

The European Water Framework Directive beyond 2010: let actions speak louder than words

The first generation of WFD River Basin Management Plans is now available. This is a formidable achievement and a great step towards addressing Europe's deteriorated river systems. However, plans are only words: only the actual implementation of the selected measures will result in achievement of good ecological and chemical status. The WFD Lille 2010 Conference pointed out that a lot of new, but so far unused scientific knowledge is available to improve the effectiveness of selected measures or to inspire the introduction of complementary measures. Furthermore, the complexity in terms of the functioning of the water system, its interaction with the socio-economic system and the uncertain consequences of climate change, urges a 'learning-by-doing' approach. This approach should be applied in well-designed, -coordinated and -monitored learning catchments.

Scientific Committee WFD Lille 2010 Conference

WFD Lille 2010 Conference

For the first time in the history of water management, integrated water resources management principles are implemented at a wide international scale (Europe) based on a common legal framework, i.e. the Water Framework Directive (WFD). This represents a fantastic opportunity for efficient protection of water resources in a coordinated way in the European Union and several associated states. Besides the technical dimension, the WFD implementation requires an open and continuous dialogue among different policy-makers, water managers and scientists and requires a well informed public. River Basin Management Plans (RBMPs) of most of Europe's river basins have now been submitted to the European Commission in Brussels and are at an early stage of implementation. However, it is clear that in the first update of RBMPs, to be published in 2015, both the wide experience gained with the process of delivering RBMPs as well as new scientific knowledge will have to be taken into account.

It is against this background that the "Conference on Integrated River Basin Management under the WFD – Action Programmes, Adaptation to Climate Change, Inspiration" was organized and held in Lille at the *Nouveau Siècle* at 26 - 28 April 2010. The conference aimed to inspire water and river basin managers, researchers, local and national government decision-makers currently engaged in the implementation of the first RBMP and anticipating challenges of the second round of RBM planning.

The conference involved representatives of the scientific community, EU Environment Ministries and stakeholders involved in the WFD implementation and climate change research. About 175 participants attended, representing: research (40 %), policy (15%), water management (12%), laboratories (12%), industry (10%), European Commission (4%), consultancy firms (4%) and international organisations (3%).

The conference outline followed a clear and logical structure. The first day focused on what has been accomplished so far with WFD-governed European river basin management. Top-level

speakers addressed the achievements under the first cycle of RBM planning and anticipated the challenges and needs for the second cycle. The second day focussed on available, but not yet (fully) exploited scientific understanding in the field of: (1) the functioning of the multi compartment water-sediment-soil-(ground)water system at the river basin scale; (2) climate change hazards; and (3) securing of water resources against deliberate or natural disorders. The first part of the day invited keynote speakers pictured the state-of-the-art on these topics. In the second part of the day the conference participants were invited to join one of the three parallel workshops dedicated to these topics. Participants were asked to enrich the conclusions from the invited speakers and to rank these conclusions by voting. The third and last day focussed on how to effectively bridge the gap between available scientific understanding and the required actions in the current, second cycle of RBM planning (2010 – 2015). It followed the same outline as day two: invited presentations followed by a (plenary) workshop. Further details on programme and speakers as well as their presentations are available at the CIRCA website¹.

WFD to date

Beyond any doubt the WFD is a formidable stimulus in the European Union to effectively evaluate risks and impacts on our deteriorated water systems and identify appropriate remediation measures. The keynote speakers, however, also illustrated that the WFD implementation process is far from easy. The wide range of economic activities and the eco-hydrological complexity of many river basins, in terms of the functioning of the water-soil-sediment-(ground)water system and the links between water quantity, quality and economic activities, make an integrated management approach to river basins complex and challenging. Uncertainty about the impacts of global change adds-up to this complexity. Furthermore, the speakers illustrated that it is no longer effective or efficient to deal with one issue at a time, since solving a singular problem often causes impacts on other environmental compartments or in other places. We must consider the consequences of our actions on all parts of the environment in an integrated way and configure these actions to cope with an uncertain future. Water management problems are ‘fiendishly difficult problems to solve’. These challenges demand an approach that is targeted towards achieving actual improvement of the chemical and ecological quality of our river basins, and thus sustaining the goods and services they provide for the well-being of society. The WFD paves the way to such an approach, but limited evidence of it can be found in the current RBMPs. This leaves ample of room for incorporating new scientific knowledge on the way to this approach in the second and next cycles of RBM planning.

Scientific knowledge as basis for action

It was universally agreed at the conference that scientific understanding is a very important basis for improving river basin management. It became clear that a lot of already available scientific knowledge has not yet found its way into the first RBMP. From the scientist’s perspective, it could, and should be used now to facilitate the implementation of the current version of the RBMPs and the drafting of the second generation of RBMPs. The science should be used to set priorities and define or refine the programme of measures in the RBMPs, rendering them more

¹ http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/implementation_convention/management_conference&vm=detailed&sb=Size_d

(cost-) effective. In fact, the WFD also requires this as in annex IV where it is stated: “The first update of the RBMP and all subsequent updates shall also include: ... an assessment of the progress made towards the achievement of the environmental objectives, ... and an explanation for any environmental objectives which have not been reached”.

By voting, the participants indicated per topic, a top two or three of scientific insights and/or resulting recommendations that are considered as most important to be taken aboard in the RBM planning and execution process.

