

WISE – water information system for Europe

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Introduction

This paper presents the initiative taken at the European Community level to harmonise reporting and data flows on water and to make the information more accessible and interoperable by all data users.

It is now recognised by Member States, the European Commission, the EEA and other bodies with a stake in reporting procedures that there is a need for “streamlining” the reporting process, gathering more useful and relevant information and making the exchange process as efficient as possible using modern technology (ie. Web based reporting). This presents opportunities for rationalising the information collected and thus reduced the reporting burden on Member States.

The different EC organisations i.e DG ENV, ESTAT, JRC and EEA together with the Member States have agreed on the development of a new comprehensive and shared European data and information management system for water - WISE.

Current situation

Member States collect and report similar or identical information to a number of different bodies, European and International on a mandatory and/or voluntary basis.

EU Member States have the obligation to report to the European Commission on European Council Directives and Decisions. The Standardised Reporting Directive¹ and its 1992 and 1995 Decisions require Member States to report information on 10 Directives. In addition, Member States are required to report information on the Urban Waste Water Treatment and Nitrates Directives for which questionnaires have been developed separately to the SRD but using the same procedure. The information gathered from the Member States completing the Questionnaires has several purposes: check legal transposition of the Directive ; assess compliance with the provisions of the Directive; assess practical implementation of the Directive ; and assess effectiveness of the Directive.

The Exchange of Information Decision (77/795/EEC) also requires Member States to supply information to the Commission on specific water quality parameters monitored at nationally selected sites on rivers and lakes. This information allows an assessment of the water quality of a small number of rivers and lakes in the EU. The collection of the same information over a number of years also allows an assessment of the trends in water quality to be made.

The mandatory reporting obligations (i.e. under the Directives on Surface Waters (including the Sampling and Analysis Daughter Directive), Freshwater Fish, Shellfish

¹ Standardised Reporting Directive (SRD) 91/692/EEC of 23 december 1991 (OJ L 377, 31.12.1991, p.48)

Waters and Groundwater Directives, Dangerous Substances Directive and its Daughter Directives) have been subject to discussions on their usefulness by Member States, the Commission and the European Environment Agency. The latter two bodies point to the rather limited environmental perspective of these reporting obligations as not all water bodies are covered. The Directives either leave discretion to Member States which waters they designate (e.g. Freshwater Fish, Shellfish Waters Directives) or do not establish environmental objectives and reporting and have been superseded by more recent legislation (e.g. the Groundwater Directive and Landfill Directive).

In addition to questions with respect to the usefulness of the information collected, there are also questions relating the mechanism of collection. Member States. A number of practical obstacles were encountered in this process:

- Information was often not submitted or incomplete;
- The format of the information provided often varied (e.g. electronic vs paper copy)² and often did not follow the format of the questionnaires in the 1995 Decision;
- It was not clear to Member States what information had to be reported for the second reporting return and what could be omitted and it was not clear to those carrying out the assessment what information had been submitted in previous returns;
- The quality of the information submitted by Member States is very diverse and often difficult to read, validate and process; and
- There are often differences between Member States in the interpretation of the questions and information needs within the questionnaires. This leads to information being incomparable between Member States and for year-on-year comparisons to be difficult to draw.

Eurostat - the Statistical Office of the European Communities also receives nationally collected data, for example on water resources, use and treatment, data generally at a national level through joint questionnaires with the OECD and in collaboration with the UN statistical service. This data is supplied by countries on a voluntary basis. It is then compiled and assessed for use by a wide range of external customers. Eurostat also has data on various Driving Forces relevant for water quality, such as population density, agricultural production, pesticides and fertiliser use, or industrial activities.

The 2002 version of the joint Eurostat/OECD questionnaire has been adapted to the definitions of the Water Framework Directive and to the Urban Waste Water Directive. The questionnaire is fully electronic and validated data is made available through a data base accessible from Eurostat web page³. Efforts are now concentrating on improving data availability and data quality. A manual for water data collection is currently in preparation.

² Electronic templates were developed during the assessment of the 1993-95 data for use for the 1996-98 reporting. However, for a variety of reasons, most Member States chose not to use these templates.

³ http://europa.eu.int/comm/dgs/eurostat/index_en.htm

The European Environment Agency (EEA) task is to deliver information to policy-makers and the public for the development and implementation of sound environmental policies in the European Union and other EEA member countries. The Agency relies on the capacities of the European Environment Information and Observation Network (EIONET), a network of environmental regulators, agencies and institutions active in the member countries.

