

Implementation of the Water Framework Directive concepts at the frontiers of Europe for trans-boundary water resources management; illusion or reality ?

Pennequin D. - BRGM - d.pennequin@brgm.fr

The October 2000 European Water Framework Directive (WFD) sets up as objective that all European water bodies reach good water status by 2015, provided that they are not under one of the derogation regime which allows to push forward this deadline in time. This ambitious objective applies to all soft water bodies, including continental surface water and groundwater.

To reach good water status by 2015, the WFD gives a step by step approach, fixes deadlines for each step, proposes a common framework to apply in all European countries, and asks for the designation of national entities to be in charge of its implementation.

The WFD considers water resources as a patrimony that should be used in a balanced and equitable manner, while being preserved at the same time for future generations. It is based on the concept of sustainable management and development. It recognizes the need to consider the scale of the catchment area as a natural working unit to manage water resources, and uses it as a basic principle for many of its recommendations. It also states that in each catchment area, both surface water and groundwater must be addressed together along with socio-economic parameters to ensure sustainable management of water resources. Last but not least, it says that water management must result from a concerted action involving representatives of all categories of stakeholders.

Extending the water resources natural management units all the way to the boundaries of the catchment areas, and creating water bodies, led to many situations in Europe where single water resources entities spread over the political boundaries of two or more countries. Special attention must be paid to these trans-boundary water resources: indeed, according to the precepts of the WFD, proper management of such water resources requires setting up in place an international concerted action which involves the stakeholders from all countries being concerned. The WFD in fact proposes a line of actions which among other things includes creating or using existing trans-national managing entities to cope with this situation.

In theory, two European countries which share a common water resource, guided by the same objective of reaching good water status, with a common working framework and common deadlines, can reasonably hope to agree on a concerted approach to implement in order to reach their common goal (*even though several difficulties often may arise*). However, at the frontiers of Europe, the situation is not as "naturally straightforward" and may even become quite complicate, as the non European neighbouring countries must abide to their own regulations, which generally do not impose a deadline for good water status. In addition, the perception of the value of water resources may be quite different outside of Europe, and the principles of water resources management may therefore significantly deviate from those applied today within the European Union.

Lake Peipsi water complex and the underlying hydraulically connected aquifer system is one example of trans-boundary water resource which extends across the boundaries of Europe. It is shared by Estonia and Russia. Being the largest trans-boundary water body and the fourth largest lake in Europe, Lake Peipsi extends along a north-south direction over a distance exceeding 150 km, and covers an area of approximately 3,555 km² which spreads over both side of the Russo-Estonian border. It is underlain by a series of four major aquifers. The shallowest of these consist of glacial continental deposits and usually provides good quality water. The Ordovician limestone aquifer underneath contains layers of oil shale deposits. The two deeper aquifers, the Voronka and the Gdov aquifers, consist of sandstone and are generally separated from each other and from the overlying aquifers by thick clay horizons.

Heavy industrial activity, oil shale mining and agriculture on both sides of the border have all started to partially contaminate this trans-boundary water resource, shared by a population exceeding 800,000 inhabitants, of which 51 % reside on the Estonian side. Averted pollution or the fear of potential pollution often led local authorities in the area to turn to the two deeper aquifers for drinking water supply, engendering groundwater overexploitation and declining water levels in certain areas. In addition, overexploitation of the deeper aquifers slowly yielded water quality degradation. This process primarily affected the mining zones.

This situation and the obligation for Estonia to comply with the European legislation, and in particular with the WFD, prompted several projects in the last few years with the aim to help (1) improving the water resource status in the area and (2) implementing different key aspects of the WFD on the Estonian side. One such project was financed by the European Union, FFEM (*French Fund for Global Environment*), BRGM (*French Geological Survey*), GTK (*Finnish Geological Survey*) and the two respective countries, Estonia and Russia (*the EU-FFEM Lake Peipsi project*). Designed to enhance collaboration between the two countries, it focused on selected pilot areas to initiate the necessary corrective actions and contributed in providing the ingredients to Estonia to elaborate the river basin management plan and the programs of measures. In particular, three major key aspects of water resources management were addressed: (1) shared monitoring - collecting, assessing and organizing common data to be shared, (2) building common tools for trans-boundary water resources management and (3) adding the socio-economic dimension to water resources management in the mining areas. Capacity building was carried out with the purpose to prepare local authorities to trigger similar actions over the remaining portions of the Lake Peipsi trans-boundary water resource.

This type of project obviously cannot pretend solving all problems and ensure that when over, the Lake Peipsi trans-boundary water resource will be completely in line with the demands of the WFD. Indeed, first of all, it can only focus on key aspects and selected demonstration actions. Extending this experience to other areas takes time. Secondly, when it comes to trans-boundary resources, water resources management requires a common and concerted effort to be achieved by all the parties being involved. As mentioned above, in this case located at the frontiers of Europe and beyond, the exercise is complicate for several reasons, among which the existence of different legislation, different working methods and different culture on the value of "water resources" on each side of the border...

The important point however, is that through this kind of project, the trans-boundary gap with respect to water resources management definitely has started to narrow down: convergence of viewpoint between the two neighbours has began. The EU-FFEM Lake Peipsi project did (1) initiate a sustainable discussion and data exchange process between both parties, (2) raise awareness on environmental matters, (3) started providing a shared vision of the problems and of the solutions to implement, (4) help building common tools and methodologies for sample areas which can be replicated in other places to eventually build up a sound river basin management plan and programs of measures, acceptable to all stakeholders, on both parts of the borderline. As such, it clearly constituted a step forward in the implementation of the WFD.

In fact, it is notably across this type of concrete trans-boundary projects that the ideas conveyed by the WFD may slowly percolate outside of Europe, and in doing so, enhance progressive acceptance of these new concepts which will eventually benefit to all, including to Europe itself, as management of shared water resources at its frontiers would be facilitated, thereby ensuring at the same time better compliance with the internal regulations of each country.

In the short term then, it is probably an illusion to believe that the full application of the WFD - including reaching good water status by 2015 - is possible in many of the shared water resources located at the frontiers of the European Union. But at the same time, it is also believed by many specialists that the objective of reaching the good water status by 2015 in many European water bodies stems from utopia, for example, just due to the great inertia of many aquifer systems.

However, in the long run the principles carried out by the WFD will most probably be adopted by many countries, as this legislation is in line with today's needs and with the perception that most educated citizens have on the issues involving water resources. The WFD is indeed one of the most advanced legislation in this respect, and it is regarded by many countries as a model to follow. Applying the WFD concepts at the frontiers of Europe for trans-boundary water resources management has started in several places, and will eventually become a completely full-filled reality, but it will take some time to be fully effective everywhere. The iterative nature of the WFD implementation should help to this effect.

Mots-clés/Key words

Water Framework Directive, Trans-boundary water resources, Aquifer system, Lake, Surface water, Water pollution, good water status