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Water Protection - Overview

1 Introduction and Overview

This Section of the Handbook deals with EC legislation in the Water Protection sector. It contains an introductory overview of the sector followed by individual fiches for selected pieces of legislation.

1.1 EU Policy on Water Protection

Water is one of the most comprehensively regulated areas of EU environmental legislation. Early European water policy began in the 1970s with the adoption of political programmes as well as legally binding legislation. As regards programmes, the First Environmental Action Programme covered the period 1973-76, and the latest is the 6th Environmental Action Programme adopted for the period to 2010. This Action Programme continues and enhances the objective of water resource protection, but note should be taken of the specific measures therein regarding the promotion of the goal of sustainable development (and see under the Water Framework Directive (2000/60/EC) for specific reference to measures adopted to this end justifying not meeting certain of the objectives of that Directive).

In parallel with political programmes in the 1970's, a "first wave" of legislation was adopted by the Community, starting with the 1975 Surface Water Directive and culminating in the 1980 Drinking Water Directive (80/778/EEC). This first wave of water legislation included water quality standard legislation on fish waters (78/659/EEC), shellfish waters (79/923/EEC), bathing waters (76/160/EEC) and groundwaters (80/68/EEC). In the field of emission limit value legislation the Dangerous Substances Directive (76/464/EEC) and its Daughter Directives (1982-1986) on various individual substances were adopted.

A "second wave" of water legislation followed a review of existing legislation and an identification of necessary improvements and gaps to be filled. This phase of water legislation included the Urban Waste Water Treatment Directive (91/271/EEC) and the Nitrates Directive (91/676/EEC). Other elements identified were revisions of the Drinking Water and Bathing Water Directives to bring them up to date (revisions being adopted in 1994 and 1995 respectively), the development of a Groundwater Action Programme and a 1994 proposal for an Ecological Quality of Water Directive. Also, for large industrial installations, the IPPC Directive (96/61/EC) covered water pollution as well.

There have been, at Member State as well as at European level, basically two different approaches to tackle water pollution¹:

- The **Water Quality Objective approach** (WQO) defines the minimum quality requirements of water to limit the cumulative impact of emissions, both from point sources and diffuse sources. This approach therefore focuses on a certain quality level of water which, in the prescribed condition and use, is not harmful for the environment or human health. This approach was mainly used in the first wave of water directives (1975 to 1980) such as the Surface Water Directive (75/440/EEC) or the Bathing Water Quality Directive (76/160/EEC, but note proposals for eventual replacement of the latter under Proposal COM(2002) 581 Final));
- The **Emission Limit Value approach** (ELV) focuses on the maximum allowed quantities of pollutants that may be discharged from a particular source into the aquatic environment. This

¹) Although, the Dangerous Substances Directive (1976) uses both approaches alternatively without integrating them fully.

approach in fact looks at the end product of a process (waste water treatment, discharges from industry, effect of agriculture on water quality) or what quantities of pollutants may go into the water and was mainly used in the second wave of water legislation during the 1990s: the Urban Waste Water Treatment Directive (91/271/EEC), the Nitrates Directive (91/676/EEC) and the IPPC Directive (96/61/EC).

Since then, the question of which approach was the most appropriate one was the subject of long scientific and political debate. Subsequently, more recent legislation both at European and Member State level, has been based on a 'combined approach' where ELVs and WQOs are used to mutually reinforce each other. In any particular situation, the more rigorous approach will apply. The new European Water Policy, and its operative tool, the Water Framework Directive (2000/60/EC), are based on this 'combined approach' (see, in particular, Article 10 of the latter). This combined approach is also in accordance with principles established in the Treaty - the precautionary principle, the preventive principle and the principle that environmental damage should as a priority be rectified at source, as well as the principle that environmental conditions in the various regions shall be taken into consideration. It may also be considered that at heart such an approach reflects the further Treaty stipulation that environmental protection requirements be integrated into the definition and implementation of other Community policies.

The Treaty provides for a set of principles for EU Water Policy as set out in Box 1 below.

Box 1 Principles of EU Water Policy

- High level of protection;
- Precautionary principle;
- Preventive action;
- Rectification of pollution at the source;
- Polluter pays principle; and
- Integration of environmental protection requirements into the definition and implementation of other Community Policies - e.g. industry, agriculture, transport and energy
- The promotion of sustainable development.

Based on those principles, the European institutions – the Commission, Parliament and Council – were agreed that a fundamental review and restructuring process was needed for Community water policy.

The Commission, which had in fact already been considering the need for a more global approach to water policy, acceded to requests from the European Parliament's environment committee and from the Council of environment ministers. Following a wide-ranging consultation of all interested parties, such as local and regional authorities, water users, enforcement agencies, water providers, industry, agriculture and, not least, consumers, environmentalists and non-governmental organisations (NGOs) the Commission presented, in 1997/1998, its Proposals for a new EU Water Framework Directive.

