THEMATIC FRAMEWORK OF THE SESSIONS

INBO WORLD GENERAL ASSEMBLY

INBO'S 30TH ANNIVERSARY

Water resources and climate change: How can basin management be more resilient?

6 – 10 October 2024, Bordeaux, France
Venue: Centre de Congrès Cité Mondiale
18 Parvis des Chartrons

Thematic session 1: « International and transboundary cooperation for basin management »

Stories of water wars regularly make the headlines in the media, fuelling fears that tensions over blue gold are a source of potential conflict. Historical analysis belies this idea: since 1814, 300 treaties have been negotiated to deal with conflicts. But the past is no guide to the future. Tensions over water resources are increasing. They are exacerbated by disruptions to the water cycle caused by climate change, population growth and unsustainable consumption and production patterns.

Peacefully overcoming the water crisis by exploiting the potential for cooperation requires a major effort. To make the most of concerted management of transboundary rivers and lakes, we need to significantly increase the resources allocated to creating and strengthening transboundary basin organizations. International water law (most notably the 1992 Helsinki Convention and the 1997 New York Convention) invites us to do this. It also stresses the need to balance the principle of “no-harm” with the principle of equitable and reasonable use, which structures it to strengthen cooperation and create upstream-downstream solidarity between riparian states. Regional legal frameworks (with the WFD for the European Union and the SADC protocol in Southern Africa) and those specific to groundwater (draft articles by the International Law Commission on the law of transboundary aquifers in 2008) have echoed this imperative for cooperation. The Sustainable Development Goals (SDGs) also provide a policy framework for improving the integrated management of transboundary water resources, with a dedicated target (6.5) and indicator (6.5.2) for monitoring progress.

Many riparian states are committed to cooperation because it is more effective. They derive more benefit from the coordinated exercise of their respective sovereignties than they would have obtained from unilateral management. Cooperating on the allocation of water volumes and the benefits derived from the use of the resource, sharing experiences and innovative governance, and investing in joint projects (infrastructure in particular!) are excellent ways of preventing conflicts.

This session aims to review the state of the art and best practices in international and transboundary cooperation for the concerted management of transboundary basins and associated aquifers.

Thematic session 2: « The dual challenge of restoring and maintaining water quality »

2A. Good ecological status of water

The Water Framework Directive (WFD) adopted in 2000 introduces the notion of "good ecological status" of water as a basin management objective in the Member States of the European Union. This definition of water quality is not limited to the analysis of physico-chemical characteristics. It includes biological reference criteria used to qualify (or disqualify) the good status of a river basin. This is an ambitious objective, particularly in the context of climate change, which is expected to increase pressures (both quantitative and qualitative) on water resources. It is part of a wider trend aimed at preserving the health of the ecosystems on which human activities depend.

This is a global trend. It joins the “One Health” paradigm (environmental and human) and goes far beyond the borders of the European Union alone. Green infrastructure, Nature-based Solutions (NBS), Natural Water Retention Measures (NWRM), restoration of ecosystem services, payment for environmental services: everywhere, these actions are playing a growing role in the arsenal deployed to restore water quality, including for heavily modified water bodies. Their appeal lies in the fact that they provide multiple co-benefits (preservation of biodiversity, adaptation to climate change and the risks of drought and flooding, landscape renaturation, etc.). The effectiveness of these local actions is particularly important when they are planned in a systematic and cumulative way, "cascading" down the river basin. These measures, and the restoration of ecosystem health that they aim to achieve, take place over the long term.

This session will present the interest that the objective of 'good ecological status' and the tools and methods developed to achieve it may have for those involved in basin management on all continents.

2B. Transboundary cooperation and water quality management

Transboundary cooperation still focuses too often (and almost exclusively) on quantitative resource management. The implementation of Integrated Water Resources Management (IWRM) for water quality should not be forgotten, but it is a challenge that is particularly difficult to meet in a transboundary basin. This inter-state configuration is even more complex than the already substantial task of managing water quality in a national river basin. Trade-offs are made between States concerned with preserving their water security and their water supply in sufficient quantity and quality. And not just between economic sectors and administrative levels.

The challenge is high: 40% of the world's population lives in a transboundary basin. It is therefore vital to strengthen cooperation between States in managing water quality and preserving the health of aquatic ecosystems. International water law (notably the 1992 Helsinki Convention and the 1997 New York Convention) makes its contribution by establishing the obligation to take all appropriate measures to prevent, control and reduce water pollution that has or may have a transboundary impact.

It is also necessary to strengthen the operational capacities for cooperation on transboundary waters, in particular those of transboundary basin organizations (data collection with networks of monitoring stations dedicated to monitoring water quality and ongoing pollution, development of water information systems and warning systems for accidental pollution, coordination and upstream-downstream solidarity in the deployment of hydraulic infrastructures such as wastewater collection and treatment systems, etc.).

This session will provide an opportunity to discuss the tensions created by the risks of transboundary water pollution and to share experiences of transboundary cooperation on water quality management.

2C. Agriculture and Water quality

Agriculture is one of the economic sectors that exerts the strongest pressure on water resources. This is obvious in quantitative terms, since the agricultural sector accounts for an average of 70% of water withdrawals worldwide. It is also true in terms of quality. Fertilizers (nitrate and phosphorus), pesticides (fungicides, insecticides, herbicides) and other phytosanitary products, as well as manure and other livestock effluents, are a major source of diffuse pollution. This agricultural pollution contaminates surface water (through run-off) and groundwater (through infiltration) and affects environmental and human health.

