

COMMON IMPLEMENTATION STRATEGY FOR THE WATER FRAMEWORK DIRECTIVE



REPORTING FOR WATER – CONCEPT DOCUMENT: TOWARDS A SHARED WATER INFORMATION SYSTEM FOR EUROPE (WISE)

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Disclaimer:

This technical document has been developed by the European Commission (ENV B.1, JRC and ESTAT) and the European Environment Agency (EEA). The document has been discussed with all the Member States, the Accession Countries, Norway and other stakeholders and Non-Governmental Organisations. Finally, the document was endorsed by the Water Directors on their meeting of 24/25 November 2003 in Rome. However, the document does not necessarily represent the official, formal position of any of the partners. Hence, the views expressed in the document do not necessarily represent the views of the European Commission.

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1. INTRODUCTION

Reporting obligations have a long-established tradition in EU water legislation, dating back to the 1975 Surface Water Directive (CEC 1975). Over the last 27 years reporting procedures have been developed to provide the Commission with information relating to the implementation of legislation to protect water resources, in particular through the adoption of the Standardised Reporting Directive (SRD) in 1991 and the 1992 and 1995 Decisions on Water Questionnaires (CEC 1991, 1992 and 1995). The 6th Environmental Action Programme (6EAP) highlights the need to:

“review and regularly monitor information and reporting systems with a view to a more coherent and effective system to ensure streamlined reporting of high quality, comparable and relevant environmental data and information.”

The 6EAP also identifies the need to undertake “ex ante” evaluation of the possible impacts (especially the environment impacts) of new policies and “ex post” evaluation of the effectiveness of existing measures in meeting their environmental objectives.

The systems available for managing the information provided have been widely extended since the first reporting requirements were introduced (e.g. development of computer systems, the internet, GIS etc.) and more information must now be made available to the public.

The Water Framework Directive (WFD) (2000/60/EC) 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. This document introduces the reporting requirements of the WFD and summarises existing reporting requirements. It goes on to discuss the purposes of reporting and the uses to which information supplied can be put. Opportunities for the sharing of data and information are identified and the principles of a shared and accessible data and information management system are outlined and the potential for coherence with other reporting mechanisms is discussed.

1.1 The Water Framework Directive

As stated above, the WFD introduces a new approach to data and information collection and reporting. The reporting requirements of the WFD are shown in Table 1.1. The WFD will ultimately repeal a number of existing reporting requirements under the SRD (see Section 1.2.1 and Table 1.2), but in the short term Member States will be required to report under both Directives. In addition four 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.

To support the coherent implementation of the WFD, the Common Implementation Strategy (CIS) was agreed by the European Commission and Member States. The CIS has allowed for the development of further guidance by Member States' experts on how the WFD should be implemented covering all articles of the Directive from the assessment of status through to reporting. Many of the guidance documents produced to date make recommendations relating to the information that should be reported and how. However, work will be required to ensure that the guidance is consistent, for example, in respect to spatial scale.

Current reporting mechanisms of information from Member States relating to the implementation of Directives do not always allow for the effective dissemination of information (see also Section 1.2.1). The WFD and CIS present a clear opportunity for all organisations involved in reporting in Europe to work together to develop an effective reporting mechanism for water. The development of such a mechanism should draw on the experience of existing reporting mechanisms and guidelines.

Table 1.1 Reporting obligations of the WFD

Subject	Article	Responsibility	To	Report due date	Frequency/ Review
List of competent authorities	3.8/Annex I	MS	COM	22/06/04	3 months after change
Characterisation of River Basin District (RBD) human activity/ economic analysis	5, 15.2,	MS	COM	22/03/05	22/12/13, every 6 years thereafter
Monitoring programmes	8, 15.2	MS	COM	22/03/07 ⁽¹⁾	
River Basin Management Plans (RBMP)	15.1	MS	COM	22/03/10 ⁽¹⁾	22/12/15, every 6 years thereafter
Register of Protected Areas	6	MS	COM	22/03/10 ⁽²⁾	22/12/15, every 6 years thereafter
Progress on implementation of programme of measures	11, 15.3	MS	COM	Within 3 years of publication of RBMP	
Implementation	18.1, 18.2	COM	EP C	22/12/12	Every 6 years
Progress by Member States' implementation	18.3	COM	EP C	22/12/06 ⁽³⁾ 22/12/08 ⁽⁴⁾	
Interim reports on implementation of programme of measures	18.4	COM	EP C	22/12/15	Every 6 years

Notes:

C - Council
COM – Commission
EP – European Parliament
MS – Member States

1. Latest date. Report to be submitted within 3 months of completion
2. To be included in report of RBMP
3. Report on characterisation and economic analysis
4. Report on monitoring programmes

Table 1.2 Water related reporting requirements

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)

1.2 Current reporting on water in Europe

1.2.1 European Commission

EU Member States are required to report to the European Commission on European Council Directives and Decisions. The SRD and its 1992 and 1995 Decisions require Member States to report information on 10 Directives¹ (Appendix A). In addition, Member States are required to report information on the Urban Waste Water Treatment (UWWT) and Nitrates Directives for which questionnaires have been developed separately to the SRD but using the same procedure. An assessment of the information requested (Nixon *et al*, 2000) divided the information gathered from the Member States completing the questionnaires into four categories:

1. Legal transposition of the WFD (i.e. has the WFD been transposed into Member States' legislation?);
2. Compliance with the provisions of the WFD (e.g. does Drinking Water quality meet the requirements of the Drinking Water Directive?);
3. Practical implementation of the WFD (i.e. how have the requirements of the Directive been implemented in the Member States?); and
4. Effectiveness of the WFD (i.e. is the WFD achieving what was intended when it was adopted?).

¹ Daughter Directives to Directive 76/464/EEC are counted as one Directive.

Nixon *et al* (2000) found that the majority of the questions asked provided information to the Commission to assess the degree of compliance with the Directive in question. A number of questions also provided information on the practical implementation of the Directives.

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.

Eurostat is the Statistical Office of the European Communities with the task of providing the EU with statistics at the European level that enable comparisons between countries and regions. The supply of these statistics to other DGs and other European Institutions allows the definition, implementation and analysis of Community policies. The role of Eurostat was defined and confirmed in a Council Regulation in 1997, which also reaffirmed the need for those involved in Community statistics to follow fundamental principles in ensuring that statistics are scientifically independent, transparent, impartial, reliable, pertinent and cost-effective. Eurostat receives nationally collected data on water resources, use and treatment, through joint questionnaires with the Organisation for Economic Co-operation and Development (OECD) and in collaboration with the United Nations (UN) statistical service. This data is supplied by countries on a voluntary basis. There is also a questionnaire on regional (NUTS2) level and initiatives to collect data at catchment level. These data are compiled and assessed for use by a wide range of external customers and also in Eurostat products such as the ‘Statistics in Focus’ series. 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 GISCO section of Eurostat acts as a reference centre on geographic information and manages the Geographic Information System of the European Commission.

