



Water Note 6

Monitoring programmes: taking the pulse of Europe's waters

The Water Framework Directive calls for the protection and restoration of clean water across Europe. A key step in this process is for Member States to gauge the health of their surface waters and groundwater through national monitoring programmes.

Monitoring is the main tool used by Member States to classify the status of each water body (a water body is a section of a river or other surface water or a distinct volume of groundwater). The directive sets a five-class scale - high, good, moderate, poor and bad status - and it requires Member States to achieve good status in all waters by 2015.

Once Member States have determined the current status of their water bodies, monitoring then helps Member States to track the effectiveness of measures needed to clean up water bodies and achieve good status (see water notes nos. 2 and 3 on surface water and groundwater bodies at risk).

The directive sets a common approach for monitoring water quality across all Member States but does not specify the methods to be used. It is up to Member States to decide the best method based on local conditions and existing national approaches.

Monitoring programmes

Member States were required to set up monitoring programmes by December 2006. The key task was to adapt existing monitoring systems to meet the needs and goals of the directive. Member States also worked together on monitoring in international river basins, such as the Danube (see the box).

While prior European legislation considered chemical contamination in water, the directive provides a major innovation by addressing aquatic ecosystems as well. Monitoring will now assess the health of ecosystems. This is a complex task, as ecosystems differ across Europe, and therefore an intercalibration process was required to ensure harmonised results (see water note no. 7).

Monitoring will also tackle human impacts on hydromorphology, the physical shape of river systems. Such impacts include changes in the flow of rivers as a result of water extraction or dams. These changes can harm the health of surface waters and their ecosystems, but for some Member States, measuring these changes is a new monitoring activity.



The Water Framework Directive establishes a legal framework to protect and restore clean water across Europe and ensure its long-term, sustainable use. (Its official title is Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.)

The directive establishes an innovative approach for water management based on river basins, the natural geographical and hydrological units, and it sets specific deadlines for Member States to protect aquatic ecosystems. The directive addresses inland surface waters, transitional waters, coastal waters and groundwater, and it establishes innovative principles for water management, including public participation in planning and economic approaches, including the recovery of the cost of water services.

Article 8 and Annex V of the directive address monitoring.

The monitoring of surface waters thus covers the chemical composition of water, a number of key biological elements, and the hydrological and morphological characteristics of water bodies in order to provide a comprehensive overview of the health of Europe's waters. Groundwater monitoring programmes cover water quality and water quantity.

Three types of monitoring

The directive specifies three types of monitoring.

Long-term *surveillance monitoring* provides a broad understanding of the health of water bodies and tracks slow changes in trends such as those resulting from climate change.

Operational monitoring focuses on water bodies which do not meet good status and on the main pressures they face – pollution where this is the main problem, water flow where extraction creates risks. Operational monitoring thus tracks the effectiveness of investments and other measures taken to improve the status of water bodies.

Member States also undertake *investigative monitoring* when they need further information about surface water bodies that cannot be obtained via operational monitoring, including information on accidents.

In addition to these three main types of monitoring, Member States need to carry out more detailed analysis in areas that are protected for drinking water or for natural habitats and species.



A first look

The directive required Member States to provide an overview of their monitoring programmes in 2007. As of March 2008, 26 of the 27 Member States had reported - all but two using the electronic WISE system.

The reports show that Europe's water monitoring programmes have more than 54,000 surface water stations - around 24,000 for surveillance monitoring, 40,000 for operational monitoring and around 12,000 common to both - and more than 51,000 groundwater stations.

Member States have made good progress in establishing monitoring programmes for aquatic ecosystems. All of the countries reporting track some, if not all, of the essential biological parameters in their monitoring programmes. These parameters include: phytoplankton, larger water plants, bottom-living invertebrate animals and fish. In the latter area, however, further work is needed as only a few countries monitor fish.

Reporting on the monitoring of protected areas also appears to be weak. In addition, many Member States did not provide information on the design of their monitoring programmes, including methodological aspects. The Commission is currently analysing the information received and will publish a report by the end of 2008.

Transboundary monitoring: the Joint Danube Survey

Member States are coordinating their monitoring activities for shared international river basin districts across Europe such as the Danube, Rhine and the Meuse/Maas.

In the Danube River basin, coordinated water monitoring work links Member States with nine neighbouring countries outside the EU. The Danube TransNational Monitoring Network, launched in 1996 under the International Commission for the Protection of the Danube River, has 79 monitoring stations throughout the Danube basin.

Three monitoring vessels supplemented this data in a recent special expedition along the Danube. In August and September 2007 these vessels participated in the Joint Danube Survey, travelling 2375 miles along nearly the entire navigable length of the river, crossing 5 Member States and 5 neighbouring countries. The three survey vessels took samples throughout their journey to allow experts to make reliable, comparable measurements of water quality and contamination levels. The three vessels were provided by Hungary, Serbia and the European Commission's Joint Research Centre and they hosted a research team from eight European countries. This was the second such survey, the first having taken place in 2001. For more information, visit www.icpdr.org/jds.

To learn more about the Water Framework Directive and Europe's waters see the **Water Information System for Europe (WISE)** at water.europa.eu. The European Commission's web pages on water protection, which are linked to WISE, also provide further information: see http://ec.europa.eu/environment/water/water-framework/index_en.html. Technical information on monitoring is available from the European Commission's CIRCA information system. See: http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/thematic_documents/12_-_monitoring.html.