The river basin scale is particularly appropriate for implementing stringent policies to combat this pollution. Regulations are an effective tool for reducing the use of these inputs (nitrate, phosphorus, pesticides) and prohibiting their spreading in areas that are particularly vulnerable or sensitive, from an ecological point of view or for drinking water supply. It must go hand in hand with technical and financial support for farmers to implement field measures, such as changes in cultivation practices to promote soil conservation and buffer zones where vegetation limits the run-off of these pollutants into watercourses.

This session will present the advantages of involving the agricultural sector in an Integrated Water Resources Management (IWRM) approach at basin level and will highlight practices that aim to reconcile the preservation of water quality and food security.

Thematic session 3: « Water scarcity: planning and tools for the quantitative management of water resource at basin level »

The combined pressures of climate change, population growth, rapid urbanization and unsustainable production and consumption patterns are having a negative impact on the amount of water available in river and lake basins and in groundwater. 2.4 billion people are already facing water stress and, as a result of these trends, by 2050, 5 billion people will be facing water shortages for at least one month. This is a direct threat to the water, food and energy security of these populations.

Developing ambitious policies to prevent and face water shortages is now a major challenge for national security. It has become essential to plan the quantitative management of water resources on a river basin scale, over the long term and taking account of these major trends.

There are two main levers available to us. The first is a priority: controlling demand must be mobilised to encourage all uses to reduce their consumption (including agriculture, which remains the most "water-intensive" sector), avoid overexploitation of water (groundwater and surface water) and sustainably meet the needs of human societies and the ecosystems on which they depend (including by maintaining a reserved environmental flow). It must be based on economic incentives for efficient use (tariffs and subsidies, in other words: the carrot and the stick). It should aim for a fair distribution of the resource, giving priority to the most essential uses. It should regulate uses by means of a system requiring prior authorisation for abstraction, combined with a water law enforcement staff responsible for ensuring compliance and a monitoring network responsible for tracking water availability.

The second lever consists of developing supply: it complements the first and should, as far as possible, target non-conventional water resources (as favored in session 4) in order to preserve the natural environment. But it can also include the balanced development of green and gray infrastructure for water storage and retention.

This session will include a range of case studies illustrating integrated water resources planning at basin scale as an effective tool for sustainable quantitative management.

Thematic session 4: « Reconciling the natural and urban water cycles: basin-scale strategy for wastewater reuse and other non-conventional water resources for water security »

In addition to controlling demand, which aims to reduce water consumption, sustainable quantitative management must also seek to develop supply, and in particular non-conventional water resources. The reuse of treated wastewater is one of the most promising of these alternative resources. It is an interesting technical solution. It reduces the threat of water shortages by increasing the availability of the resource. It meets the needs of certain uses (agricultural irrigation, industrial processes, watering green spaces, even drinking water, depending on the level of treatment applied, etc.) without increasing the pressure on the natural environment through additional withdrawals.

However, the deployment of wastewater reuse is not easy. Firstly, the economic cost is significant: it includes the cost of infrastructure (equipment and networks) and the energy and financial cost of wastewater treatment. Secondly, technical and regulatory solutions are needed to address the health risks associated with these alternative resources, including the risk of contamination of crops irrigated by treated wastewater (drug residues, heavy metals).

Lastly, regulatory and governance reforms are also needed to improve coordination and the distribution of roles and responsibilities between players in the large water cycle (in the sense of managing the resource in its environment) and players in the small water cycle (in the sense of managing water, sanitation and irrigation services in towns, agricultural plots and industrial sites).

To overcome these difficulties, it may be useful to develop a strategy for deploying the reuse of treated wastewater at river basin level, and to involve all these stakeholders in its implementation. It may also be appropriate to mobilize other non-conventional resources, including the collection and management of rainwater and desalination.

This session will provide an opportunity to discuss solutions, models and best practices for deploying non-conventional resources at basin level.

Thematic session 5: « Meeting the challenge of climate change adaptation: the interest of a sound basin governance »

Increased frequency and intensity of floods and droughts, altered river flows, degradation of aquatic ecosystems, salinisation of coastal groundwater due to rising sea levels... Our societies are mainly affected by climate change through the water cycle. These impacts have a cascading effect on the environment, ecosystems, people's access to water and economic sectors that are heavily dependent on water resources: energy, agriculture, industry, etc.

The challenge of adapting to climate change is partly technical (monitoring its impacts using in-situ surveillance networks and satellite monitoring, hydroclimatic modeling to estimate its evolution, developing climate strategies and action plans based on the study of these impacts and identified vulnerabilities, setting up funding mechanisms to mobilize resources dedicated to adaptation, etc.).

However, the challenge of adaptation is also one of governance. Taking up this challenge means establishing and strengthening legal, regulatory and institutional frameworks (e.g. basin councils and committees), as well as appropriate governance practices to mobilize all stakeholders in the fight against climate change.

Participatory governance is a determining factor in the effectiveness and performance of sectoral public adaptation policies, and ensures their coherence. It also enhances knowledge by widening the circle of those involved in gathering data and information for the emergence of shared climate diagnostics. It also encourages support for (and ownership of) the adaptation objectives and measures set collectively, and makes everyone responsible for their implementation and the results achieved in terms of resilience. Finally, it is a powerful tool for reconciling and arbitrating the divergent interests of the various uses of water put to the test of climate resilience.
It is worth organizing this participatory governance on the scale of river basins to ensure that global climate observations, projections and commitments land locally. Acting at this scale bases decision-making (for example on the location of hydraulic, green or gray infrastructure) on the hydrological and territorial reality of this natural unit rather than on the constraints imposed by administrative boundaries (intra- or inter-state): the adaptation measures decided on within this framework are therefore more effective.

This session will look at various basin governance models that have demonstrated their ability to engage stakeholders in ambitious climate change adaptation programmes.