The resulting Water Framework Directive (2000/60/EC) thus reflects this new way of thinking and has the following particularly key objectives:

- the development of an integrated Community policy on and for the long-term sustainable use of water, and its application in accordance with the principle of subsidiarity;
- expanding the scope of water protection to all waters: surface waters, including coastal waters, and groundwater;
- achieving "good status" for all waters by a certain deadline, and preserving such status where it already exists;

- water management based on river basins, with a "combined approach" of emission limit values and quality standards, with appropriate coordination provisions for international river basin districts where river basins are located in more than one Member States and/or also involve non-Member States territory ;
- setting prices for water use taking into account the principle of costs recovery and in accordance with the polluter pays principle;
- getting the citizen involved more closely involved; and
- streamlining legislation.

1.2 EU Legal Instruments

The water sector contains a range of directives and three Council Decisions. The Water Framework Directive not only provides a managerial framework for the whole range of water protection policy and legislation, it will also replace many of the "first wave" legislation after different transition periods: Directive 75/440/EEC on Surface Water for Drinking Water Abstraction, the Dangerous Substances Directive 76/464/EEC and its daughter directives, Council Decision of Exchange of Information 77/795/EEC, the Fishwater Directive 78/659/EEC, the Shellfish Water Directive 79/869/EEC, the Directive of Measurement and Sampling of Surface Waters 79/869/EEC, and the Groundwater Directive 80/68/EEC. The provisions of these directives are to be incorporated into the Water Framework Directive, allowing them to be repealed in a phased basis.

The existing and future legal instruments can be categorised as set out in Box 2 below.

Box 2 Legislation in the Water Protection Sector

The Framework Legislation

Water Framework Directive (2000/60/EC), as amended by:
Decision 2455/2001 establishing the list of priority substances in the field of water policy

Water Quality Objective oriented:

- Bathing Water Directive (76/160/EEC) (but note Proposal COM(2002) 581 Final for its eventual replacement).
- Drinking Water Directive (98/83/EC).
- Directive on Surface for Drinking Water Abstraction (75/440/EEC as amended by Directives 79/869/EEC and 91/692/EEC, but to be repealed under the Water Framework Directive (2000/60/EC) as from 22.12.07).
- Freshwater Fish Directive (78/659/EEC) as amended by Directive 91/692/EEC, but to be repealed under the Water Framework Directive (2000/60/EC) as from 22.12.13).
- Shellfish Water Directive (79/923/EEC as amended by Directive 91/692/EEC, but to be repealed under the Water Framework Directive (2000/60/EC) as from 22.12.13).

Emission-Control oriented:

- Urban Waste Water Treatment Directive (91/271/EEC, as amended by Directive 98/15/EC) and related Decision 93/481/EEC.
- Nitrates Directive (91/676/EEC).
- Ground Water Directive (80/68/EEC as amended by Directive 91/692/EEC, but to be repealed under the Water Framework Directive (2000/60/EC) as from 22.12.13).
- Dangerous Substances Directive (76/464/EEC², but to be repealed under the Water Framework Directive (2000/60/EC) as from 22.12.13, save for Article 6, which was repealed with effect from 22.12.00)

² The Dangerous Substances Directive 76/464/EEC and its Daughter Directives on mercury, cadmium, hexachlorocyclohexane and list 1 substances provide as a rule an emission control approach. However, as an alternative they allow, under certain circumstances, a water quality objective approach as an alternative.

- Directive on Discharges of Mercury from the chlor-alkali electrolysis industry (82/176/EEC, note the potential for its repeal under the Water Framework Directive, Article 16).
- Directive on Discharges by Cadmium (83/513/EEC, note the potential for its repeal under the Water Framework Directive, Article 16).
- Directive on Discharges of Mercury from other sources (84/156/EEC, note the potential for its repeal under the Water Framework Directive, Article 16).
- Directive on Discharges of Hexachlorocyclohexane (84/491/EEC, note the potential for its repeal under the Water Framework Directive, Article 16).
- Directive on Discharge of List I Substances (Directive 86/280/EEC as amended by Directives 88/347/EEC and 90/415/EEC, note the potential for its repeal under the Water Framework Directive, Article 16).

Monitoring and Reporting

- Directive on the Measurement of Surface (Drinking) Water (79/869/EEC as amended by Directive 81/855/EEC, but to be repealed under the Water Framework Directive (2000/60/EC) as from 22.12.07).
- Common Procedures for Exchange of Information (Decision 77/795/EEC as amended by Decisions 84/422/EEC, 86/574/EEC and 90/2/EEC)

International Legislation

- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus) (1998).
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo) (1991).
- Helsinki Convention on Watercourses and International Lakes (1992).
- River basin conventions (Danube (1987), Elbe (1990), Oder (1996), Rhine (1999)).
- Barcelona Convention (1976) as amended and its protocols.
- OSPAR Convention(1992) as amended.
- Bonn Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and other Harmful Substances (1983).
- Helsinki Convention on the Baltic Sea (1992).