The Joint Research Centre (JRC) Directorate-General is an integral part of the European Commission. It provides independent scientific and technical advice to the Commission, the European Parliament, the Council of Ministers and EU Member States in support of EU policies. Most of the research relevant for the environment is carried out by the institute for Environment and Sustainability, whose mission is to provide scientific and technical support to EU policies for the protection of the environment contributing to sustainable development in Europe. In this context many relevant data are gathered and particular expertise from the JRC is used to support reporting activities, particularly in relation to geographical information systems (GIS).

1.2.2 European Environment Agency

The European Environmental Agency’s (EEA) mission is to deliver timely, targeted, relevant and reliable 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 EEA is able to carry out its mission by making use of 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's activities also involve co-operation with other international organisations such as Marine Conventions. Through its EIONET, the EEA is able to produce timely, targeted, relevant, reliable and comparable information on Europe's environment.

In terms of water, the EEA has established EUROWATERNET as the process by which it obtains on a voluntary basis much of the information it requires on the pressures on, state of, and impacts on the quality and quantity of water across the whole of Europe. EUROWATERNET 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 EUROWATERNET data flows on biological and hydromorphological indicators. Validated data arising from EUROWATERNET is now available to the public via the EEA's web page². The EEA supplements, when necessary, EUROWATERNET with information and data from other international and national sources such as Marine Conventions, national State of Environment Reports, Food and Agricultural Organisation (FAO), Eurostat, JRC, and the European Commission DG Environment.

1.2.3 International Commissions

In addition to the European Commission and EEA, Member States also report on a voluntary basis to the geographically appropriate International Commissions responsible for the administrations of Conventions on the Seas (e.g. OSPAR, HELCOM and MEDPOL) and Rivers (e.g. Rhine, Danube and Elbe). The following paragraphs provide a brief, non-exhaustive, overview of key reporting activities in some international conventions

Within OSPAR the Strategy on a Joint Assessment and Monitoring Programme (JAMP) is the framework that covers all reporting, monitoring and assessment, including a programme on marine monitoring. Reporting is carried out on the implementation of adopted PARCOM and OSPAR Decisions and Recommendations on specific substances or groups of substances following an agreed reporting procedure and adopted reporting formats. This procedure is currently under revision to improve the efficiency and timing of reporting to take non-OSPAR reporting requirements into account. Contracting Parties report annually on riverine input and direct discharges (RID) to estuaries and coastal waters on selected pollutants to Convention waters using standard methodologies.

In 2000, OSPAR adopted the Harmonised Quantification and Reporting Procedures for Nutrients (HARP guidelines) on a trial basis. They should serve as a tool for OSPAR Contracting Parties to report, in a harmonised manner, their different

² <http://dataservice.eea.eu.int/dataservice/>

commitments, present or future, with regard to nutrients under the OSPAR Convention, in particular the “Strategy to Combat Eutrophication”. The HARP guidelines should also enable Contracting Parties to quantify and report in a harmonised and transparent way on nitrogen and phosphorus discharges and losses from point and diffuse sources into inland surface waters and nitrogen and phosphorus inputs into the OSPAR Maritime Area as appropriate. The nine Guidelines are listed in Appendix B. The further development of the Guideline on Diffuse losses awaits results from the international intercomparison of methods (“Towards European Harmonised Procedures for Quantification of Nutrient Losses from Diffuse Sources”-EUROHARP, EC-5FP research project).

Within the framework of the North Sea Ministerial conferences, a harmonised reporting system on hazardous substances (HARP_HAZ) has been developed and used. The system covers emissions to air and discharges and losses to water from both point and diffuse sources. It is the starting point for the development of an OSPAR reporting system on hazardous substances that are subject to a cessation target. The first step of the further development of the HARP_HAZ system was the adoption in 2003 of a guidance document on a common framework for the establishment of the monitoring strategies for each of the substances and substance groups on the OSPAR list of chemicals for priority action.

Within HELCOM the Co-operative Monitoring in the Baltic Marine Environment (COMBINE) is the basis for environmental monitoring, reporting and assessment activities. The aim is to identify and quantify the effects of anthropogenic discharges/activities in the Baltic Sea, in the context of the natural variations in the system, and to identify and quantify the changes in the environment as a result of regulatory actions. The COMBINE programme covers the open sea and coastal waters and for hydrographic and hydrochemical measurement, contaminants, effects of contaminants and radioactive substances. For all these annual reporting is required. In addition, HELCOM has specific monitoring programmes for the estimation of waterborne pollution load (PLC-water, covering the whole Baltic Sea catchment area) and airborne pollution load (PLC-air) to the Baltic Sea. Harmonised methodologies for measurements, quality assurance, calculations and reporting of data have been agreed.

Furthermore, reporting is carried out on the national implementation of adopted HELCOM Recommendations on preventative and reduction measures for specific substances or groups of substances every third year using agreed reporting formats. HELCOM has contracted ICES for the services in handling marine data.

Also in the context of the Barcelona Convention, a number of data gathering and reporting obligations exist in particular in relation to the Mediterranean Action Plan (MEDPOL).

Within the Rhine Commission framework there is regular reporting on the 50/70% reduction target on inputs of 45 Priority Substances. The Rhine Commission has a harmonised reporting procedure for quantifying the diffuse sources of a number of substances to be used by International Commission for Protection of the Rhine (ICPR)-countries. Every relevant point source of these substances has to be notified, but the inputs from diffuse sources are much more significant in the Rhine basin and

quantified according to a harmonised procedure. The pollution of the river Rhine by PCBs from sediments older than 10 years is inventoried by a Working Group. The substances are selected by means of provisional quality targets and concentrations of the relevant substances in water, suspended matter in sediments and fish.

The International Commission for the Protection of the River Danube (ICPDR) has set up a Joint Action Programme which includes regular reporting. In this frame, the results of the trans-national monitoring network covering the Danube and its main tributaries are reported on an annual basis

1.3 Effectiveness of current reporting

The current mandatory reporting obligations can be grouped into 2 categories:

1. Those originating from the Bathing Water³, UWWT, Nitrates and Drinking Water Directives and the Exchange of Information Decision that have their own reporting schemes. The reports produced serve their information and enforcement purposes. While several of these reports are of public interest, their preparation is a somewhat time and resource consuming process.
2. The reporting obligations on the Directives on Surface Waters (including the Sampling and Analysis Daughter Directive), Freshwater Fish, Shellfish Waters and Groundwater Directives have been subject to discussions on their usefulness by Member States, the Commission and the EEA. 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 as to which waters they designate (e.g. Freshwater Fish and Shellfish Waters Directives) or do not establish environmental objectives and reporting and have been superseded by more recent legislation (e.g. the Groundwater and Landfill Directives). Similar considerations also apply to reporting under the Dangerous Substances Directive and its Daughter Directives.

