of the prestigious Ponts, Eaux et Forêts engineering school. He was elected President of the International Office for Water (IOWater) at the last General Assembly on 12 June 2018.

He succeeds Pierre ROUSSEL, former President of the Permanent Commission of Natural Resources and the General Environment Council for the Environment and Sustainable Development (CGEDD) and former Director of Water at the ministry of the environment, who had not sought the renewal of his mandate, after having held the Presidency of IOWater since 2009.

The General Assembly paid tribute to Mr ROUSSEL for his action at the head of IOWater for the last nine years.

Mr ROUSSEL stated that, "IOWater is a superb, efficient set-up with a sound reputation. I've really enjoyed my time here and I hope that I was useful. Now it's time to hand over to the younger generation. After a change in Director General last year, it's time for a new President. Welcome to Pascal, an established colleague in the world of water. The future of IOWater is wide open."

Pascal BERTEAUD has been managing director of CEREMA since 2 May 2018. He previously held numerous management positions in public and government bodies, and worked on the cabinet of the ministry of the environment.

From 1997 to 2002, he was director of the public service at BRGM, then director of water at the ministry of ecology and sustainable development from 2002 to 2008.

He was managing director of two public bodies (EPAMARNE and EPAFRANCE), where he was responsible for developing the new town of Marne-la-Vallée from 2008 to 2010; from 2010 to 2012 he was deputy director of the cabinet at the ministry for ecology, sustainable development, transport and housing, before becoming director general of the National Institute of Geographic and Forest Information (IGN) from 2012 to 2014.

He has held posts as cabinet director of the Républicains group at the Paris City Hall from 2015 to 2017, then acted as national coordinator of Ecological Transition Contracts (CTE) at the ministry for the environment up until May 2018.

In addition, Mr BERTEAUD has held posts as chairman of the board for the National Office for Water and Aquatic Environments (2007-2008), and been a board member for Agro-Paris-Tech (2013-2016), Météo-France (2003-2008), the National Food Safety Agency (AFFSA) and the Naval Hydrographic and Oceanographic Service (SHOM).

Mr BERTEAUD said in his speech, "I am particularly touched by this election and thank the members of IOWater for having chosen me as President of the governing board. IOWater is a formidable machine which, under the leadership of its successive presidents and managers, has become indispensable to water stakeholders. My thanks go to Pierre Roussel and Jean-Francois Donzier for their work over the years. To succeed them is quite a challenge, but one that the new Director General, Eric Tardieu, and I will tackle with great determination".



IOWater present at professional trade fairs

In 2018, the International Office for Water actively pursued its participation at different trade fairs in France and around the world.

It was an exhibitor at the following fairs:

- Carrefour des gestions locales de l'Eau in Rennes;
- Salon des Teq in Quebec;
- Cycl'Eau in Bordeaux, Vichy and Strasbourg;
- Carrefour des collectivités territoriales in Brive ;
- Assises de l'ANC in Dunkerque and Fort de France;
- Pollutec in Lyon.

IOWater was also attended the following events as a visitor in 2018:

- Pro piscines conference in Avignon ;
- National Conference on Biodiversity in Valenciennes;
- St Hyacinthe congress in Quebec;
- Water Information Days in Poitiers ;
- Mayors' Congress in Paris.



Cedre / IOWater framework agreement



On 12 June 2018, Eric TARDIEU and Stéphane DOLL, respectively Director General of IOWater and Director of the Centre of Documentation, Research and Experimentation on Accidental Water Pollution (Cedre), signed a framework agreement that outlines the scientific and technical cooperation between the two organisations in the domains of water, aquatic environments, biodiversity and waste.

This agreement will lead to synergies between the two associations, which have complementary missions, expertise and knowhow.

The framework agreement stipulates the forms of collaboration between the two bodies and details the specific domains featured in the agreement, including the following:

- Vocational training.
- Expert and consultancy missions.
- R&D programmes relating to trials on technologies and processes.
- Contribution to national and international recommendations in terms of documentation and data systems management.
- Participation in European Union projects and international cooperation and stakeholder networking in the water sector on a global scale.

First concrete action

The partnership has already taken shape with a first activity involving digitalising and long-distance hosting of Cedre training sessions by IOWater. IOWater is also contributing to writing a summary article on GEMAPI for Cedre's newsletter.

An IOWater day event in partnership with Cedre on the theme of "accidental surface water pollution" took place in Paris in November 2018.

IOWater and Cedre training sessions are also jointly promoted by both organisations.



pS-Eau / IOWater framework agreement



Pierre-Frédéric TENIERE-BUCHOT and Pascal BERTEAUD, respectively presidents of pS-Eau and IOWater, signed a technical and scientific cooperation framework agreement on 21 December 2018.

The agreement's object is to define a framework for cooperation, dialogue and exchange of information, the promotion and follow-up of research activities, training, expertise and scientific and technical information between pS-Eau and IOWater in the domains of water, aquatic environments, biodiversity and waste.

This framework agreement is part of a collaboration process in place for over a decade between the two associations, and will be the occasion to develop partnerships between IOWater and pS-Eau even further:

- Collaboration on French Water Agency support projects as part of decentralised cooperation (Oudin-Santini Law).
- Vocational training.
- Expertise and consultancy missions.
- R&D programmes relating to trials on technologies and processes.

- Contribution to national and international recommendations in terms of documentation and data systems management.
- Set-up and participation in European Union projects and international cooperation and stakeholder networking in the water sector on a global scale.
- Joint development of missions and work by pS-Eau and IOWater.
- Design and availability of tools to give greater visibility to water and biodiversity in terms of research and expertise, decentralised cooperation, and vocational and initial training.

First concrete action

The partnership's first concrete step was a cooperation programme associating pS-Eau (decentralised cooperation project) and IOWater (institutional support) on the Mono transboundary basin between Benin and Togo. This project is financed by the Rhone-Mediterranean-Corsica Water Agency.

In addition, two cooperation programmes to support Integrated Water Resources Management in Burkina Faso funded by the Loire-



Bretagne Agency (Nakanbé basin) and the Seine-Normandie Agency (Mouhoun basin) have been underway since respectively 2011 and 2013. PS-Eau, the ACTEA network and IOWater work together closely to ensure that decentralised cooperation projects are consistent in applying IWRM practices and basin-scale planning (SDAGE and SAGE management plans).

The connection between the Mono and Burkina projects led to a technical and exchange study trip organised in Ouagadougou in 2018. It involved a delegation of representatives from the Beninese and Togolese ministries for water and their homologues from Burkina Faso to enrich their experience of IWRM.



Brand new premises for IOWater



In recent years, IOWater has expanded considerably with an increase in staff numbers. On its Limoges site, activities for training, information, data management and support for water and environmental stakeholders were starting to lack the necessary office and training space.

It was also crucial to update the premises to comply with French regulations for establishments receiving the public (ERP) following recent fire assessments and to provide access for disabled people.

IOWater now fully corresponds to future requirements of the water and municipal waste sectors thanks to its advances in new pedagogical practices on digitalising training and information.

In September 2017, IOWater undertook work to extend its premises on its site in Limoges, which was completed in September 2018.