As can be seen from the above, the Community had established a set of legislation in the water sector containing important links between itself, but there were and are also important links between legislation within this sector and legislation in other sectors. The Water Framework Directive provides for the operation of much of this other legislation in a coherent and comprehensive manner. It is, however, useful, too, to consider what the most important links with the legislation in other sectors are. These are identified in Table 1.

Table 1 Summary of Key Inter-relationships to be found between Legislation in the Water Sector and other EC Legislation in the Environmental Acquis (but note the important role of the Water Framework Directive in providing exactly for such a network of inter-linking legislation)

<i>Related Sector Legislation</i>	<i>Relevance</i>
<i>Horizontal Sector (see Section 2 of Handbook)</i>	
Environmental Impact Assessment Directive (85/337/EEC, as amended)	Requires an EIA for new projects which are judged to have a significant impact on the environment. The results must be made public and views of the public taken into account in decisions. The impact on water quality is an important and relevant issue to consider in an EIA.
Access to Environmental Information Directive (90/313/EEC, but note that it is to be replaced by a new such Directive 2003/4/EC) (see Section 2) and the SEA Directive (2001/42/EC)	Requires environmental information held by public bodies to be made available to the general public on request. Most of the water directives specify the collection of water quality information or information concerning permits. As a rule any such information held by public bodies would be covered by this directive. Directive 2003/4/EC would expand the scope of “public authorities” for this purpose. Note, however, the extensive rights of access to documentation under the Water Framework Directive as regards designs, drafts and final versions of river basin management plans. The SEA itself requires plans and programmes for water use to be subject to strategic environmental assessment.

Reporting Directive (91/692/EEC) and Water Questionnaires (92/446/EEC and 95/337/EEC)	Sets out provisions on the transmission of information and reports concerning certain EC directives from Member States to the Commission. The reporting requirements specified in many water protection directives are modified by this directive.
Waste Sector (see Section 4 of Handbook)	
Waste Framework Directive (75/442/EEC and amending directives)	Requires the adoption of waste management plans. Within the plans the siting and operation of waste sites must be such as to avoid water pollution, and the possibility of water pollution occurring must be an issue to be taken into account in the plan. Such installations are material considerations as regards the classification of the status of waters and as regards the creation of programmes of measures for river basin districts under the Water Framework Directive.
Hazardous Waste Directive (91/689/EEC as amended by 94/31/EC)	Requires the adoption of hazardous waste management plans, which include provisions to prevent water pollution, e.g. through the permitting arrangements. The creation and disposal of such waste are material factors as regards the creation of programmes of measures for river basin districts under the Water Framework Directive.
Sewage Sludge Directive (86/278/EEC)	Regulates the use of sewage sludge in agriculture in such a way that contamination of soil and pollution of water does not occur from metal contaminants, nitrates and phosphates. Such use, as is the Directive specifically itself, is a material factor as regards the creation of programmes of measures for river basin districts under the Water Framework Directive.
Titanium Dioxide Directives (78/176/EEC, 82/883/EEC and 92/112/EEC)	Aims to reduce and eliminate pollution of water caused by discharges from the titanium dioxide production industry.
Nature Protection Sector (see Section 6 of Handbook)	
Habitats Directive (92/43/EEC) (see Section 6); and The Birds Directive (79/409/EEC)	Aim to protect a network of habitats throughout Europe and the flora and fauna they support, including specific protection for birds. Satisfactory water quality is an essential factor in such areas. Both are specifically pertinent to identification of protected areas for inclusion in river basin management plans under the Water Framework Directive, and are material to measures to be adopted in programmes of measures for river basin districts under the Water Framework Directive.
Industrial Pollution Control and Risk Management Sector (see Section 7 of Handbook)	
IPPC Directive (96/61/EC)	Implements integrated measures for the prevention and control of pollution. Requires permits for prescribed activities which set conditions, including emission limits to water, using the principles of BATNEEC. Some Member States integrate this process with the EIA process under Directive 85/337/EEC. The Water Framework Directive specifically requires that measures in River Basin Management Plans must include those which give full effect to the provision of the IPPC Directive in relation to industries and activities specified in Annex I to the Directive. The Directive itself is specifically material to the measures to be adopted under programmes of measures for river basin districts under the Water Framework Directive.
Risks of Existing Substances Regulation (793/93) and related Regulations	This Regulation applies to existing substances and places obligations on manufacturers and importers to provide data and on Member States to carry out risk assessments. The Water Framework Directive specifically requires that in drawing up strategies to deal with water pollution, the Commission must take into account risk assessments of pollutants carried out under the Regulation.
Seveso II Directive (96/82/EC)	This Directive aims to prevent major accidents which involve dangerous substances. It requires operators to develop major-accident prevention policies and to provide safety reports outlining how they intend to manage and handle dangerous substances. The Water Framework Directive also provides for Member States to adopt plans to deal with significant losses of pollutants from technical installations as part of the programme of measures for river basin districts, and this Directive is specifically referred to for the latter purpose.