In addition to questions with respect to the usefulness of the information collected, there are also questions relating the mechanism of collection. Member States have submitted three returns under the obligations of the SRD, the last being due in September 2002. Two of the returns have been processed and analysed covering the years 1993-95 and 1996-98, respectively. A number of practical obstacles were encountered in this process in both cases, namely;

- Information was often not submitted or was incomplete;
- The format of the information provided varied (e.g. electronic vs paper copy)⁴ and often did not follow the format of the questionnaires in the 1995 Decision;

³ Although the Bathing Water Directive is covered by the SRD, reporting takes place annually and independently of the other Directives encompassed by the SRD.

⁴ 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.

- 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.

Examples of the specific problems encountered are provided in Appendix C.

Data are sent to Eurostat on a voluntary basis through the joint Eurostat/OECD questionnaire. The 2002 version has been adapted to the definitions of the WFD and to the UWWT Directive. The questionnaire is fully electronic and validated data is made available through the NewCronos data base. Efforts are now concentrating on improving data availability and data quality. A manual for water data collection is currently in preparation. As stated in Section 1.1, reporting to EUROWATERNET is not a statutory obligation. 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 Repository, 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. The data are held in Waterbase, which was made available on-line to the public via the internet during 2003-04.

The OSPAR RID data are reported on spreadsheets and stored as such by OSPAR. OSPAR has contracted ICES for their services in handling of marine data from the national monitoring programmes related to OSPAR obligations. ICES policy of only accepting datasets in the required format and with all data fields completed has led to a rather incomplete database with many national and temporal gaps in the data sets and data series. Accessibility of ICES data is also an issue (there is often a 10 year moratorium for the public release of some data sets which makes them useless when they become available).

2. PURPOSES FOR REPORTING

Member States collect and report similar or identical information to a number of different European and International bodies. However, uses to which the information is put differs between the organisations, and indeed, in some cases the information provided may not meet the needs of the organisation. If an integrated system of reporting is to be developed it is important to first identify the data that is required by each stakeholder (i.e. the “user needs”). This could also present opportunities for rationalising the information collected and thus reduce the reporting burden on Member States. This section describes the reasons why a number of organisations are collecting information and the type of information required.

There are three distinct, but overlapping, requirements for information to be gathered from Member States to EU and International Organisations:

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; and
3. Using information on implementation and trends to assess the effects and effectiveness (including cost-efficiency) of policy, both before and after measures have been introduced.

2.1 European Commission requirements

The main reason the Commission requires information to be supplied is to enable it to check compliance with EU legislation (type 1 information). In order to be able to do this, it requires information that enables it to:

- Ensure data are plausible;
- Ensure data are consistent;
- Conduct cross-references and cross-checks on data (especially in International River Basins); and
- Ensure the Directive has been implemented in a harmonised way.

The Commission also requires type 2 and 3 information to allow it to determine whether existing policies are adequately protecting the environment and to identify where further measures may be needed. Eurostat requires type 2 data to conduct the trend analysis its remit requires.

For data to meet the Commission’s needs, it must be collected and reported in a clear and consistent way by all Member States. The information can be aggregated and supplied at a smaller scale than may be required at, for example Member State level. However, the Commission may need access to more detailed information in cases

where compliance is not clear. Any additional request for data and information should be justified (i.e. it should be clear for what purpose the additional data is needed) and proportionate (i.e. the cost for providing the additional information should be reasonable).

In case the European Commission intends to publish the conclusions resulting from the compliance check, these should be communicated to the Member States in advance of the publication.

Eurostat acts as a reference centre for geographical information in the European Commission and manages the geographical reference database of the European Commission. In doing so it provides the European institutions and the governments of the Member States with the information needed to implement, monitor and evaluate Community policies and to disseminate statistics to the European public and enterprises and to all economic and social agents involved in decision making. In order to do this it aims to implement a set of standards, methods and organisational structures which allow comparable, reliable and relevant statistics to be produced throughout the European Community, to:

- Endeavour to improve the statistical systems of the Member States and support the developing countries as well as the countries moving towards a market economy; and,
- Ensure standardisation and harmonisation in the geographical information exchange process between Member States and Eurostat.

In the context of its mission, Eurostat collects environmental data related to economic activities, such as waste management, water use and treatment, pesticide and fertiliser use, and environmental expenditures. Most of these data collections are co-ordinated with OECD and UN in order to assure world-wide compatibility.

The link to socio-economic statistics is established through sustainability indicators and through environmental accounting. This requires compatibility of environmental data with economic data through the use of common classifications such as the international NACE/ISIC classifications for business sectors.

Eurostat needs on water data are summarised in the joint EEAs/European Topic Centre/Eurostat/OECD Questionnaire on Inland Waters. The questionnaire was last revised in 2001 through a task force including members from various countries, OECD and ETC-Water and represents the current needs. It contains the most relevant variables on water resources, water use and waste water treatment. Additional data requests might come through the water accounts, currently in discussion in the London group for environmental accounting. Needs for regional data are defined in the Eurostat regional questionnaire. Geo-referenced information will be helpful in the future to map Eurostat driving forces data, usually available for administrative regions, with water data collected on water basin or geo-referenced level.

Eurostat needs to ensure that the geographical data which is transferred from the Member States to the European Commission conforms to the standards set up by the interservice group of the European Commission on geographical information (COGI).

It should be possible to integrate the geographical data into the GIS of the European Commission and it has to be assured that the geographical data can be made available to other Commission services.

2.2 EEA requirements

Articles 2(ii - vi) of the Council Regulation establishing the EEA (EEC/1210/90) state that the tasks of the EEA shall be:

- *To provide the Community and the Member States with the objective information necessary for framing and implementing sound and effective environmental policies; to that end, in particular to provide the Commission with the information that it needs to be able to carry out successfully its tasks of identifying, preparing and evaluating measures and legislation in the field of the environment;*
- *To assist the monitoring of environmental measures through appropriate support for reporting requirements (including through involvement in the development of questionnaires, the processing of reports from Member States and the distribution of results), in accordance with its multiannual work programme and with the aim of co-ordinating reporting;*
- *To advise individual Member States, upon their request and where this is consistent with the Agency's annual work programme, on the development, establishment and expansion of their systems for the monitoring of environmental measures, provided such activities do not endanger the fulfilment of the other tasks established by this Article. Such advice may also include peer reviews by experts at the specific request of Member States;*
- *To record, collate and assess data on the state of the environment, to draw up expert reports on the quality, sensitivity and pressures on the environment within the territory of the Community, to provide uniform assessment criteria for environmental data to be applied in all Member States, to develop further and maintain a reference centre of information on the environment. The Commission shall use this information in its task of ensuring the implementation of Community legislation on the environment;*
- *To help ensure that environmental data at European level are comparable and, if necessary, to encourage by appropriate means improved harmonization of methods of measurement;*
- *To promote the incorporation of European environmental information into international environment monitoring programmes such as those established by the United Nations and its specialized agencies;*
- *To publish a report on the state of, trends in and prospects for the environment every five years, supplemented by indicator reports focusing upon specific issues.*

The basis of EEA reporting is the DPSIR Framework (Appendix D). Thus information and indicators are required on the **D**riving forces resulting in **P**ressures on the environment that affect its **S**tate and potentially causing an **I**mpact (degradation).