The extension has provided new offices for IOWater staff, classrooms with much greater capacities and equipped with the latest digital technology and long-distance learning facilities. It also now has a multimedia laboratory for digitising training and information. In total, the facilities cover a surface area of 650m².

The project received funding from the Nouvelle-Aquitaine regional council and the local council of Haute-Vienne.

With this extension project, IOWater has further developed its activities for the long term on its sites in Limoges and La Souterraine.



“French Water Cluster”

IOWater’s contributions

In 2016, the working group on water from the Strategic Committee of Eco-Industries (Comité Stratégique de la Filière des Eco-Industries (CSFEI eau)), set up by the Conseil National de l’Industrie (CNI) resulted in the establishment of the “Filière Française de l’Eau” - FFE (French Water Cluster).

Gathered for the first time under a federating banner, the members of FFE have a primary objective of raising user awareness of the gigantic investments made by previous generations and the responsibility that we all have today to preserve our heritage so that we can transmit it to future generations.

It also has a vocation of gathering all stakeholders involved in the “Water” area and aims to promote investment policies in water and sanitation facilities.

The FFE gathers contractors and elected representatives, engineering firms, IT firms, industries and companies, public and private operators, government bodies, schools, specialist universities and training schools, research laboratories, professional and inter-professional associations, along with public and private funders. This sector of excellence represents 125,000 jobs.

IOWater is closely involved in the FFE’s working bodies and groups.

In particular, IOWater is a member of the steering committee and co-funder of the study by the PIPAME (inter-ministerial pole for prospective and anticipation of economic change) “Tomorrow’s water, challenges and perspectives for companies in the sector”, launched by FFE and the French General Directorate for Enterprise (DGE).



la filière française de l'eau

This study looks to the future of water in France in 2030: challenges, technologies, innovations and how the profession will need to change.

IOWater works with FFE governance as a member of the production task force of the strategic committee on water (CSF-Eau).

In this capacity, it contributes to the following key projects:

- Digital and numerical changes in the water sector
- Adapting jobs and training in the water sector to the industrial changes taking place.

www.lafilierefrancaisedeleau.fr



Documentary portal on water and biodiversity

The “documents on water and biodiversity” portal is a centralised access point for documentary resources on water and biodiversity on the web.

This includes scientific, technical and pedagogical documents. With support from the French Agency for Biodiversity (AFB), IOWater coordinates a network of 26 organisations that feed into the portal by pooling their documentary resources.

In May 2018, around twenty members of the network gathered at the Adour-Garonne Water Agency in Toulouse for the national seminar of water and biodiversity documentalists.

The special event was an opportunity to share experiences and plan future collaboration.

A participatory workshop illustrated the benefits of the network to pool competencies and knowledge.

Two new organisations joined the network to feed into the portal: the Ecrins National Park, and the natural heritage department at the National Natural History Museum.

The “documents on water and biodiversity” portal now offers a wide range of functions and services on line, such as:

- Document search: simple, advanced or cartographic.
- Processing of searches: memorised requests, alerts, export of instructions, etc.



- Documentary selection: highlighting of documents following requests from contributors.
- Special focuses on themed features connected to current events.
- Access to a shared thesaurus for contributors.

It provides access through the web to over 78,000 references, including IOWater references.

Additional services have been added to the portal. To make it easier to share documents, for example, users can now create their own personal selection of documents.

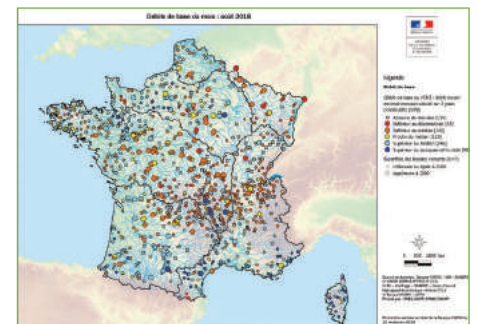
This personalised selection can be easily integrated into a website to showcase contributors' wealth of documentary resources.

www.documentation.eauetbiodiversite.fr



National Bulletin on the Hydrological Situation in France “BSH”

“BSH” is a national Bulletin on the Hydrological Situation in France that provides monthly updates on the state of water resources in the country: precipitation, flow rates of water courses, level of water tables and reservoirs, and snow cover.



Comprising maps, flow charts and comments, the BSH is the result of a partnership between several data producers: the French ministry for the environment, Météo-France, the French Agency for Biodiversity, BRGM, Voies Navigables de France, EDF and Seine Grands Lacs.

Since January 2018, IOWater has run the editorial committee of the BSH, with financial support from the French Agency for Biodiversity (AFB).

www.oieau.fr/eaudoc/publications/publications-oieau-et-partenaires



EAUDOC

Digital library on water and biodiversity accessible to all

“Eaudoc” is the international portal of documentation on water.

It provides free access via the web to: repositories (i.e. notices) from a heritage collection initiated in 1970, IOWater publications, and open archives related to water and biodiversity.

In 2018, IOWater digitalised its physical documents with a view to making them accessible on EauDoc.

At the end of the year, IOWater also launched an experimental project for exploiting digitalised documents using a personal assistant to make searching easier.

The document base contains 326,380 references to date.

www.oieau.fr/eaudoc



Water catchment areas

All there is to know about protecting catchment areas



Since 2017, IOWater has helped coordinate the community of water catchment areas (AAC).

This web portal provides support to the AFB's resource centre for protecting catchment areas by creating a network space for stakeholders, and centralising and promoting different resources (data, documents, training courses, events, etc.) on protecting catchment areas and combating diffuse pollution.

Innovative approaches include the creation of a special information sheet describing each AAC in France.

These feature information from external databases and data entered directly by the data managers.

In 2018, new sections were added to the web portal on protecting catchment areas in Europe.

It is now possible to access feedback from a dozen European countries concerning the protection of drinking water catchment areas.

Examples of European zones created to protect potable water resources are also included.

www.aires-captages.fr



Water & biodiversity

Implementation of the Convention on Biological Diversity

In 2010, the 20 Aichi targets organised a strategic plan for 2011-2020 to promote five biodiversity goals.

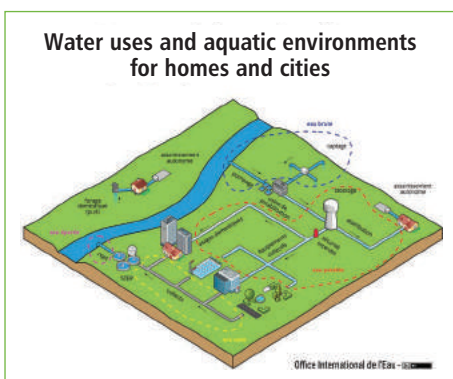
Strategic goal B focuses on reducing direct pressure on biodiversity, and goal 8 stipulates the need to bring down pollution pressure to a non-detrimental level by 2020.

To take a close look at the diverse approaches taken by some countries to apply this target for water, IOWater, with support from AFB, developed a comparative summary of the legal framework associated with this target for 5 selected countries (Austria, Bulgaria, Canada, Spain and France).