2 Development of a Sectoral Strategy and Implementation Plan

The Implementation Management Checklist, presented in Section 2.4 of the Introductory Chapter provides an overall framework for preparing a strategy to implement the legislation contained within this sector. The following text focuses on key issues pertinent to this environmental sector, which are developed in the remainder of this section. Further guidance on implementation is provided in the fiches for individual legal acts.

The water sector consists of a large body of legislation relating to different uses, polluting processes and pollutants. The tasks involved in implementing the legislation require actions by government, through an appointed competent authority. Ideally one agency or Ministry should have this responsibility. The government will also need to set overall policy within the context of the EC directives, for example, establishing the role that taxation or other fiscal measures will have in implementing water quality objectives. In addition, the Urban Waste Water Directive (91/271/EEC) and the directives concerned with use-related water quality (for example the Bathing Water (76/160/EEC, but note Proposal COM(2002 581 Final providing for its eventual replacement) and Drinking Water Directives (80/778/EEC, as amended by 98/83/EC) require action from water and sewerage providers. The Nitrates Directive (91/676/EEC) requires action from agricultural undertakings, and directives addressing various industrial pollutants ('priority substances' under Article 16 of the Water Framework Directive) will also require action from industry. The costs of implementing these directives are likely to have been, and any future implementation still to come are likely to be, overall very substantial, so careful planning is necessary at the strategy formulation stage.

A number of new strategies will result from the implementation of the Water Framework Directive. Specific issues that are important in formulating a sectoral strategy include the following.

(i) *River Basin Management*

The new approach to water management requires water to be managed on the basis of river basins, rather than according to geographical or political boundaries. Specific provision is made in the Water Framework Directive for obligatory coordination between Member States sharing a river basin district, and for Member States to endeavour to coordinate responses for international river basins that are shared between Member States and non-Member States. This enables assessment of all activities which may affect all the water bodies in question, and their eventual control by measures which may be specific to the conditions affecting the river basin. The Water Framework Directive therefore requires river basin management plans to be drawn up on a river basin basis. It may be necessary or desirable to sub-divide a large river basin into smaller units, and sometimes a particular water type may justify its own "sub-" or supplementary plan.

Fundamental to this approach, and in the interests of effective and appropriate administration, is the identification of river basins of a sufficient size to ensure the viability of an organisational framework set up to administer them. Prior to decisions being taken on the type and constitution of any new organisation or whether to use existing ones, the government will need to establish river basin boundaries. The adoption of suitable institutional structures to enable this to be achieved is one of the challenges for Member States in implementing the directive. No general guidance can be provided from experience gained in the past, as indeed there are successful examples both for centralised and for decentralised administrations achieving the objectives of water protection. However, the Water Framework Directive does propose use of existing institutions and structures for international river basin districts where possible.

The following are some possible options for an organisational approach to meet the demands of the river basin approach:

- a) To utilise existing regional structures, but organise and ensure co-ordination of functions related to each river basin so that decisions are made jointly by cross-boundary institutions, which are based on the needs of the river basin.
- b) To appoint a central overseeing body, with river basin-based subsidiary departments or institutions to organise and carry out the day-to-day work in the river basins.
- c) To appoint individual river basin institutions with direct control over the activities in each river basin.

It should be borne in mind that the river basin approach applies equally to river basins that cross national borders: The Water Framework Directive, as indicated above, makes coordination across national boundaries mandatory between Member States, and recommends it with Third Countries. Considerable experience has been gained in international cooperation along rivers such as the Rhine and the Elbe.

(ii) Programme of Measures

Central to each river basin management plan will be a programme of measures to ensure that all waters in the river basin achieve good water status. There are also provisions for stand-still or “non-deterioration” obligations. The starting point for such programmes is the full implementation of any relevant national or local legislation as well as of a range of Community legislation on water and related issues. If this basic set of measures is not enough to ensure that the goal of good water status is reached, the programme must be supplemented with whatever further measures are necessary. These might include stricter controls on polluting emissions from industry or agriculture as well as from urban waste water sources; land use planning might in this context be a key issue to be taken into account.

(iii) Combined Approach

The Water Framework Directive takes a “combined approach” to pollution control:

- limiting pollution at source by setting emission limit values or other emission controls;
- establishing water quality objectives for water bodies; or
- providing for control of certain diffuse impacts.