The EEA has established Reportnet as the process and tools by which it obtains on a voluntary basis much of the Eionet data flows, information it requires on the pressures on, state of, and impacts on the quality and quantity of environment across the whole of Europe.

In terms of water, EIONET-Water is based on existing national and international networks and covers rivers, canals, lakes, reservoirs, transitional, coastal and marine waters. It also includes data on emissions and loads to all water categories, and a methodology for producing comparable information on Europe's water resources (water quantity). In terms of quality and emissions/loads, information is obtained on nutrients, organic matter indicators and hazardous substances. Work is underway to develop data flows on biological and hydromorphological indicators. Validated data is now available in Waterbase to the public via the EEA's web page⁴. Information and data are exchanged electronically ideally using provided templates or on line questionnaires/templates. Data can either be uploaded by countries into the EEA's Central Data Registry, or into the countries own server to which the EEA has access, or data can be sent by email.

However, data are often supplied in a number of different formats. This can lead to time consuming work in validating and incorporating data received into the overall database. All datasets are accepted, even those that are incomplete, to provide as complete a picture as possible on the state of Europe's water resources. However, this can result in data gaps.

In addition to the European Commission and EEA, Member States also report on a voluntary basis to International Commissions of Conventions on the Seas (e.g. OSPAR, HELCOM and MEDPOL) and Rivers (e.g. Rhine, Danube and Elbe). The database of these commissions are usually rather incomplete with many national and temporal gaps in the data sets and data series and with a low accessibility of data as often there is a 10 year moratorium for the public release of some data sets which makes them useless when they become available.

The Water Framework Directive (WFD)⁵ introduces a new approach to data and information collection and reporting, providing a more streamlined reporting process and a clearer distinction between the information needs of different actors at different levels. It presents an ideal opportunity for the development of an integrated data management system for water related information that will allow the data and information needs of actors at all levels to be met. It also requires the availability of a geographic reference data set (GIS) for catchment areas and water bodies.

⁴ <http://dataservice.eea.eu.int/dataservice/>

⁵ Directive 2000/60/EC establishing a framework for Community action in the field of water policy, OJ L327 of 22.12.2000, pg. 1.

The WFD will ultimately repeal a number of existing reporting requirements under the SRD, but in the short term Member States will be required to report under both Directives. In addition 4 water-related Directives will remain in force, each with their own reporting requirements. Ultimately it would be necessary for these reporting requirements to be integrated with those of the WFD.

Legislation to be repealed by the WFD	Date of repeal
Exchange of Information Decision (77/795/EEC)	2007
Surface Water Directive (75/440/EEC amended by 79/869/EEC)	2007
Freshwater Fish Directive (78/659/EEC)	2013
Shellfish Waters Directive (79/923/EEC)	2013
Groundwater Directive (80/68/EEC)	2013
Dangerous Substances Directive (76/464/EEC)	2013

Legislation remaining in force
Urban Waste Water Treatment Directive (91/271/EEC)
Bathing Water Directive (76/160/EEC)
Nitrates Directive (91/676/EEC)
Drinking Water Directive (98/83/EC)

WISE – a common vision

Opportunities for the sharing of data and information have been identified and the principles of a shared and accessible data and information management system have been outlined and the potential for coherence with other reporting mechanisms have been discussed at the European Community level.

A concept - Water Information System for Europe - WISE. was developed (see concept paper (reference:XXXX)) by DG ENV, JRC, ESTAT and EEA. These EU institutions and the member states agreed on the water directors meeting in November 2003 on the development of such a new, comprehensive and shared european data and information management system for water.

There are three main distinct, but overlapping, requirements for information to be gathered from Member States to EU and International Organisations which will need to be fulfilled by any new integrated system. These are :

1. Checking compliance and implementation of EU legislation at a national level.
2. Assessing and comparing state and trends for the environment and the associated pressures, impacts and socio-economic driving forces that either cause or result from changes.
3. Use information on implementation and trends to assess the effects and effectiveness (including cost-efficiency) of policy, both before and after measures have been introduced.

WISE is a shared information system, not a single “mega” database where all information is held centrally, but consists of the building blocks (see figure 1). There are still practical elements of the implementation of such system which need to be further discussed, developed and agreed such as which organisation will be hosting the server, etc.