Responses would include measures and policies to reduce the pressures and hence improve state and reduce impact (essentially type 2 and 3 information).

The EEA's need for information on pressures, state and impact must take into account:

- Spatial resolution required (aggregated regional, national, sea areas, catchments, sub-catchments, water bodies (e.g. transitional water bodies, groundwater bodies, different sized (including small) rivers and lakes));
- Temporal resolution (yearly indicator reporting of indicators based on data and information that is no more than 2 years old);
- Sectoral resolution (apportionment) (e.g. point and diffuse sources of pollutants, and water abstractions and demand).

The EEA reports are based on policy-relevant indicators. To that end the EEA is developing an integrated core set of indicators incorporating six environmental themes (including water) and five socio-economic sectors. Over recent years the EEA has produced the annual Environmental Signals Reports and sectoral reports such as the Transport and Environment Reporting Mechanism (TERM). The spatial coverage of reports also varies from the EU (e.g. Environment in the European Union at the Turn of the Century) to pan-European reports covering EU, EFTA, Accession countries and NIS. (e.g. the Kiev report).

2.3 Requirements of International Conventions

International conventions have reporting requirements reflecting the purpose/objectives of their respective organisations. In most cases, the reporting requirements are based on political agreements to do so, but non-compliance has no legal consequences for Contracting Parties. Efforts towards harmonised quantification and reporting represent a prioritised topic in several international organisations over the years (see also Section 1.2.3). Some of the results/experiences (e.g. HARP Guidelines and OSPAR marine monitoring guidelines) should be highly relevant when discussing the new reporting requirements for the WFD or improved reporting on other EU Directives (e.g. Nitrates Directive). A more detailed analysis of the existing reporting requirements and the potential for their integration in a wider system as proposed in this concept paper will be carried out at a later stage.

2.4 Member States

Member States collect information for a number of purposes, including:

- To fulfil obligations to the Commission and other EU and international bodies;
- To provide themselves with information on the state and trends in the quality and quantity of their water resources;

- To enable assessment of compliance with national legislation (e.g. achievement of quality standards for List II substances; to assess compliance with emission limit values);
- To assess the effectiveness of policies implemented and to identify where additional measures may be required;
- To target resources for environmental improvements; and
- To provide information to the general public.

The above list suggests that Member States therefore require the same types of information as the European and International bodies, but it is required in more detail and at a smaller geographic scale. Indeed, different levels of information are likely to be required depending on the administrative level involved (e.g. national vs regional vs local).

2.5 General public

Over recent years Member States have been required to disseminate more information on environmental quality to the general public (e.g. through the recently adopted Aarhus Convention). The information that must be provided to the public ranges from raw data extracted from registers and databases through to reports on state of the environment. However, as Stec and Casey-Lefkowitz (2000) point out, there is a world of difference between making information available to the public and making it accessible in a user-friendly form that reflects the needs and concerns of the public. Not only must information be made available to the public, but the public also needs to be informed as to where and how that information can be obtained and the information tailored such that the public interest is kept alive. The WFD builds on this and requires a greater level of public participation in water management than ever before.

It should be acknowledged that Member States have an official and legally binding responsibility towards the European Commission only for reporting their data. In the light of the growing transparency and the obligations under the Aarhus Convention, these data will be made publicly available. It is obvious that neither the Commission nor the Member States have obligations or responsibilities towards the use of these data by third parties.

3. OPPORTUNITIES FOR INFORMATION AND DATA SHARING (COMMON VISION)

Sections 1 and 2 have illustrated the varied requirements for reporting information on water at a European level. Work undertaken by the EEA has demonstrated that countries often have to report what appears to be similar information to a number of different organisations. Some commitments for reporting are legally binding while others are moral. Quite often the former will take precedence over the latter because of resource constraints in a Member State. It is also clear that many of the questions asked, or requests for information, are badly formulated leading to incomplete answers and to incomparable information. This is partly because the questions have been agreed at a political rather than a technical level and partly because Directives are interpreted and implemented differently by Member States.

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.

The European Commission (DG Environment, JRC and Eurostat) and the EEA have agreed that there is a need to take advantage of new technologies and to move together towards a system where up-to-date, required and useful information is made available via internet sites. Eurostat has collected data electronically since 1996 and makes results available through the NewCronos data base. Currently, Eurostat extends its free dissemination in order to make useful data available free of charge to all interested users. The EEA is using electronic technologies to collect basic comparable water data (based on EUROWATERNET guidelines) from Member States and to make useful data and assessments, based on indicators, available free of charge to the general public on the internet. Several Member States have also made good progress in making their national databases available via the internet and there is an opportunity to build on these experiences further to serve the needs of reporting on water under the WFD and further multiple needs for environmental reporting in the future.

A common vision of the major players and drivers involved in the further development of principles for the collection and exchange of information and the identification of reporting needs is displayed in Figure 3.1.

The **starting point** is the Member State’s monitoring and data collection system. This network should be designed on the basis of policy objectives and can serve different purposes and the objectives of several Directives both nationally and internationally.

The **next and intermediate level** is related to data generated through monitoring. Monitoring generates data which need to be transformed into information that is useful for the various users (i.e. the Commission, the EEA, Member States themselves, the public and international organisations). The relevant information needs of the various users would be designed on the basis of common assessment purposes and users. The INSPIRE (electronic based reporting, European spatial data infrastructure) initiative, which addresses all environment media (including water)

and is aiming at developing the necessary infrastructure to allow a harmonised access to environmental data should also play a role in the process.

The **third level** concerns the objectives of the monitoring/reporting and the integrity of its processes and products. As discussed in Section 2, the reporting of data and information by countries at the EU level can be categorised according to three purposes:

1. To check compliance of EU legislation;
2. To assess state and trends in the environment in order to identify changes; and
3. To evaluate policy effects and effectiveness (including cost efficiency).