It then produced country fact sheets presenting the levers for action implemented, and a comparative summary leading to recommendations for mobilizable means and tools.



Easier access to information on water



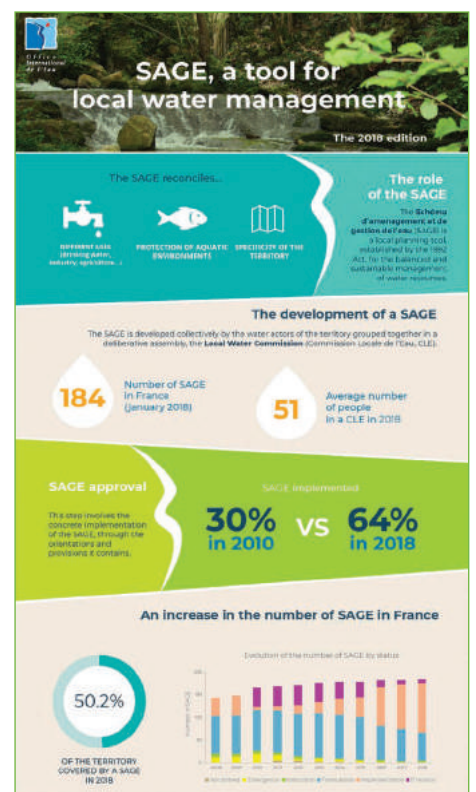
To make data on water and aquatic environments easier to understand and access, in 2018 IOWater produced the following with financial support from AFB:

- Around 90 pedagogical articles on five main themes (aquatic environments, usages, potable water and sanitation, pollution/pressures/risks, water management), devised to be reused on the Eau-france portal.

- About fifty diagrams available to everyone for reuse.
- A thematic dossier on water and climate change, gathering background and explanatory information, with a selection of reliable and pertinent resources, all in a concise format.
- About 150 key figures to provide an overview of the data available and the situation in the water sector.

IOWater also set up a data-visualisation platform featuring interactive visual representations of data.

www.oieau.fr/mediatheque/illustrations
www.oieau.fr/mediatheque/chiffres-cles



Europe - France

Agricultural phosphorus

Investigation of regulations in France and 4 European countries

The "phosphorus" issue is crucial from an environmental point of view (due to the risk of eutrophication) and also in terms of stra-

tegy (phosphorus is a limited, but indispensable resource for farming).

IOWater looked at the regulations concerning managing phosphorus in agriculture.

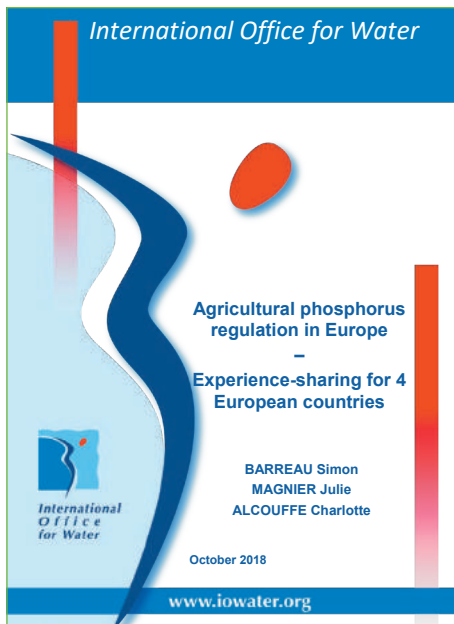
In a first document that draws from its network of experts, IOWater has produced a summary that illustrates the current state of play of key regulations in France.

Secondly, IOWater carried out an extensive comparative investigation into regulations in four European countries (Germany, Denmark, Italy, Netherlands).

For each country, the proposed sharing of experience is based on a bibliographic study and completed by interviews with different experts on the theme.

www.oieau.fr/eaudoc

("Publications" section then "Synthèses techniques")



Invasive alien species

Socio-economic development: a suitable regulation tool



The idea of associating the control of invasive alien species (IAS) with their economic development is appealing: the financial income obtained on one side could be used to contribute to controlling the invasion.

Although on paper the idea appeals, what is the reality on the field?

To answer this question, the working group on biological invasions in aquatic environments (GT IBMA) performed a study of the challenges and risks of such a development. Their work was based on an extensive review of the existing literature and an international survey led in collaboration with the International Office for Water, involving over 60 contributors.

The results show that information on monitoring the positive and negative impacts of these practices is rarely available, and that the ecological benefits are often much smaller than the economic benefits.

"Virtuous" approaches do however exist and call for deeper analysis of these cases to formulate recommendations and ensure positive ecological outcomes for the projects.

www.gt-ibma.eu



Water and diffuse pollution



To build expertise capacities for combating diffuse pollution, IOWater draws from its knowhow on documentary management and its agronomic competencies.

In 2018, its actions led to the following:

- A watch bulletin on information connected to eutrophication.
- A survey of projects related to eutrophication funded by the European Union over the last ten years.
- An overview of nitrate concentration levels in aquatic environments, with an analysis of changes over time and trends.
- An analysis of trends relating to excess nitrogen in feeding and catchment areas.
- A summary of the rule of law in France in terms of agricultural phosphorus.
- A situational analysis of the existing regulations on agricultural phosphorus in some European countries.



Technical Secretariat of "SANDRE"

National Service for Water Data and Common Repositories

Establishing a common language

The French regulatory framework

In the water sector, which is rapidly evolving, partly due to climate change, the ability to acquire, analyse and disseminate data from different origins is now an issue of key strategic importance.

The primary concern of SANDRE at its creation in 1992 was to define a common language and framework for exchanging data on water as a fundamental component of knowledge.

Since then, French and European legislation have made it obligatory for administrations to make their data accessible and reusable.

Today, obstacles nevertheless still exist, such as the cost of disseminating data, and the sensitive character related to the nation's basic interests, private life, etc. **In addition, technical constraints to which SANDRE has found a solution mean that water stakeholders can disseminate data on water while making it useable and comparable. In this way, its contributors massively feed into the French Water Information System (WIS) following decree No. 2009-1543 of 11 December 2009; they thus enrich the common heritage on the SANDRE base.**

Two videos presenting SANDRE were produced last year:



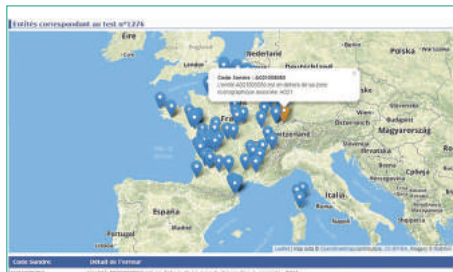
www.youtube.com/channel/UCoytYo4NFoobUHyS75czKA

In 2018, SANDRE opened up access to over 17,923 metadata and over 939,565 object identifiers (SANDRE codes for lakes, rivers, water bodies, surveillance sites, parameters measured in water, taxon appellations, etc.), which can be used freely.

SANDRE participates in improving data: over 20,000 file conformities and 33,000 interventions have been carried out to this end. The SANDRE website is visited by 180,000 internet users a year.

IOWater has ensured SANDRE's Technical Secretariat since 1992, today with support from the French Agency for Biodiversity (AFB).