Figure 1 – WISE in the wider context

WISE is not only a vision, a concept, it is a process. The EC organisations have jointly engaged themselves in the process of developing this common vision in order to have it operational as soon as possible and to implement it, including all the various elements, by 2010.

The specific data requirements (i.e which data is needed for compliance checking and which information is requested for state of the environment reporting, what gGIS information is needed, etc.) is being defined through working groups operating under the common implementation strategy for the implementation of the WFD and in close collaboration of the different relevant EC organisations and Member States.

It is also a set of tools listed below:

- A single web portal: A web based data entry prototype and an output tool; and
- GIS tools (visualisation tool, geographic reference data set, comprehensive coding system for hydrological features (rivers, lakes, river basins, coastal waters, groundwater, etc)).

WISE is also different components to respond to the different needs of data users:

- WISE RTD web
- WISE compliance
- WISE EIONET Water

State of play

WISE is currently being developed and should be fully operational by 2010. A few tools are however available: the web based prototype for inputting 2004 reports for WFD has been on line since last June. 11 MS have submitted their 2004 reports into WISE and the remaining MS have until the end of June to do so. The web input tool for 2005 reporting will be on line for testing by mid July.

Wider context

WISE will cover all water-related information stemming from EU water policy (not only the Water Framework, but also the Urban Wastewater Treatment, Nitrates, Bathing Water and Drinking Water Directives as well as the upcoming Marine Strategy and the Flood Action Programme) and it should be extended to cover other European water-related datasets (such as EIONET Water and water research information). By geo-referencing most of these data, WISE will become an important building block for INSPIRE, another European Community initiative.

INSPIRE is an initiative for a legal framework on creating a spatial data infrastructure within Europe. The principle of this initiative is to try to avoid multiple collection and maintenance of geographic data and to encourage sharing of data between different users and application. In addition to technical standards for data interoperability it also tries to define the legal background for data sharing. The proposal for the INSPIRE directive was adopted by the Commission in July 2004 and is currently being discussed in the Council and Parliament. >>check>> A work programme is being prepared by Eurostat and JRC to establish implementing rules for INSPIRE. On the long term, WISE should be fully compliant with the INSPIRE principles.

One of the other modules of WISE, WISE-UWWTD will include for example data and information related to compliance under UWWT Directive. There are three main reporting requirements for the UWWT Directive: Art. 17 – Implementation programmes, Art. 16 - Situation reports, and Art. 15(4) monitoring – treatment level, treatment performance, sewage sludge generated in urban waste water treatment plants and on specific food-processing industries reported in three separate parts.

The reference years to report and the deadlines to report for these three types of reporting for UWWTD in previous reporting exercise for the EU-15 were also different. The formats to report were also different. In addition, after the enlargement, there is also the difference between EU-15 and EU-10 in relation to the deadlines as each new member state has different transitional periods.

In order to harmonise reporting for UWWTD as well as to make a coherent link-up with the other reporting for water at the EU level, the DG ENV has the intension to set up a single reporting system for the entire directive (i.e. all articles to report) and

setting a single reference year and to integrate this single system into WISE - as a mid-term and long-term goal.

For the coming years the list of tasks to be addressed for UWWTD in relation to WISE are in particular:

- development of a single electronic reporting system for UWWTD (extension of the existing database and its adjustment to electronic reporting which covers all the reporting issues of the UWWTD)
- Integration of the UWWTD database and data-flows into WISE
- Development of the interface for access to WISE and launching and maintaining the public service
- Thematic and systematic assessments of compliance
- Visualisation of data for public
- Help Desk for users

A WISE Implementation Plan for the integration of UWWTD database into WISE for 2006-2010 should be developed in the coming months. A feasibility study on the current database needs to be integrated into the WISE structure and the future compliance reporting is under development.

- 2006: single electronic reporting system for UWWTD in place
- 2007: prototype of UWWTD database integration into WISE is operational
- 2008: UWWTD database is fully operational within WISE system and sole instrument to submit compliance reports by the Member States

Conclusions

WISE – the water information system for Europe is currently being developed and should be fully operational by 2010. Its main objective is to streamline the reporting requirements for the different report needs and thus reduce the burden of reporting on Member States.

WISE is a shared information system, not a single “mega” database where all information is held centrally, but consists of the building blocks and will have to be in line with other EC initiatives such as INSPIRE and EIONET and WISE-RTD.

There are still several elements of the practical implementation of such system which need to be further discussed, developed and agreed such as which organisation will be hosting the server, etc.