These three purposes are interrelated in the sense that the same data/information may be used for different purposes. Based on the same core set of information different analysis may be foreseen, such as:

- For compliance checking, there will be strict legal objectives against which checking is done through the Member States and with the RBMP being a major tool providing the basis;
- For establishing causality across the DPSIR chain (using indicators) in its assessments as well as for producing prospective analyses there is the desire to use the available statistics/information (which might require access to the lower aggregated regional information/data);
- For prospective analysis, models would also be fed with information on state of action in countries on the measures, plans, strategies and investments available through the RBMPs.

Whilst the last two purposes might be common to all information users identified, the first will be the sole responsibility of the Commission.

The ultimate aim of the proposed system is to get a true appreciation of the real situation of the environment at the European level and to facilitate the use of information supplied for the legal obligations of compliance checking for use in other environmental reporting systems. This will be achieved through transparent and manageable procedures where data quality, treatment, delivery, access and use are clearly addressed. The scheme also indicates where the responsibilities of the Commission and Member States lie. Ultimately, proper sharing of information should lead to Member States being able to operate consolidated monitoring programmes that can provide the correct data and information for a number of different purposes, including those of the Member States themselves.

In conclusion, the European Commission (DG ENV, Eurostat and JRC) and the EEA are committed to continue the development of a new, comprehensive and shared European data and information management system for water, including river basins, following a participatory approach towards the Member States, in order to have it operational as soon as possible and to implement it, including all the various elements set out in this document, by 2010.

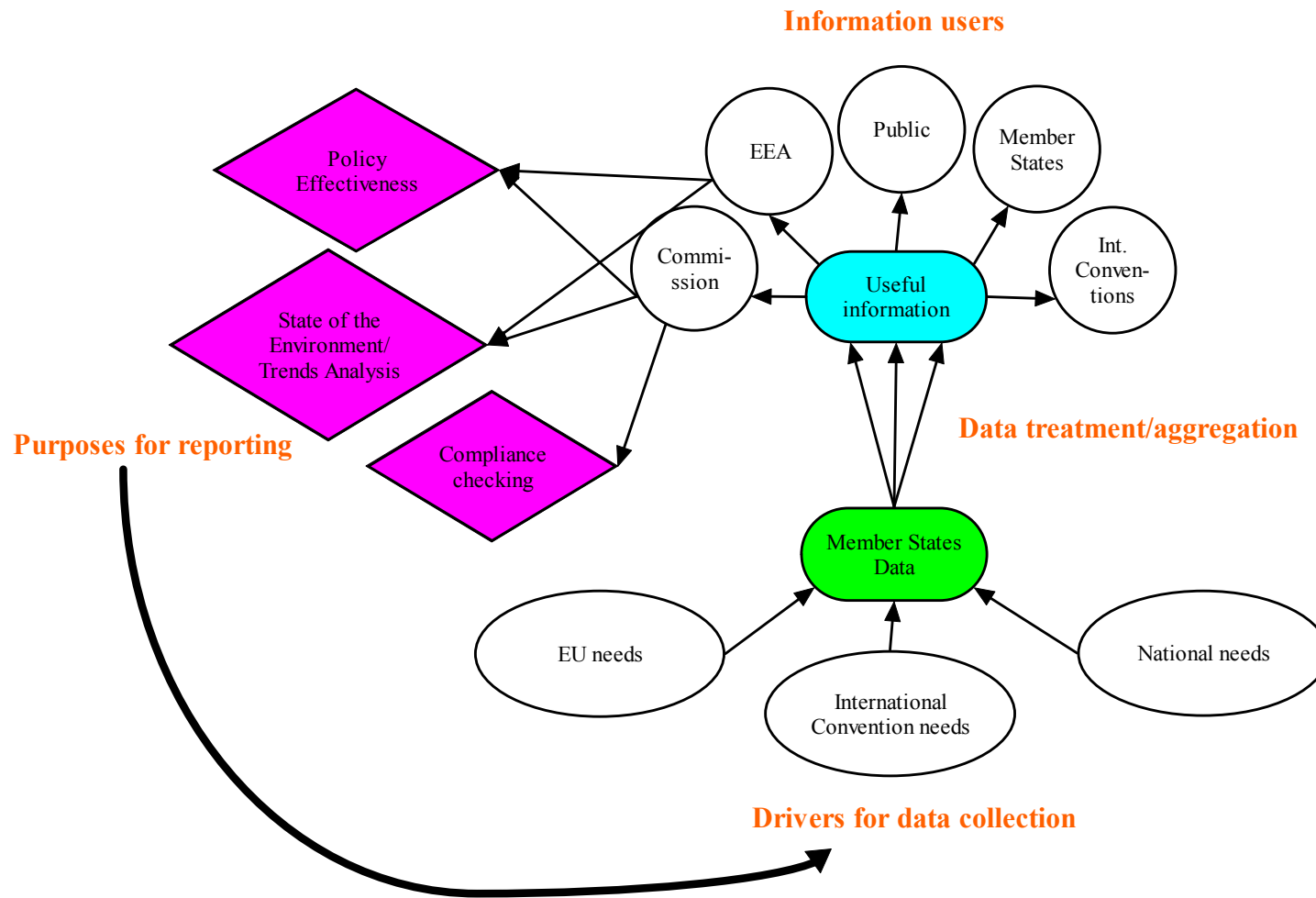


Figure 3.1 Common Vision

4. THE PRINCIPLES FOR A SHARED WATER INFORMATION SYSTEM FOR EUROPE (WISE)

In developing the principles on which a Shared Water Information System for Europe (WISE) can be developed a number of different questions need to be considered:

- What information must be reported and to whom?
- What other information do Member States need to make available and to whom?
- What will the information be used for?
- How should the information be aggregated?
- At what scale should the information be reported?
- Are there common definitions and standards for reporting data?

4.1 Information reported and its use

As described in Section 2 the reporting of data and information by Member States can be categorised according to three types or purposes:

- **Purpose 1:** Checking compliance and implementation of EU legislation;
- **Purpose 2:** Assessing state and trends for the environment and the associated pressures, impacts and socio-economic driving forces that either cause or result from changes;
- **Purpose 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.

Table 4.1 summarises the information currently collected and its uses. It addresses not only what is to be reported under legislation (e.g. the SRD) but also under voluntary mechanisms such as those run by Eurostat and the EEA primarily on State of the Environment data collection. It should be noted that data and information for the purpose of compliance checking are required according to the existing EU legislation on water and are for the sole use of the Commission. However, the Commission is not solely interested in compliance checking but also by information that will be collected for the two other purposes through the WISE..