Adapting to stakeholder needs



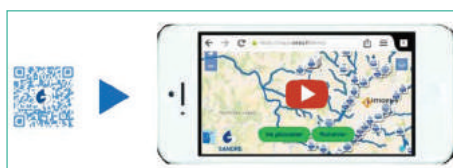
The SANDRE apparatus to control the quality of geographic data has progressively spread.

The results of verifications are published in the SANDRE Atlas Catalogue as are those relating to hydrometric stations on the mainland.

The descriptive sheets on each geographic datum include a 5-star rating system by which users can give their opinion. This same system was extended in 2018 to a rating of the quality of SANDRE meetings. The general average for SANDRE activities in 2018 was very good: **4.44/5** (based on over 100 ratings).

Almost all smartphones and tablets are currently equipped with GPS. IOWater's mapping application, which it has made available to SANDRE, can use this geolocation to search for and visualise in real time all SANDRE geographic objects within a 5-km radius.

<https://services.sandre.eaufrance.fr/maps>



Technicians on the field can therefore increase reality with their smartphone or tablet to locate visible objects, such as water quality measurement stations. The Rhin-Meuse Water Agency intends to provide this service to its operators to guide them during different water-abstraction operations on the field.

Disseminating reference data

IOWater has published its new "API repository" online to disseminate and interrogate SANDRE's reference data sets. This online service, known as API for "Application Programming Interface", replaces the former SANDRE web repository service. It offers numerous data research possibilities, and increased performance. All applications and users of the Water Information System (WIS) will progressively employ this API.

www.sandre.eaufrance.fr/api-referentiel

Extending to other areas

In its capacity as **Technical Secretariat of SANDRE, IOWater** is involved in the following:

➔ INSPIRE

As part of the European INSPIRE Directive, IOWater is a contributing member to produce specifications on the exchange of water-related data.

INSPIRE is a European Directive whose object is to facilitate the dissemination, availability, use and reuse of geographic information in Europe. It is directly connected to SANDRE, which itself guarantees the interoperability of information systems relating to water in France.

In this capacity, IOWater, has integrated INSPIRE themes into the search for geographic data in the SANDRE Atlas Catalogue.





**AGENCE FRANÇAISE
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➔ Nature and landscapes

IOWater has produced a dictionary on acquiring pre-localisation data, and characterising and monitoring wetlands. It will be useful in the future for the Nature and Landscape Information System (NLIS).

The objective is that raw data acquired from characterising and monitoring wetlands will be put into databanks, disseminated, and made interoperable between different information systems (Water, Land, Nature and Landscape, etc.).

➔ Marine environments

As part of its work to build a Marine Information System (MIS), IOWater made specifications of marine waste in partnership with Ifremer. IOWater updated the surveillance site repository corresponding to quality measurement stations along the French coastline.

➔ Interoperability

IOWater has catalogued new SANDRE URIs (Uniform Resource Identifiers) made visible for the Water Information System (WIS). Web users and machines (computers, connected objects and vocal assistants) can easily use data on SANDRE geographic objects, for example the Semme River as shown below.



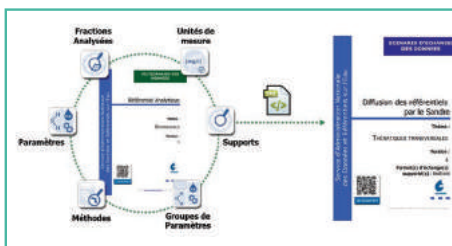
Responding to national requirements

IOWater, in its capacity as SANDRE's Technical Secretariat, contributes to national projects developed by Water Information System (WIS) partners:

➔ Analytical repository

In collaboration with AQUAREF and IFREMER, IOWater disseminates the repository of SANDRE parameter groups.

This is a classification of around 350 chemical parameters referenced in regulatory texts. The repository can already be used on all Internet applications.



➔ Hydrogeology

In partnership with BGRM, IOWater disseminates version 2 of the hydrogeological repository BD LISA from SANDRE's Atlas Catalogue. This repository is designed to make a mapping of hydrogeological entities available to all of mainland France and its overseas territories. The data are based on the exchange scenario of SANDRE version 2.1 specifically specified by IOWater, which facilitates exploitation of the data by users equipped with a Geographic Information System (GIS).

ISO 9001 certification audit

IOWater was granted renewal of its ISO 9001:2015 certification by AFAQ for its activities as **Technical Secretariat of SANDRE**.



➔ Flood forecasting and hydrometry

SCHAPI, the central service for hydrometeorology and support for flood forecasting, supplies data relating to hydrometric stations and sites. IOWater has updated the hydrometric repository on the SANDRE site and modelled the hydrometric observation and forecasting data. In addition, it has tackled the theme of flooding.



➔ Navigable Waterways of France (VNF)

IOWater ensures dissemination of repositories on French waterways and thematic areas of concern to data producers. VNF, which produces data related to managing navigable waterways in the country, will from now on employ the modelling work done by IOWater to facilitate data exchanges relating to hydrometry.

Water supply

The Aube water board - Syndicat Départemental des Eaux de l'Aube (SDDEA) - is a joint association run by a personalised management system. The SDDEA gathers over 450 towns and covers the following: potable water, collective sanitation, non-collective sanitation, aquatic environments and mosquito control. In 2018, SDDEA implemented its own information system based on IOWater's technical requirements. The SDEA in Strasbourg is undertaking a similar initiative with IOWater.

Invasive alien species



Prevention and management solutions



At the workshop, 62 participants attended a presentation of feedback on strategies and case studies set up by different Member States and basins. The practical exchanges within the working groups underlined the importance of seeking synergies between implementing basin management plans and policies on invasive alien species.

Concerning surveillance systems, WFD surveillance programmes have already gathered interesting data that could be used to monitor invasive exotic species.

The key importance of invasive alien species when setting up management measures was also underlined during the workshop, with the aim of developing integrated, versatile solutions.

Invasive alien species present a serious threat to indigenous animals and plants, causing billions of euros of damage to the European economy every year.

The European regulation on invasive alien species came into force on 1 January 2015.

It sets out a series of measures to implement in Europe to respond to this issue.

Of these invasive alien species, some feed off aquatic environments and can impact good ecological status targets required by the WFD for rivers, lakes, coastal and transition waters.

To debate the issue, a workshop was organised on the theme: **“Invasive alien species: prevention and management solutions”**, during EURO-INBO 2018 held in Seville, Spain in October 2018.

Eutrophication

European seminar to establish a state of the art on knowledge

Excess nutrients in continental and marine waters are at the origin of eutrophication. This global phenomenon is a major cause of ecosystem degradation.

It constitutes a public health issue and causes significant economic damage: degradation of fishing zones, depreciation of the touristic value of affected sites, cost of managing green algae, etc.

Although action in place over the last few years has led to significant improvements, the reduction of pollution in aquatic environments by nutrients is still a major challenge that calls for public policies on different levels.