In each case, the approach that provides for setting the most stringent provisions will apply. Thus Member States will have to set down in their programmes of measures both limit values to control emissions from individual point sources and environmental quality standards to limit the cumulative impact of such emissions as well as providing to take account of diffuse sources of pollution. The emissions limit values will have to be set in line with Community, national and regional legislation, inter alia, with the IPPC Directive (96/61/EC) and the Urban Waste Water Treatment Directive (91/271/EC) for installations and discharges covered by these Directives, the Nitrates Directive (91/676/EC), the Directives adopted under Article 16 of the Water Framework Directive, the Directives in Annex IX of that Directive and any other relevant Community legislation (see Article 10 of the Water Framework Directive).

For relevant pollutants and pollution sources of priority concern (‘priority substances’ under Article 16) the Water Framework Directive obliges the Council and Parliament to establish Community

emission controls and water quality objectives. Where environmental quality objectives or emission limit values have been set for particular dangerous substances under the Daughter Directives of the 1976 Directive on Discharges of Dangerous Substances to Water (76/464/EEC), these are to be reviewed and if necessary incorporated into the Water Framework Directive. Decision 2455/2001/EC has already established an initial list of priority substances, added to the Water Framework Directive as Annex X

To achieve the relevant degree of control, the competent authority/authorities should be given sufficient legal powers and resources to be in a position to:

- identify and monitor all types of discharges and other impacts in the river basin districts;
- regulate the whole range of activities having an actual or potential impact on water resources on a river basin management basis;
- grant, review and amend as appropriate permits for the discharge of effluents and enforce compliance with permit conditions and adopt other suitable control measures in this regard; and
- undertake pollution prevention activities by, for example, enforcing water protection zones, or by controlling specific activities which could have adverse impacts on the status of water.

As waters used for drinking water abstraction are subject to particular protection, Member States are required to set environmental quality standards for each significant body of water that is used for abstraction or that may be so used in future. These quality standards must be designed to ensure that under the expected water treatment regime the abstracted water will meet the requirements of the Drinking Water Directive (80/778/EEC as amended by 98/83/EC) (see further Article 7 of the Water Framework Directive).

The Water Framework Directive also addresses water quantity insofar as it is relevant to water quality. To that aim any abstraction of groundwater or surface water, except such as are of irrelevant concern, have to be subject to a permitting procedure. Similarly with impoundment measures affecting fresh surface water. Permits should only be granted for abstraction if they provide for compliance with the objective of a long-term balance between abstraction and recharge rates. In issuing permits, authorities will have to take into account the impact of abstractions on water quality, and the effect that reduced availability of water may have on the effect of effluent discharges on water status, and on other users and potential users of water resources.

Assessment and control of water demand require significant forward planning by regional authorities in conjunction with the authorities or companies that supply drinking water or otherwise abstract water for use or use water on any significant scale, to assess the future impact of population growth and industrial and other development on the availability of water in the river basin. The potential impact on groundwater is particularly important in this respect.

(iv) Monitoring Programme

Monitoring is an essential element to effective implementation of the Water Framework Directive. The systematic monitoring of surface water and groundwater quality and quantity required is in several categories:

- surveillance monitoring;
- operational monitoring;
- investigative monitoring; and
- compliance monitoring.

Data on monitoring will be publicly available, and will also form the basis for classification of status for water bodies within a river basin district and also for the designation of programmes of measures designed to achieve the objectives of the Directive for all water bodies within each river basin district. They should also be regularly reported to the Commission, as well as being able to contribute to the monitoring network within the European Environment Agency.

(v) *Cost Recovery*

Water is essential for a number of economic as well as environmental and health reasons such as the maintenance of drinking water supplies, the irrigation of crops and use in many industries. It is therefore essential to the viability of the population. Watercourses have traditionally been used for the carriage of effluents and wastes, both industrial and human. The application of economic instruments such as charges for use of water as a resource or for the discharge of effluents into watercourses or as subsistence charges merely for having a permit is a policy explicitly endorsed in the Water Framework Directive. Member States are to take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to an economic analysis specified under that Directive, and in accordance in particular with the "polluter pays" principle. Economic assessment thus becomes an essential part of water management planning. Water pricing policies must be applied by 2010 that provide an adequate incentive for the efficient use of water, and provide for an adequate contribution of the different water users to recovery of the costs of water services. However, the Directive does not prevent the funding of particular preventive or remedial measures in order to achieve the objectives of the Directive. Also derogation is possible where this does not compromise the purpose and achievement of the objectives of the Directive.

Having to take account of the principle of recovery of the costs of water services is quite a radical innovation at European Community level. However, many of the existing EU Member States have been following this approach in their national legislation fully or to a considerable extent for quite some time (Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, Netherlands, Sweden, United Kingdom). It should also be noted that a similar but not identical provision, requiring that the costs of landfilling be charged by the operator, had already been adopted by the Community (Landfill Directive 99/31/EC – see Section 4).