Table 4.1 Different reporting types

	Purpose 1		Purpose 2	Purpose 3
Issues/ Reporting types	Legal transposition	Practical compliance and implementation	State of the Environment data for trends assessment	Evaluation of policy effectiveness
Purpose	Provide Commission with sufficient information to enable an assessment of the correct transposition of European Union legislation into national law.	Inform Commission on compliance with technical standards/ targets, in particular exceedances/non-attainment. Also details of actions taken by Member States to comply with & implement European Union directives.	To gather data for integrated assessment of what is happening to the environment, why it is happening and the effect policy has on changing trends. Data can be both over time and space.	Analyse policy measures' impact on environment and human health and people's behaviour/ judge whether objectives have been achieved (ex-post)/ compare costs/benefits between different policy measures/ support evolution of new policies (ex-ante).
Types of info collected	Details of national implementing legislation. More than one set of details maybe relevant for Member States with federal/ regionalised structures. This can be a once-only exercise but updates may be necessary as national legislation evolves.	Quantitative data enabling checking of compliance with quantitative objectives set at the European Union level and national limit values. Such data tend to refer to what is happening in a particular place at a particular time (data from a sampling point on a water stretch), with limited information provided on long-term trends. Qualitative descriptions of national measures - plans, strategies, investments – pursuant to articles of legal text.	Measurement/survey/administrative/ spatial data and modelling and observations linked to policy objectives and targets. The quantitative data reported here differ from that reported under purpose 1 in that what is needed is more comprehensive both across the Driving Forces, Pressures, State, Impacts chain and in terms of geographical coverage. Data on long term consistent trends (both temporal and spatial) are also sought rather than data form a particular point in space and time as often required for compliance checking.	Qualitative information on policy implementation similar to that collected under purpose 1. Also information on best practices and institutional arrangements to feed models and facilitate shared policy learning between Member States. Quantitative information across the Driving Forces, Pressures, State, Impacts chain as collected under purpose 2 to feed models and provide the basis for producing outlooks and prospective analysis against different policy scenarios.
Actors involved	Legal experts in Member States and European Union. Policy makers in Member States.	EPA inspectors/ scientists/ policy officials in Member States. Policy makers in Commission DG Technical Units.	Statisticians, environmental scientists, NGO volunteers, geographers, spatial assessment experts.	Policy makers, academics, economists, social scientists, environmental scientists, statisticians.

	Purpose 1		Purpose 2	Purpose 3
Use of information	To be checked by DGENV legal experts and inserted into Celex database and Commission reports on implementation. Also through the 3-yearly reports under the SRD. To provide the basis for infringement proceedings against countries in European Court of Justice.	By technical units of Commission to support implementation and enforcement of legislation. Also used as the basis for infringement proceedings by the Commission against countries. In this respect it is important to be transparent on the use of data for this purpose against the possible use of the same data for purposes 2 and 3. Otherwise countries will be reluctant to provide data for purpose 2 if they believe it will be used for purpose 1. Summary results disseminated through 3 yearly reports (SRD) and other Commission reports.	By EEA, EUROSTAT and international organisations (OECD, Conventions) to produce integrated environmental assessments such as the 5-yearly state and outlook report of the EEA; indicator based reports such as EEA Environment Signals, Eurostat Pressure Indices, sectoral reporting mechanisms (TERM, EERM); other reports such as DGENV's annual report and the synthesis report under the European Union Sustainable Development Strategy. Data underpinning these assessments are also disseminated via EEA/Eurostat electronic data warehouses and GIS-based assessment systems; and, Eurostat statistical yearbooks and pocketbooks.	For DGENV/EEA/Member States to undertake evaluation of existing European Union (ex-post) and new policies (ex-ante) using scenarios and models. Existing policies include the Nitrates Directive while new policies include the proposed thematic strategies under the 6thEAP and CAFÉ programme. For Member States to enhance shared policy learning through sharing information on best practices and technologies and implementation costs.
Methodologies and tools	Not applicable due to differing approaches taken in Member States to developing national laws, hence standardisation using tools and methods not desirable.	Mandatory questionnaires and templates under the SRD, or other legislation. Usually brief questions, with little additional guidance, both on quantitative data for checking compliance and on the qualitative information to be reported on measures.	Generally voluntary data collections with accompanying well-defined structures, guidance and tools. E.g. Data structures - Eurostat JQ Guidelines - Eurowaternet Classifications - CORINAIR Frameworks – Environmental Accounts Exchange formats – XML.	Scenarios and models for prospective analysis Cost benefit analysis tools to underpin analysis of environmental/economic interrelationships. Shared policy-learning tools such as use of the WWW.
Quality aspects	High reliability Medium timeliness Low comparability Low accessibility.	Medium reliability Low comparability Medium timeliness.	High to medium reliability Medium timeliness Medium comparability High accessibility.	High to medium reliability Medium timeliness Medium comparability Low accessibility.

An analysis of this table shows that:

- Some of the information provided by countries for practical implementation, assessment and State of the Environment reporting are also relevant to effectiveness evaluation. Hence it is important that these inter-linkages are recognised in order to design an efficient reporting system;
- For quantitative data there are clear overlaps between the data needed for compliance checking and for overall assessment of the state of the environment. However, a broader range of data, both in spatial and temporal terms, is needed for the latter purpose to enable wider monitoring of progress and assessment of the effects of policies.

4.2 Data use

It is also important to be clear on the purpose for which the data are to be used since countries will be reluctant to report data identified for purpose 2 if this is then also used for purpose 1 and hence as a possible basis for infringement proceedings. There are also overlaps here with the information needs of Member States. Member States have an obligation to make information on the environment widely available through legal instruments such as the Aarhus Convention and recently adopted EU Regulation on Access to Environmental information and the requirements of the WFD relating to public participation. A well designed Community data and information management system for water should not only be designed to facilitate the reporting of information to the European Commission and other bodies, but also to allow the effective dissemination of information from Member States to all stakeholders.

The wide range of different purposes for reporting and actors involved suggest there may be scope for separating some components of the new reporting system so as to minimise confusion, maximise response rates, and maximise transparency. At the same time, it is vital to assure that separation does not overlook inter-linkages.

4.3 Aggregation of information and scale

In general, information (e.g. monitoring data) is collected by Member States at a highly disaggregated level. Although such information is of use to the Member State, for example, in determining whether a short-term pollution incident has occurred, it is of little use to the Commission, other relevant bodies or the public. For the information to be meaningful it must be manipulated with statistical techniques to give more appropriate results (e.g. to be presented as an annual average). The level of aggregation of data will need to be determined depending on the use to which the resulting information will be put.

As for aggregation of data, the scale at which information should be reported will vary depending on the use to which it will be put. For example, the general public will be interested in information at a local, regional or national scale, whilst information reported to the European Commission should be at a national, river basin or water body scale. Indeed, for the WFD different information will need to be reported at different scales, for example, information on transposition and competent authorities should be reported at a national scale, whilst the results of characterisation and economic analysis should be reported at the river basin or water body scale. The European Commission is also required to report the information at a higher, European scale. In many countries the processing of monitoring and assessment activities and the reporting requirements for national purposes and international mandatory and voluntary reporting requirements are different and are therefore treated distinctly. The harmonisation of aggregation requirements at an international level has been identified as a basic requirement to meet Member States' wishes for streamlining information exchange.

