The EU - Water Framework Directive - A Challenge for Information Management

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With the Water Framework Directive, the Directive 2000/60/EC of the European Parliament and of the Council, the European Union establishes a new and unique framework for Community action in the field of water policy.

The basic principle of the Water Framework Directive (WFD) is that the management unit is the natural hydrological unit, the river basin – and not the administrative units. Due to this basic principle, cooperation between administrative units as districts, provinces, "Länder" and states (Member States) is mandatory. For the management of river basins, such as the Danube basin, the Rhine basin or the Elbe basin, it is essential to collect the relevant information and to share this information with the other partners in the river basin.

The WFD specifies the information necessary for the implementation of this directive very clearly in its articles and annexes. Most of the information needed has a geographical parameter which makes the use of advanced GIS applications unavoidable. The geographical component is rather complicated due to the fact that most information is collected in relation to the administrative unit, and not in relation to the river basin.

What kind of information is required?

The WFD asks for characterisation and the identification of location and boundaries of surface water body types which means that such water body types have to be described and all water bodies within a given river basin or river basin district shall be identified as falling within either one or the other category. Due to the fact that the basis for this typology covers a lot a geographical information such as altitude, seize of the catchment area, geology, latitude, longitude and many others even for this first step GIS based analysis is necessary.

To identify the relevant pressures on the environment in a given basin, a lot of different information concerning human activities has to be collected as there is information on:

- Estimation and identification of significant point source pollution in particular according to a list of substances given in the WFD with a reference to the pollution source as there are urban settlement, industries, agriculture and other activities;
- estimation and identification of significant diffuse sources of pollution from these activities;
- estimation of significant water abstractions including seasonal variations, total annual demand, and loss of water in the distribution system;
- flow regulation facilities and morphological alterations for surface water;
- estimation of other significant impact, and estimation of land use pattern including identification of the main urban, industrial and agricultural areas, forests etc.

This information is to be completed for groundwater by a geological characterisation including extent and type of geological unit, a hydrogeological characterisation followed by information on superficial deposits and soil in the catchment including information on groundwater recharge and thickness, porosity, hydraulic conductivity and adsorptive properties of deposits and soils as well as the stratification characteristics of the groundwater within the groundwater body.

This information has strong spatial and temporal component including the third dimension as for the description of the groundwater stratification and for the characterisation of soil.

Additionally, information on the legal status of the area stipulated in other directives (protected areas etc.) has to be included.

Based on this information quality and quantity monitoring systems have to be established and the information from this monitoring systems have to be managed in an appropriate way.

Furthermore, the description of the river basins should include economic analysis containing sufficient details in order to calculate the recovery of the costs of water including information on volume, prices and costs associated with water service, and estimates of relevant investments including forecasts of such investments.

All this information will be used to establish water basin management plans which have to be made available to the public in a clearly defined way in order to allow public participation in the whole process.

In order to allow the establishment of river basin management plans for the whole basin (basin of River Rhine, Danube, Elbe etc) it is of crucial importance to share the information with other MS (or non MS if they agree to cooperate) in order to allow the establishment of a river management plan for the whole basin. Copies of the river basin management plans have to be sent to the European Commission.

There is no doubt that the implementation of the Water Framework Directive is one of the most demanding projects in the field of the EU environment policy. There is no doubt, too, that the implementation of the WFD will pose extraordinary requirements on all levels of data management - and this under considerable time pressure. River basin management plans based on the information described above have to be published in the year 2009 at the latest.

A timetable and work programme for the production of the plan, including a statement on the consultation measures to be taken, shall be made available for comments to the public at least three years before the beginning of the period to which the plan refers.

Time is running.