Financing programmes to improve water quality and to provide adequate water supply will be a major challenge for all Candidate Countries. Charges reflecting the above-mentioned principle will contribute to the necessary investments; however, introduction of such charges might also pose a significant problem if they entail considerable changes. The costs will have to be borne by the user/consumer whether domestic, industrial or agricultural, and will have to include construction, financing and maintenance of measures such as extraction, treatment and distribution of water for drinking or irrigation purposes or other uses, and the collection treatment and discharge of waste water.

(vi) *Public Consultation*

An important aspect of the development of river basin management plans is the need to involve the public. Since much of what is to be decided will have a direct impact on peoples' lives, for example in the quality of waters in their neighbourhood, but also in terms of levels of payment for water resources, with the setting of emission limits a major influence on industry and on end-uses such as fishing and bathing, members of such a wider public have a legitimate interest in the setting of water quality objectives. Competent authorities need to set in train arrangements to provide for the public to communicate its views to them on proposals contained in such plans. As a result, there are detailed provisions to this end set out in the Water Framework Directive.

Further as a consequence, suitable consultation mechanisms have to be arranged in order for the public to have an opportunity to see and comment upon proposals for river basin management plans. It is important that citizens, consumer and environmental groups, local communities, but also relevant government departments, water utilities, industry and commerce are fully involved in the discussions on the design of river basin management plans as these are likely to affect all these organisations, and the plans will rely in large part upon actions by such organisations for achievement of their objectives.

3 Institutions and Relevant Parties

3.1 Stakeholders

There are a large number of stakeholders who have an interest in, or may be affected by, water management measures. The principal stakeholders, and their roles in the process of developing and implementing a sectoral strategy to achieve compliance with EC policies and legislation on water management, are identified in Box 3. The following subsections focus on the main groups of organisations that are involved in the water sector.

3.2 Central Government Institutions

In general, the Water Framework Directive is neutral as regards specific organisational structures. In the EU there are Member States with centralised as well as decentralised or federal constitutional structures, and it is the right of Member States to choose the approach they prefer for implementing Directives. Additionally, established practice and tradition might play a key role in distribution of responsibilities between different national ministries and/or regional and local authorities.

However, certain key questions should be addressed in any case:

- Decide on a responsible 'lead' ministry for implementing the Water Framework Directive, as well as ensuring that there is cooperation and involvement in the decision-taking process where other ministries are to be involved. In many cases the lead ministry is the Ministry for the Environment, but others are very likely to need to be active participants, such as those responsible for Health (Drinking Water Directive), Agriculture (Nitrates and Sewage Sludge Directives), Industry (emission control) and or Foreign Affairs (in the case of transboundary pollution);
- Decide on the distribution of responsibilities (planning, legislation, monitoring, implementation, regulation, and consultation and reporting) between national, regional and local bodies (it is possible that some of the monitoring may be able to be done by water and sewerage utilities and others whose impact on water resources is controlled under Community legislation, but this will not be able to replace the overall coordinating and information gathering and collating required of governmental bodies);
- Arrange for the explicit involvement of other public bodies and agencies (e.g. National Standardisation Institute, Environment Agency, Environment Inspectorate).

Box 3 Principal Stakeholders and their roles in the water quality sector

Stakeholders	Roles
Central Government (e.g. a National or Regional Ministry or Department)	→ Implementation and maintenance of compliance with EC policies and legislation in the water sector. Provision of guidance to affected sectors - farming, industry, the general public. Reporting to the Commission on compliance, extensions of time and derogations. Also, coordination in the case of international river basin districts. Are likely to include the (key) body that sets and/or regulates the costs recovery obligation.
Environmental agencies working on behalf of central government (e.g. regulatory authority, inspectorate, accreditation agency for laboratories or industrial sectors)	→ Provision of planning, development of environmental quality standards, application of standards, regulation, monitoring and compliance assessment, and technical assistance.
Regional and local government/municipalities	→ Construction of publicly owned sewer networks, sewage treatment works, water treatment plants. Also likely to be the relevant authorities granting planning permission for such operations if these are to be completed by the private sector. They will thus need to ensure that their public powers are exercised in accordance with obligations under Community law.
Water and sewerage providers (public and/or private)	→ Construction and operation of privately owned water and wastewater treatment works. Likely to have key input on the costs recovery obligation.
Industrial companies and other commercial operators	→ Compliance with permits for water abstractions and effluent discharges. Also likely to have key input as to future water use and quality trends.
The public otherwise	→ Involvement in consultation processes for river basin plans. Reporting pollution incidents. Likely to be concerned with the costs recovery obligation, and protection of those economically disadvantaged.
Environmental and Consumer NGOs	→ Lobbying on behalf of the public with respect to water quality objectives, siting of treatment plants, pollution problems, and costs recovery issues.
Research institutions (e.g. Universities)	→ Technical research into monitoring equipment and standards, environmental quality standards, toxicity assessment, water analysis.