4.4 Development of a Water Information System for Europe (WISE)

The main reporting obligations of the WFD are discussed in Section 1. Although the Directive itself lays down general reporting requirements, specific templates for reporting have been included in some of the guidance documents (e.g. WFD CIS Guidance document No. 1 and WFD CIS Guidance document No. 3) developed under the CIS.

The challenge is to design an efficient system that recognises the many and varied needs of the users, makes best use of existing information in Member States, respects principles already established (e.g. under the Aarhus convention) and takes account of those being developed under other initiatives (e.g. INSPIRE). The INSPIRE principles, its recognition of the subsidiarity principle and the stepwise approach make this initiative and its legal frame a promising reference for short and medium term development of a WISE for WFD reporting.

The system has to be flexible, easy to keep updated and manageable in terms of human resources. Descriptive (textual data - documents, metadata; figures, graphs, maps, etc.), numerical and spatial data have to be integrated.

Crucial for the development and acceptance of the WISE will be:

- As outlined in Section 2 the identification and definition of the data required by the EC and each stakeholder;
- The specification of the data needed;
- The definition of the degree of required flexibility (a high degree of flexibility means to have detailed data and to have a highly complex system (provided that data records are kept simple in the database). This might reduce the performance of the system in the sense of speed, increase the error rate and, what is most important, make the use of the system more complicated. However, many different user needs might be satisfied;
- The definition of standards for data exchange and the data exchange mechanism from Member States to the European Commission (data specifications, templates, interfaces, etc.);
- The transformation of data (Member States) to standards defined for reporting under the WFD;
- The access of different users to different parts of the information and data (safety precautions, access rights, restrictions in data transmission, non disclosure agreements, etc.).

Furthermore, the following stages, amongst others, will be important:

- The development of data entry/validation routines;
- The development of templates to query the data according to different user needs;
- The data transformation according to different user needs (e.g. data aggregation);

- The assurance of traceability in all data transfers and integrity of transferred data through the appropriate use of security and encryption;
- The development of tools or integration of existing tools for data analysis;
- The link of numerical and descriptive data to spatial data where appropriate;
- The data visualisation in form of tables, graphs and maps;
- The development of reporting tools; and
- The development of interfaces to other water related Directives.

The level of detail of the data required by the European Commission has to be balanced carefully. A high level of detail means an enormous amount of data. This will make data handling very difficult and error-prone. For example, if Member States provide data for rivers with a catchment area larger than 10 km², GIS systems might come to their limit if these data are put together to one European wide layer and analysed. On the other hand, if data are aggregated to a very high level not all user needs may be satisfied.

The GIS Working Group for the CIS has already considered many of the issues outlined above with respect to geographic information in preparing its Guidance Document (WFD CIS Guidance Document No. 9). In respect of the exchange of data of GIS layers, the Document states that there are two technical possibilities:

“One option is to transfer them into a centralised system, where they will be stored, quality checked and analysed. The other option is to leave them at their place of origin (i.e. to store the data sets locally in each river basin district or country) and to guarantee access to these data through common standards and protocols. Whilst the first option is easier to implement, the second option will reduce the burden of transferring data. However, it also asks for detailed specifications for the set-up and maintenance of a distributed system which is more complicated.”

The same options apply to all Member States reporting under the WFD. Working Group 3.1 concluded that the preferred long-term option would be for a decentralised system, but that given the short timescales for the first reports to be submitted, there is insufficient time to develop such a system and that initial reporting should be carried out through a central system. For either option, it is proposed that internet technology be the main vehicle for the systems to operate.

4.5 From a concept to a workable system – Next steps

The concepts presented above will be further developed through agreed “Guidance Documents” that will address the questions listed under Section 4 and provide the necessary answers.

One document will cover the issue of data and information to be reported in the frame of checking compliance and implementation of the EU water legislation. The initial priority will be the WFD, but at a later stage, the other directives will also be considered. Another document will be related to the state of the environment / waters. The reporting mechanisms to be put in place will need to fulfil the requirements listed under Section 4.4.

5. POTENTIAL FOR COHERENCE WITH OTHER REPORTING MECHANISMS

There are a number of reporting mechanisms already in existence, which the development of WISE should take into account, both in terms of learning from experience and ensuring interaction and coherence. Table 5.1 shows the key elements of these systems and the opportunities for coherence with WISE. It should be noted that INSPIRE will provide the basis for WISE. The reporting mechanism (data and transfer formats) developed for the WFD will ultimately form part of the Reporting Framework Directive currently being developed by DG Environment. The development of WISE will also need to draw upon the experience of other reporting mechanisms, for example Eurostat, JRC and the EEA and will identify opportunities for data sharing wherever possible.

Table 5.1 Coherence of WISE with other reporting mechanisms

Reporting requirements	Requirements of WISE				
	Purpose for collection	Types of data collected	Detail of data required	Data exchange	Access of users to data
Existing EU Mechanisms					
SRD	Assessment of compliance. Some policy effectiveness.	Designation of waters (including boundaries), water quality, compliance with standards, reasons for non-compliance.	By designated area or water course. Presented as annual statistics.	Generally by paper according to agreed templates (not always used).	Data supplied to Commission. Summary report prepared.
UWWT Directive	Assessment of compliance.	Number of agglomerations, pollution loads, capacity of collecting systems, compliance of collection systems, investment.	By agglomeration class and designation of area for discharge. By year (not consecutive).	By paper according to agreed templates and by use of reports.	Data supplied to Commission. Summary report prepared.
Nitrates Directive	Assessment of compliance.	Information on codes of good agricultural practice and programmes on their application. Maps of areas identified under Article 3(1) and the criteria used for their identification and maps distinguishing between those areas identified since the last report. Summary of monitoring results and a summary of how the results contribute to the designation of vulnerable zones. A summary of the action plans drawn up according to Article (5).	By Member State. Summary information only.	By paper – no agreed format.	Data supplied to Commission. Summary report prepared.