In the face of this observation, the French ministries for ecology and agriculture asked four major French research organisations to establish a state of the art on current scientific knowledge of environmental eutrophication at a global level, with the aim of directing public policy. Based on this report produced by Expertise Scientifique Collective (ESCo), the Ministry for Ecological and inclusive transition organized a European Seminar on Eutrophication in Paris on 27 and 28 June 2018.



IOWater provided support to organise the seminar by coordinating workshops with around forty participants from sixteen European countries on the first day of the event.

The group work was based on direct exchanges between participants and on participatory techniques. Thanks to the experiences of Member States, it resulted in an analysis of the implementation of public policies on eutrophication in the form of SWOT matrices.

The exchanges led to the definition of environmental targets to combat eutrophication and the identification of key elements to modernise public action on this subject, at national and European levels.

The results obtained were useful on the second day of the seminar, when they fed into debates at round tables to determine what key issues public policies should treat in the future to reduce eutrophication.

GEST'EAU

Coordination of the SAGE community and environment contracts

Since 2002, IOWater has coordinated the community of implementors of environment contracts and water development and management plans, known as SAGE (Schémas d'Aménagement et de Gestion des Eaux - Water Development and Management Plan). To do so, it has received funding from the French ministry for ecology and the French Agency for Biodiversity (AFB). Coordination of this network mostly involves a website, gesteau.fr, and the biannual organisation of a seminar gathering managers of water and aquatic environments to meet and exchange.

SAGE national seminar and climate change adaptation

The seventh national SAGE seminar revolved around the theme of adapting to climate change. The event was jointly organised by the French ministry for ecological and inclusive transition, IOWater and AFB, in collaboration with the SAGE national technical group. It took place 24 and 25 September, at the Orléans Conference Centre.



The event gathered 230 participants including SAGE coordinators, presidents of CLEs (local water commissions), representatives from devolved state services, and Water Agencies. The following topics were debated: How can SAGE be used to take climate change impacts into account? How can the functions of aquatic ecosystems lead to better resilience to climate change?

A summary of the key points and recommendations resulting from the diverse workshops and round tables contributed to different reflections at the second sequence of the "Assises de l'Eau" water congress.

More information at:
www.seminaire-sage-changement-climatique-2018.oieau.fr

Data and feedback on gesteau.fr

Information available on gesteau.fr includes:

- 191 SAGE information sheets;
- 287 environment contract sheets;
- And over 8,700 documents.

Feedback on water management and aquatic environments is available in the "Partage d'expériences" section and in the testimonies, such as on the Oudon SAGE (August 2018) and the Vie and Jaunay SAGE (June 2018), which relate their action to reconquer and preserve biodiversity.



www.gesteau.fr

Wetlands

Web conferences to support managers

IOWater organises and runs web conferences to build the competences of wetlands managers.

They are an occasion to gather managers and specialists to exchange on specific topics. Their highly practical online format means that a greater number of people can participate. In addition, they are available to view again on IOWater's YouTube channel.



The first web conference related to the publication of the SANDRE data dictionary "description of wetlands" to present it to future users.

A second web conference disseminated the work done by the French Agency for Biodiversity on ecological damage. Straddling human and social sciences and life and earth sciences, this event was an occasion to discuss the effectiveness of environmental law to protect aquatic environments and to suggest avenues for improvement.

These web conferences are available to view again on the IOWater YouTube channel:

www.youtube.com/user/OIEauWeb



2019 Training Course Catalogues



Practical exercise at a pilot water treatment plant

Climate change, biodiversity, health and the environment, solidarity between territories, good ecological status for water courses: these are the key priority themes established by the French ministry for ecological and inclusive transition.

The International Office for Water has devised its training courses in this direction, to respond to expectations and anticipate requirements by:

- Accompanying and training professionals in fundamental vocational skills.
- Constantly updating and improving themes and training courses on offer.
- Developing and using innovative pedagogical methods and media.

In 2019, IOWater will be adding 15 new training courses on the following themes:

- **Regulation and management of services:** human resources management of skills transfers.
- **Safety of people:** chemicals for first-aid representatives in the work place - Management of dangerous waste at the laboratory.
- **Metrology and analyses:** sampling from water courses as part of the water body monitoring programme.
- **Production of drinking water:** quality parameters for water and bottled water - Water health safety management plans (PGSSE).

- **Drinking water supply:** sizing of pipes and equipment - Safety of water facilities and data security.
- **Rivers and water bodies:** watercourses: diverse statuses, rights and obligations - Water uses and aquatic environments - Combat against accidental hydrocarbon pollution in inland waters - Biodiversity of fauna in wetlands and continental waters.
- **Water in agriculture:** accompanying a methanation project.
- **Water in industry:** choice, design and sizing of industrial waste treatment plants - Combat against accidental pollution from hydrocarbons and chemicals in industrial environments and rivers.

The full list of courses available at IOWater's National Training Centre for Water Professions (CNFME) is presented in the following specialist catalogues:

- **"Water Professions" ;**
- **"Waste & the Circular Economy" ;**
- **"Water & Biodiversity" ;**
- **"Water Jobs" : English version of the training offer.**

Details on all of our courses at:
www.oieau.org/cnfme

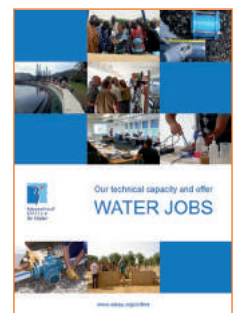
In 2018, over 6,000 professionals from public services and the private sector (field agents, technicians, engineers, heads of departments, elected representatives, etc.) benefited from courses run by IOWater. These either took place at the exceptional facilities located in Limoges and La Souterraine, or on site at customers' facilities in France, Europe and all over the world. Thanks to IOWater trainers, attendees acquired knowhow, competencies and methods that are indispensable to understanding and following changes in their profession.

The pedagogical methods developed by IOWater combine theoretical lessons, case studies, practical exercises and demonstrations, and now include technological and learning developments through gamification (learning through games), virtualisation (3D animations, video demos, forums, etc.) and customisation (self-training, self-evaluation, training pathways, etc.).

To follow changes in vocational training, IOWater has developed qualifying courses and trade-oriented programmes, and is moving towards certification for some of its modules. IOWater is also developing a Master's in "water development and engineering" (DEVINE), devised and produced in collaboration with the University of Science in Limoges. The CNFME has ISO 9001 certification (version 2008), an "AQUAPLUS" label, is an accredited "QUALIPLUIE" training centre, a certified "CATEC®" training centre, and can confirm that its good practices conform with the requirements of the "continuous vocational training quality" decree thanks to obtaining Veriselect certification and DATA-DOCK referencing.



On request, all of these IOWater training courses may be carried out in English for groups of trainees.



New platforms at IOWater

Wastewater treatment using activated sludge and tertiary treatments



The "activated sludge" pilot project set up on the IOWater site at La Souterraine is a strategic tool employed in numerous training courses.

The apparatus is capable of treating 120 m³/day and was totally renewed in September 2018. This real-life treatment station was specially devised and set up at the training centre.

Currently comprising a low-load activated sludge channel, in early 2019 it will be completed with tertiary treatments.

The treated water will be able to undergo treatment by mechanical filtration and ultraviolet rays to obtain a quality result compatible with bathing waters.