3.3 Competent Authorities

Examples of the duties which need to be carried out by the competent authorities in the water sector are illustrated in Box 4. In some countries existing organisations, sometimes within central

government, or regional or local bodies already undertake similar work. There may be a need to expand their responsibilities or, if it is not already available, to consider a new organisation.

Competent authorities can be appointed for individual directives, for environmental sectors or across environmental sectors. The last option allows the use of skills (such as permitting, inspection and compliance assessment) which are common across sectors to be utilised efficiently, and also encourages cross-sector issues and the necessary links required by individual legislative instruments to be addressed with the minimum of administrative efforts.

Box 4 *Examples of activities that are specifically required to be carried out by a competent authority in the water sector (note the comments above as regards the future (non-) existence of various water-related directives further to the Water Framework Directive 2000/60/EC, and also the all-pervading effects of the latter as regards all the below-mentioned activities)*

Planning and Implementation

- Identify river basins (2000/60/EC).
- Prepare river basin management plans, programmes of measures (2000/60/EC).
- Identify bathing waters, shellfish waters, freshwater fish (76/160/EEC, 79/923/EEC, 78/659/EEC, 2000/60/EC).
- Identify agglomerations (91/271/EEC, 2000/60/EC).
- Identify sensitive and less sensitive areas (91/271/EEC, 2000/60/EC).
- Identify nitrate vulnerable zones (91/676/EEC, 2000/60/EC).
- Grant derogations (80/778/EEC, 78/659/EEC; 2000/60/EC).
- Identify the industries to which directives apply (76/464/EEC, 2000/60/EC).
- Fix standards applicable to drinking water, bathing water, shellfish water, freshwater fish (80/778/EEC, 76/160/EEC, 79/923/EEC, 78/659/EEC, 2000/60/EC).
- Set water quality objectives (76/464/EEC, 2000/60/EC).
- Set fixed emission limits (76/464/EEC, 91/271/EEC; 2000/60/EC).
- Specify urban waste water treatment requirements and sewerage designs (91/271/EEC).

Technical Standards

- Develop a methodology for deciding water quality objectives (86/280/EEC, 2000/60/EC).
- Develop a methodology for deciding emission limit values (76/464/EEC, 2000/60/EC).
- Establish procedures for the issue of authorisations (76/464/EEC, 96/61/EEC).

Regulation

- Establish an inspectorate that is authorised to inspect installations, take samples, and take enforcement actions (96/61/EEC, 91/271/EEC; 2000/60/EC).
- Establish laboratories and associated organisations capable of sampling and analysing waters and effluents according to prescribed methods with the application of quality control regimes to ensure harmonisation with directives (79/869/EEC, 2000/60/EC).
- Institute the prior authorisation regimes for industry and for wastewater treatment plants (96/61/EEC, 91/271/EEC; 2000/60/EC).
- Set up monitoring programmes to determine compliance with directives (80/78/EEC, 76/464/EEC, priority substances; 2000/60/EC).
- Establish databases and information systems to allow reports to be made to the Commission and to the general public (91/692/EEC, 90/313/EEC; 2000/60/EC).
- Enforce measures for emission controls of priority substances (2000/60/EC).

Reporting

- Prepare reports on e.g. implementation, designations, authorisations, derogations etc. (91/692/EEC as amended by Decision 94/741/EEC; 2000/60/EC).

A cross-sectoral (i.e. across environmental sectors) competent authority, provided by a single national body or by regional bodies operating under the same management regime, covering the environment

would result in economies of scale and expertise through shared facilities and resources and would represent the closest form of integration on environmental issues. Alternatively sectoral competent authorities would require close collaboration on those issues which are regarded as cross-sectoral, and their terms of reference should include the links between sectors.

Where issues of strategic importance to Member States arise these should be dealt with by a national level organisation. The need for specialised technical expertise supplied at a consistently high level also suggests the advantages to be gained by appointing national organisations, with the consequent efficient use of scarce resources.

As indicated above, the Water Framework Directive requires decision-making on a river basin district basis. A national competent authority will need institutional structures capable of operating in the geographical areas dictated by the limits of the river basins districts. The alternative of devolving responsibility to regional bodies which match or which can accommodate the boundaries of river basins districts might also be considered. However, in the latter event, it is important for the purposes of achieving the objectives of the Directive that such current administrative facility does not determine the identification and allocation of river basin districts.

As most elements of the legislation in this sector are linked through the river basin district approach and common methodologies, using either quality objectives which apply to waters and/or the application of limit values to effluents and/or controls on diffuse sources, it is advantageous for the competent body for all legislation concerning water quality and pollution control to be the same in each region of the country, if not across the country as a whole. Common methods of sampling and analysis are also required and it is possible in this way to avoid duplication of effort and to make savings by using samples for more than one purpose. This approach also has the advantage of allowing for standardised protocols for the taking and presentation of proof in enforcement actions. If individual regional or river basin organisations are appointed as competent authorities, they could share laboratory facilities. Close co-operation is required in this case, however, to avoid differences in testing procedures and interpretation of the results. A national competent authority could operate in river basin districts by setting up a managerial structure based on river basins districts.