Reporting requirements	Requirements of WISE				
	Purpose for collection	Types of data collected	Detail of data required	Data exchange	Access of users to data
Bathing Waters Directive	Compliance. Policy effectiveness.	Geographic designations, number of samples taken in bathing season and extent of the season, summary monitoring results including exceedence of standards, analytical methods, improvement schemes.	By designated water. Summary information.	Electronic. Specified data format for numerical data + “read me” free format for supporting information.	Data supplied to Commission. Compiled in a web-site and as a summary report. Public has access to web-site and report.
EPER	Policy effectiveness, state of the environment.	Emissions of specified pollutants to air and water. Details of industrial facilities and the pollutants discharged.	Annually by installation and a national overview.	Electronic in a specified data format.	Publication in a report and via the internet.
Eurostat	State of the environment, policy effectiveness, sustainable development, environmental accounts.	Water resources, water use, water treatment, geographical reference data.	Bi-annual for national data, irregular for regional data Level of detail as laid out by the GIS Guidance document (WFD CIS Guidance Document No. 9).	Electronic. Based on standard Excel templates, using Circa as data repository. Electronic in specified format (shapes, GML).	Published reports. Also available electronically through the NewCronos data base and free Web pages. Geographic data supplied to the Commission through central servers, web pages.
Future Mechanisms					
Framework Directive on Reporting	State of the environment, compliance, policy effectiveness.	All media, exact requirements to be agreed.	To be agreed.	To be agreed.	To be agreed.
Inspire	State of the environment, compliance, policy effectiveness.	Geographical reference information.	To be agreed.	To be agreed.	To be agreed.
EEA					
Existing Mechanisms					
Eurowaternet	State of the environment, policy effectiveness.	Water, sediment and biota. Monitoring data, physical characteristics, pressure information, water quantity.	Selected monitoring stations, annual data.	Electronic, via the internet.	Through published reports. Will be available on the internet in 2003.
Future Mechanisms					
Reportnet	State of the environment, policy effectiveness.	Envisaged for all media.	To be determined.	To be determined.	To be determined.

6. CONCLUSIONS

Reporting obligations have a long-established tradition in EU water legislation and over the last 27 years reporting procedures have been developed to provide the European Commission with information relating to the implementation of legislation to protect water resources. The systems available for managing this information have been widely extended over the same period (e.g. development of computer systems, the internet, GIS etc.) and more information must now be made available to the general public.

The WFD 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 and different levels. Specific reporting requirements are being developed through the CIS with some already identified in the Guidance documents produced during 2002-03. Monitoring costs money and much of the information that must be collected for the implementation of the WFD has the potential to be used for a number of different purposes. Therefore maximising use of information that costs millions to collect but orders of magnitude less to make available makes economic sense. The WFD and CIS present an ideal opportunity for all involved in reporting in Europe to work together to develop an effective reporting mechanism for water.

WISE will be beneficial to all players and all levels. The challenge for all parties involved is to design an efficient system that recognises multi-needs, makes best use of existing information in countries, respects principles already established (e.g. Aarhus) and takes account of those being developed under the Reporting Framework Directive, INSPIRE and other Community initiatives.

In developing such a system the information needs of all potential users, both now and in the future, must be properly defined. This paper goes some way towards this, but further work will be required, not least in identifying the information needs of all stakeholders in the implementation of the WFD. The Commission and the EEA are committed to continue the development of such a system in order to have it operational as soon as possible and to implement it, including all the various elements set out in this document, by 2010.

The development of WISE will not be easy and there are many issues to be resolved. However, the costs of not doing so could be greater. The Commission and the EEA are committed to continue the development of such a system, following a participatory approach towards the Member States, in order to have it operational as soon as possible and to implement it, including all the various elements set out in this document, by 2010. Information collection and reporting costs money, but much less than the costs of implementing poorly defined environmental policy based on insufficient knowledge.

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APPENDIX A LIST OF DIRECTIVES COVERED BY THE STANDARDISED REPORTING DIRECTIVE

1. Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community;
2. The Daughter Directives to 76/464/EEC (82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC);
3. Directive 78/659/EEC on the quality of fresh waters needing protection or improvement in order to support fish life;
4. Directive 78/176/EEC on waste from the titanium dioxide industry, as amended by Directive 83/29/EEC;
5. Directive 79/923/EEC on the quality required of shellfish waters;
6. Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances;
7. Directive 75/440/EEC on the quality of surface water intended for the abstraction of drinking water in the Member States;
8. Directive 79/869/EEC concerning the methods of measurement and frequencies of sampling and analysis of surface water intended for the abstraction of drinking water in the Member States;
9. Directive 80/778/EEC relating to the quality of water intended for human consumption; and
10. Directive 76/160/EEC concerning the quality of bathing water.

APPENDIX B HARP NUTRIENT REPORTING GUIDELINES

1. Framework and Approach of the Harmonised Quantification and Reporting Procedures for Nitrogen and Phosphorus;
2. Guideline for the Quantification and Reporting of Nitrogen and Phosphorus Discharges/Losses from Aquaculture Plants;
3. Guideline for the Quantification and Reporting of Nitrogen and Phosphorus Discharges from Industrial Plants;
4. Guideline for the Quantification and Reporting of Nitrogen and Phosphorus Discharges from Sewage Treatment Works and Drainage Systems;
5. Guideline for the Quantification and Reporting of Nitrogen and Phosphorus Losses from Households not Connected to Public Sewerage;
6. Guideline for the Quantification and Reporting of Nitrogen and Phosphorus Losses from Diffuse Anthropogenic Sources, including Quantification of Background Losses of Nitrogen and Phosphorus;
7. Guideline for the Quantification and Reporting of the Monitored Riverine Load of Nitrogen and Phosphorus, including Procedures for Normalisation of the Nitrogen and Phosphorus Load;
8. Guideline on Principles for Source Apportionment for Quantifying Nitrogen and Phosphorus Discharges and Losses; and
9. Guideline for the Quantification and Reporting of the Retention of Nitrogen and Phosphorus in River Catchments.

APPENDIX C EXAMPLES OF SPECIFIC PROBLEMS ENCOUNTERED WITH INFORMATION SUPPLIED UNDER THE STANDARDISED REPORTING DIRECTIVE

- In some Member States different regions report separately to the national authorities (Germany, United Kingdom) and in some cases regions report separately to the Commission (Belgium). Some Member States include returns (for some Directives) for overseas areas (France, United Kingdom). There was little evidence in these returns of a preliminary validation and screening of the data at a national level. Most data from regions were sent on to the Commission as they were received by the national authorities.
- Various regions often use different methods of analysis and units in which data are expressed.
- Some returns cover years outside the reporting period.
- Some returns consist of large textual reports, including some data or no data at all, or data that are not clearly related to a specific date, year and place.
- Some returns are a mixture of hand-written data, printed data, poorly photo-copied data and electronic returns, not always with a clear reference to date, year and place.
- Reporting for one Directive is included in the questionnaire for another Directive.
- Reporting on percentages or number of samples non-complying without submitting actual data.
- Reporting of aggregated data e.g. averages and maximum values, where a lower aggregation level is required.
- Reporting at a higher geographic level than required.
- Incomplete or seemingly incomplete reporting (not all entities are reported on, so they are either all in full compliance or they have not been included).
- Different units of expression used within the same return (for different regions, for different dates), or no unit of expression mentioned at all.
- Reporting in different steps. Some Member States send returns and separate notes to the Commission. These notes often can not be traced.

APPENDIX D DPSIR ASSESSMENT FRAMEWORK