The ‘top three’ related to the functioning of the water-sediment-soil-(ground)water system at the river basin scale were:

1. Good environmental status in a water body requires also good sediment status. Sediment is an essential, integral and dynamic part of our river basins. Where human activities interfere with sediment quantity or quality, sediment management becomes necessary. It therefore seems logical to seek to realize relevant opportunities to link sediment management to RBM and, where appropriate, to the WFD objectives and ecosystem services. However, this link was hardly or not at all addressed in the first RBMPs. Guidance, derived from the sharing and learning from existing experiences, is needed on how to include sediment management.
2. River restoration must consider the full river basin scale, including groundwater. Site specific measures are often not sufficient.
3. One of the key-objectives of the WFD is to achieve a good ecological status for surface water bodies. However, a lot of available data/information on the ecological status was not used to prepare the first RBMPs. Besides recommending using this available information it is also recommended to investigate gaps in the knowledge that have emerged in the first RBM planning cycle, with specific attention to hydro-morphology, as well as to include a full assessment of sources of pollution.

The ‘top three’ for climate change hazards:

1. Use an integrated modelling approach to refine local scale projections of climatic change.
2. Improve our knowledge base by coupling integrated biophysical system models to socio-economic models and by subsequently feeding them with available data about the impacts of past disasters.
3. Understand and explain the different levels and sources of uncertainties and ensure the robustness in the projection/scenarios.

The ‘top two’ for securing of water resources against deliberate or natural disorders:

1. Effect/ exposure/ quantity models are available but a more consistent monitoring approach (chemical, ecological, ecotoxicological, hydrological, habitat) is needed to support and improve their efficiency to indicate actual threats to the ecological health. For consistency, it is important to monitor the same parameters at the same sites and

same dates. Furthermore, effect-based monitoring tools (biotests, biomarkers, effect-directed analysis) should be better integrated in the WFD monitoring programmes because they help to unravel causal links between geochemistry and ecology.

2. Small scale deliberate, accidental or natural contamination of (drinking) water resources (before or after treatment) does regularly occur even although their consequences so far have been competently handled and effectively limited. However, it was made clear during the workshop that, in the event of any major or large water contamination incident, it would not be possible to protect water consumers effectively due to the lack of early warning systems. Hence there is a need to further develop early detection/warning systems for accidental and deliberate water contamination. The development should address the: integration of multi-parameter sensors, improvement of the response/reactivity time, reduction of the level of uncertainty and development of models for defining the best locations to apply the early detection/warning systems.

How to (re)act?

From the first round of RBM planning it is clear that much can, and has to be improved to meet the WFD objectives. So far the RBMPs are just paper plans. The WFD in its core is about effective actions. This aspect appears to be a big bottleneck. Although the first RBMPs seem not to be over ambitious in their programme of measures, there are even serious question marks to the effectiveness of the selected measures. Application of the available scientific understanding, i.e. following of the scientific recommendations above, may certainly improve that effectiveness.

But how to do it?

In the final workshop at day three it was put forward that a successful 'how' depends on four pillars, i.e.: right timing, provision of context, linking of levels (EU/National/Regional on both ways) and connecting of people. The discussion concluded the next recommendations on how to enhance uptake of 'science' in the WFD RBM planning and execution process:

- Fostering integrated water resources management and dealing with complexity at the river basin scale asks for continuous improvement of RBM (instruments). We should focus research on small scale cases studies initiated by RBM policymakers and/or managers. We need well-designed, -coordinated and -monitored learning catchments where through a 'learning-by-doing' approach we can try to improve in small steps the effectiveness of selected measures and, where needed, introduce and fully evaluate complementary measures.
- The WFD related RBM learning process is still not well developed. To build up learning capacity at the European scale, it is recommended to establish a 'reflection platform for the WFD' in which different scientific disciplines, different involved policy areas (like water quality, quantity, spatial planning, soil and land use, etc.), stakeholders and river basin managers will – on a regular basis – reflect on the lessons learned in the 'learning catchments' mentioned above. In this way, the capacity for a 'science-policy interface' in

the context of the implementation of the WFD and its current revision process will be built up. There was a very strong overall consensus on this key issue.

- Also on RB scale such platforms should be established to encourage exchanges between scientists and water managers. Such platforms may facilitate face-to-face communication. Resources should be made available for scientists to disseminate their knowledge to those who need it. In this way, it should allow scientists to participate in RBM related policy or practice groups, such as river basin commissions.
- A big challenge is to increase the 'river basin' focus in the RBM planning. The first cycle of plans does not appear to start from a perspective and priority setting on basin scale (top-down) but more from a bottom-up perspective resulting in a summing up of priorities at local (water body) and national scales. It was clear to the conference participants that in the second round of RBM planning, we should devote more energy to planning/priority setting at the river basin scale. This also means more attention for trans-boundary cooperation in several of the European basins. In this perspective, the role of river basin commissions was discussed. It is recommended to discuss how to give them a more responsible role in WFD RBM planning and implementation process.
- Both scientists and policy makers/managers should be more pro-active, on a personal level to bridge the gap between science and policy/management. Scientists should then also communicate transparently on the uncertainties/error margins that go with their scientific findings. Policy makers/managers should more actively seek for the knowledge that they need.