Analysis of the treated water can be integrating into practical activities carried out at the laboratory of the La Souterraine training centre.

The pilot treated water can also be subjected to additional treatment by ultra-filtration combined with an activated carbon column.

The objective is to work on reducing emerging substances (micropollutants) before discharging them into the natural environment.

To facilitate the operations of these installations, a tele-management system coupled with an energy meter will follow operations in real time and monitor their electricity consumption.

At training sessions, trainees will be able to make concrete comparisons of purification performances, energy performances, and the different techniques used to treat waste water.

This investment amounting to almost € 400,000 was made possible thanks to self-funding from IOWater and aid from the Loire-Bretagne and Adour-Garonne Water Agencies.

The platform formerly used at the centre will have a second life. It was dismantled in early July and restored to be installed at a factory to treat waste produced at the site.



Sanitation network platform



In early 2018, IOWater's National Training Centre for Water Professions (CNFME) was equipped with a new pedagogical platform for "waste and rain water" sanitation networks.

This teaching tool can be used to show network components (different types of pipe made from concrete, sandstone, iron, etc.), different manholes (concrete or polypropylene) and road covers and grates.



The platform will also be used for practical exercises like laying different types of pipes (PVC, polypropylene), making new connections and connections on existing networks.

The platform was extensively used by participants on training courses carried out for the company FransBonhomme to acquire a vocational qualification certificate (CQP for a technical sales representative selling building materials) and those who took part in courses on sanitation networks featured in the catalogue.



Digitalised training courses

New investments and achievements at IOWater

In 2018, investments to develop training tools at the International Office for Water were devoted to the construction and operation of a new digitalisation studio.

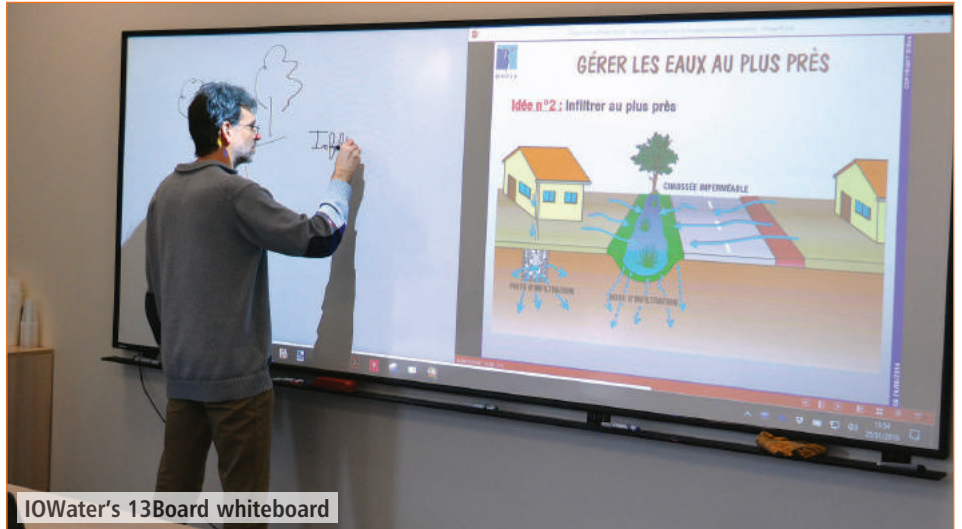
Equipment includes a green-screen cyclorama, a 4K camera, a sound recorder, appropriate lighting and a work station. The studio is now operational to carry out live training sessions at a distance and digitalised training with embedded videos.

Classrooms at the IOWater training centre are now more interactive following the installation of **13Board whiteboards**. A series of sensors positioned around the whiteboards transform them into a giant tablet that can be controlled and written on with a finger. Trainers' notes can thus be made available to participants at the end of the course.

In parallel, IOWater produces teaching products that go beyond traditional training methods, either by producing its own digitalised teaching tools or by offering its training digitalisation services to other partners.

2018 saw the following achievements:

- Production of a number of films on analysing dry matter and organic sludge matter from treatment stations and on techniques for identifying leaks on the water supply network.



IOWater's 13Board whiteboard

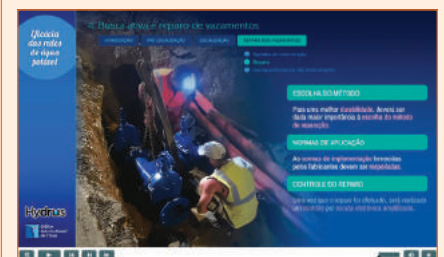
- Development of a training course on authorisation for intervention in close proximity to networks (AIPR), with 100% long-distance learning, on preparing for the obligation for skills in personnel working close to networks. Comprising several animated modules and a quiz, this interactive course takes about one day to follow at a distance from a work station so that employees can prepare for the qualifying examination.
- Start of production of an e-learning document for Cedre (Centre of Documentation, Research and Experimentation on Accidental Water Pollution) centred on the behaviour of chemicals likely to be present in marine pollution. This document will comprise interactive modules, videos and questionnaires. It will be available in French and English and available online on the future Cedre e-learning website.



IOWater's digitalisation studio

France / Brazil cooperation

Digital modules



The cooperation project led by IOWater in Brazil in 2017 to mark twenty years of the Water Act, with funding from the French ministry for ecological and inclusive transition (MTES), led to the development of digital learning tools called: "Making water supply networks efficient and identifying leaks" and "Saving energy in water and sanitation services". The final report of the project was published in April 2018.

Information system on public water and sanitation (SISPEA)

A MOOC for public water and sanitation services to improve entry of indicators into the information system

The International Office for Water, with support from the French Agency for Biodiversity, has produced a MOOC (Massive Open Online Course) to make it easier to produce Reports on Service Price and Quality (RPQS) via the information system on public water and sanitation (SISPEA).

The RPQS is obligatory for all towns and local authorities responsible for one or more public water supply and/or sanitation services.

The NOTRe Act of 7 August 2015 made it mandatory to input indicators from the information system on public water and sanitation under SISPEA.

The Act came into force on 1 January 2016 for local authorities with over 3,500 inhabitants, and for public inter-municipal cooperation establishments (EPCI) with at least one town of over 3,500 inhabitants.

The MOOC, comprising 6 modules in the form of videos, aims to help authorities input data from their services, avoid routine errors, publish their RPQS more easily, and manage their services better.

Since January 2019, the MOOC has been accessible free of charge on the SISPEA website.

www.services.eaufrance.fr



“EcoCuencas”

Massive Open Online Course (MOOC)



- The Piracicaba, Capivari and Jundiá (PCJ) basins, which supply water to the city of Sao Paulo in Brazil.

Following preparation of methodological and summary works developed by the Ecologic Institute and the OECD on economic and financial mechanisms for managing water in a climate change context, the Latin American partners (National Water Secretariat of Ecuador, Cuenca Verde Corporation in Colombia, PCJ Agency in Brazil, National Water Authority of Peru) developed innovative pilot measures.

These measures supported implementation of levies and/or payments for environmental services at various scales (including micro river basin, basin, and national territory levels).



The results and methods were consolidated by the nine partners of the project and are presented in a **Massive Online Open Course (MOOC)**, available in Spanish on the IOWater website:

www.oieau.org/mooc/eco_cuencas



IRSTEA

Pilot network to detect leaks made available for applied research

IRSTEA (Research Institute on Science and Technologies for the Environment and Agriculture) is carrying out research in the domains of heritage management and loss from water supply networks as part of a research project entitled ROC (oriented renewal of pipelines).

To contribute to the project, in 2018 and 2019 the International Office for Water is making its experimental leak-detecting network in Limoges available to IRSTEA.

The IRSTEA team on heritage management of water-related facilities will initially be trained to operate this pedagogical and testing platform.

Then, following the installation of additional equipment to respond to research requirements, the platform will be used to study the effectiveness of action to reduce losses from water supply networks and, more particularly, the connection between service pressure and leak flow rates.



IOWater's leak-detection network

Guadeloupe

Partnership Convention with the Guadeloupe Water Office



The Guadeloupe Water Office is a public body that guarantees the preservation of water resources and the satisfaction of user needs.

To achieve its multi-annual intervention programme for 2019-2024, presented on 1 October 2018, requires stepping up efforts on training, awareness-raising and support for basin contractors.

Considering IOWater's proven expertise on the entire water cycle, the Guadeloupe Water Office signed a partnership convention on 21 November, entrusting IOWater with organising training sessions from 2018 to 2021 to perfect and professionalise agents.

Events and information seminars will also be organised for users and elected representatives.



New requirements for local authorities!



As part of the "Plan Eau Dom" water plan, local authorities in French overseas territories competent in water supply and sanitation management must sign a progress contract before 31 December 2018. This requirement was set out by the ministers for the ecological transition and the overseas territories in a technical note addressed to Prefects on 30 July. In the absence of such a contract, investment credits from the state will be stopped.

Partners of the regional conference of water stakeholders (region, department, single authority ARS, AFB, AFD, CDC, etc.) are invited to apply the same rule.

The conference, which must take place at least twice a year, is required to establish a strategic document setting out the criteria for selecting authorities applying for support. Commitment to this progress contract must at least translate into a deliberation on support for this strategic document.

In this context, IOWater worked with Ernst and Young to help the Guadeloupe Office for Water (ODE) update its multi-annual intervention plan (PPI) 2019-2024, validated last November.

This intervention plan takes into account the degraded situation of water and sanitation on the island and anticipates exceptional measures of support from ODE to EPCIs in Guadeloupe, in cooperation and close coordination with the regional water stakeholder conference.

To this end, IOWater works for the ODE as a special training partner.



Agence Française de Développement



Vocational training requirements for water stakeholders

As part of its activities in the water and sanitation sector, the Agence Française de Développement (AFD) works with beneficiary countries to improve access, quality and sustainability of services, while ensuring improved management of water in an environment increasingly subject to the impacts of climate change.

To reach these objectives, AFD's main priority is to strengthen national and local governance to ensure long-term technical and financial management in the sector and to accompany its partners beyond the projects it finances.

To this end, and to have a significant impact on the sector's development, AFD is involved in financing projects that meet with the (initial and continuous) vocational training requirements of all stakeholders in the field (water services, engineering firms, public services,

private sector, etc.) at different levels of competency (operators, technicians, engineers, top managers, etc.).

This involves a variety of innovative means (training centres attached to operators, independent centres, training services, training programmes, etc.) whose sustainability can be assured (transparent, effective governance framework, balanced economic model, etc.).

With a concern to consolidate the "capacity building" side of its work, AFD asked IOWater to carry out a study to give a general overview of vocational training needs in the water supply and waste water sanitation sector in the countries that AFD operates in.

The aim of this study is to put together an operational "tool kit" so that AFD can identify vocational training projects centred on satisfying the sector's economic demand.

The study carried out by IOWater included the following components:

- Concise overview of the water supply and sanitation sector and key issues.
- Human resource issues in the water supply and sanitation sector (trades, qualitative and quantitative needs).
- Human resource training in the water supply and sanitation sector (vocational training issues, priority training, funding of vocational training, governance of vocational training measures).
- Recommendations for investing in vocational training (potential vocational training projects).
- Development of case studies in three geographic areas (South Africa, Morocco, Haiti).

Occitanie Regional Health Authority / Adour-Garonne Water Agency

"Good practices to obtain quality water"

As part of its multi-annual contract of targets and means with the French ministry of health, in 2018 the Occitanie regional health authority (ARS) asked IOWater to carry out training sessions on good practices to obtain quality water. The course was aimed at elected representatives and territorial agents at small local authorities in the Occitanie region.

The objective of ARS Occitanie is to continue improving the quality of water on the whole of its territory. This training programme was co-funded by the Adour-Garonne Water Agency, which shares a territory with ARS Occitanie.

An awareness-raising programme for operators, focused on the training course, was set up by IOWater.

The training programme follows on from courses carried out successfully by IOWater for over 1,500 elected representatives and territorial agents since 2012 on the territo-

ries of the Adour-Garonne Water Agency, the Rhin-Meuse Water Agency and ARS PACA.

The training sessions were intentionally designed to last one day so that a maximum number of people could attend.

They were also organized at local level (département) to limit the transportation required.

The one-day courses focused on action that can be put in place to monitor water quality and facilities.

The aim of the action is to guarantee quality water at all points on the network based on a number of good practices that range from protecting catchment zones to maintaining installations and cleaning reservoirs, with an accent on the importance of disinfecting and follow-up.

Following a first theoretical part, a visit was organised to a catchment site equipped with a protection fence and a water treatment plant.



Visit to a water catchment site

The combination of theory with a practical visit and analyses of treated water provided concrete and practical input for each of these training sessions.

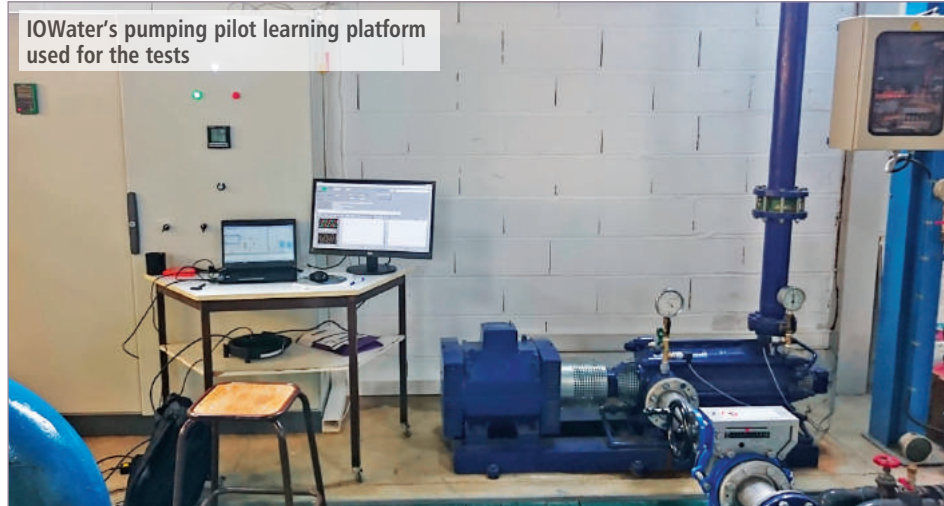


Europe - France



Schneider Electric

IOWater's learning platforms boost R&D at Schneider Electric



IOWater's pumping pilot learning platform used for the tests

Following a bibliographic technical study carried out by IOWater in 2017 on the impact of pump defects and wear on the machine's mechanical and electrical variables, Schneider Electric was keen to pursue its investigations by setting up tests in real conditions.

The training infrastructure at the National Training Centre for Water Professions (CNFME) offers multiple potential uses and representations of real-life situations (networks, pumping systems, etc.), making it ideal for carrying out this kind of test.

IOWater was therefore naturally well placed to pursue its support for Schneider Electric in this second, more practical, phase.

IOWater's installations were then adapted to simulate pumping defects (in particular cavitation). An Altivar Process frequency drive provided by Schneider Electric assures control of the WKL pump cycle.

A diaphragm valve placed at the point of aspiration enables generation of different levels of cavitation at the entrance to the pump, while a tap lets in air.

The pressures upstream and downstream from the pump and the flow in the network are recovered using sensors to observe the evolution of operating points depending on the defects generated.

A supervision and acquisition system has been developed to collect digital information from the drive and sensors and the pressure and intensity signals upstream from the apparatus, with an acquisition frequency capable of reaching 250,000 measurements a second.

The test results are compiled thanks to this software. Schneider Electric analyses them according to three functioning levels: electrical, mechanical and hydraulic.

The conclusions should lead to improved understanding of the impact of cavitation on pumping systems, and ultimately the development of new detection methods based on analysis of data that will be measured or estimated by the speed drive.



Air France Industries

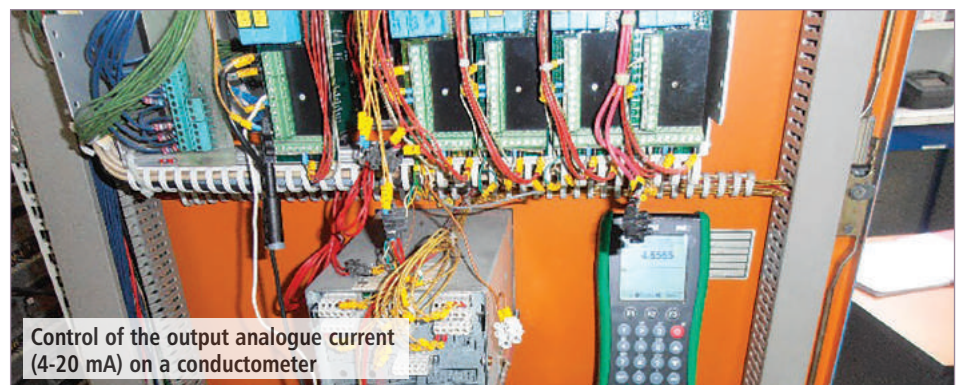
Instrumental diagnosis

In July 2018, IOWater carried out a functional diagnosis of online measurements from the industrial waste treatment unit at the Orly Sud Air France Industries site.

At the control point of the final discharge, the three measurements concerned were pH, conductivity and temperature.

The objectives of this support were to control the aptitude of the measuring instruments, evaluate the accuracy of these measurements, and test the reactions of instruments (thresholds and/or limits exceeded with LEDs lighting up on the transmitters).

Moreover, some parameters, especially pH and temperature, are subject to discharge thresholds at the end of treatment.



Control of the output analogue current (4-20 mA) on a conductometer

The transmission of information, analogue loops, and sampling and verification practices were thus controlled and subject to recommendations.

To perfect the diagnosis, a documentary review (operating modes, description of

measurement points, process measurement flowchart, calibration/verification sheets, frequency of maintenance operations, cleaning and calibration) was supplemented by physical controls of the measuring instruments (pH, conductivity, temperature). ✓



Europe - France

Diagnosis and technical support for industrials

IOWater was once again actively solicited by industrials in 2018 to carry out audits with a view to optimising water treatment procedures.

The technical sectors concerned were highly varied:

- Tanneries (BASTIN, PECHDO, etc.).
- Agrifood (LACTALIS, TERRA LACTA, etc.).
- Chemical industry (SAIPOL, LYON-DELL-BASELL, CHEVRON, etc.).
- Refineries and energy producers (EDF, TOTAL, ORANO, CHEVRON, etc.).
- Automobile industry (VOLVO TRUCKS, etc.).

Diagnoses and support from IOWater in the industrial sector included the following missions:

① Accompaniment on strategic issues:

- Adaptation strategies and action plans.
- The most economic, sustainable use of water.
- Natural water retention measures.
- Reuse of water, multicriteria approaches.
- Ecosystem services and biodiversity of aquatic environments.
- Institutional discussions and cooperation.

② Expert and advisory missions:

- Bibliographic summaries.
- Rapid, long-distance analyses and/or on-site in case of malfunction, regulatory modifications, etc.
- Diagnosis of treatment unit design and operation, and definition of directions for improvement.
- Technico-economic optimisation (reactants, energy, etc.).
- Characterisation of effluents (hard COD, etc.).
- Eco-engineering, nature-based solutions, life cycle analyses, adaptation of planning and management by river basin.



③ Research test and technology development programme:

- Treatability tests of clean industrial water and waste water.
- Promotion of IOWater's existing teaching and technological platforms.
- Production of pilots in maritime containers useable on any industrial site.

④ Set-up and joint participation in **calls for European Union and international projects** and their production. Networking of stakeholders in the water sector on global level, mobilising expertise capacities of both parties.

⑤ **Competence assessment:** conception and production of training plans. Recognition of competencies and training paths. Method for validating competencies (certification).

A non-exhaustive list of missions in 2018 includes:

PECHDO tannery: diagnosis of the industrial effluent treatment unit:

- Detailed visit with the operator.
- Production of a chrome precipitation curve.
- Carrying-out of jar tests.
- Report of recommendations.

LACTALIS: Quantification of impact of altitude and temperature on calculations of oxygen requirements. Measurement protocol for oxygen transfer in clear water.

SAIPOL, Avril Group: Diagnosis of the industrial effluent treatment unit:

- Validation or not of STEP sizing.
- Validation or not of STEP equipment.
- Recommendations to optimise operation and settings.

TOTAL group: Production of a bibliographic, technical and scientific overview of the analysis methods of free chlorine and associated regulation of chlorine for semi-closed circulation cooling systems.

VOLVO TRUCK: Audit of 2 demineralisation chains in production and regeneration phase:

- Optimisation of all settings, acid and caustic soda dosage, dilution, calibration of probes.
- Assessment of the current state.
- Technical report of all of the measures and controls carried out.
- Diagnosis of the treatment station with a view to reusing water.

✓

"EUROPE-INBO 2019"

Discussing the future of the European Water Directives and showcasing ambitions!
Lahti - Finland - 17-20 June 2019
Please register: www.inbo-news.org

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Professional training

Documentation and publications

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In France, in Europe
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- Documents on water and biodiversity



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