3.4 Regional and Local Government

The role of regional and local government in the water sector is important for two reasons:

- First, most countries have a tiered administrative structure in which certain powers are devolved to the regional (county, department, Länder) or local level of government (planning authority or municipality). Such decentralisation is stronger in federal states but exists generally;
- Second, the Water Framework Directive is based on a “decentralised” concept of river basin management and encourages the involvement of local people as much as possible in the whole planning process.

The Water Framework Directive will require the co-operation of regional and local authorities in developing operational objectives which are to some extent also use-related (e.g. waters for drinking water abstraction, waters for bathing). Measures to meet prescribed water quality standards and abstraction limits will in any case require local action.

The provision of water, sewerage and waste management services may be the responsibility of the regional or local government. Such bodies will be involved in ensuring that drinking water is safe and that human waste products are disposed of in a satisfactory way so as to minimise public health risks and/or harm to water resources otherwise. Regional or local administrations may be responsible for,

and be funded to construct water and waste water treatment plants, water mains, sewer networks and waste management facilities. In such cases the regional authority may be an appropriate competent authority in the terms of the Drinking Water Directive (80/778/EEC) or Urban Waste Water Treatment Directive (91/271/EEC) and the Waste Framework Directive (75/442/EEC) and other relevant waste-related Directives like the Landfill Directive (99/31/EC). The role of the regional or local authority in implementing these directives, and the possible conflict of interest must be considered in such cases, since the authority could be in the position of both the regulator and the regulated.

The river basin district approach includes the catchments of cross-border rivers. If the competent authorities are based on regional or local authorities, provision must be made for inter-state co-operation and coordination to ensure that at least as regards that part of the international river basin in their own territory the requirements and objectives of the Directive are met. It may be necessary for the central government to reserve some powers for international co-operation on cross-border rivers. The same considerations apply to joint action required in the case of coastal and estuarine waters.

3.5 Private Sector Involvement

EU legislation is neutral on the issue of ownership of water infrastructure, and leaves this to Member States, following the principle of subsidiarity. Indeed the present 15 Member States present quite a diverse picture:

- local communities or associations of such communities being the main owners and providers of services related to urban waste water collection and treatment as well as drinking water supply in several Member States;
- large industries constructing and maintaining their own plants or having established partnerships with local communities;
- mixed public-private companies in others; and
- a completely privatised water industry, largely with some form of monopoly on water supply and waste water disposal, in a major part of one Member State.

Experience gained shows that all the approaches have certain merits in a particular situation, but no general conclusions can be drawn, and the historical development of the sector as well as the political situation has to be taken into account.

Whatever approach is to be taken, clearly defined responsibilities will facilitate both achieving the environmental objectives and the best use of available resources.

3.6 Environmental Inspectorate

Water protection legislation involves a considerable burden in terms of inspection and monitoring. One or more inspectorates may be needed to assess compliance with the requirements of the directives and to take enforcement actions, although, as indicated above, advantages may be gained from having one inspectorate responsible for such matters across the country. However, details of how to organise all such inspectorates are left to the discretion of Member States.

Many of the activities are common to directives in other sectors so there are advantages, in the event of more than one responsible inspectorate, in establishing inter-sectoral inspection and enforcement arrangements. Such inspectorate arrangements could be set up within the competent authorities. Any such inspectorate(s) requires specific terms of reference to undertake work within the remit of the directives, and a clear reporting line, to enable enforcement procedures to be instigated. In the water sector one such inspectorate could be located within the river basin management organisation, or

inspectorate facilities could be attached to the local government. Any such organisation must be equipped with sampling and inspection facilities, vehicles, data processing systems, trained staff, and have access to laboratory facilities which themselves need to use methods in accordance with those specified in the directives.

The inspectorate(s) should take responsibility for monitoring adherence to all the directives in the water sector. It is sometimes considered advantageous to use a separate organisation to monitor the drinking water directive as there are health implications in non-compliance and closer links with health authorities could be developed. Local municipalities or authorities could be used to monitor and report upon aspects of the water directives such as drinking water quality or effluent quality, but if this option is used the inspection role should be quite separate from other aspects of implementation such as the operation of works.

3.7 Communication and Consultation

The implementation of the Water Framework Directive requires a review of the environmental impacts of human activity and an economic assessment of water use. This must be followed by the preparation of a river basin management plan and a programme of measures. In order to assess adequately activities within a river basin district, consultation with those who live and work there is essential. Similarly, as the management plan and programme of measures will affect residents and activities in the river basin district, consultation is necessary to ensure that the proposals are likely to be achievable and will not lead to an unacceptable burden on those who use that river basin district. This directive requires consultation to take place, and the competent authorities should arrange consultation mechanisms with interested parties. The parties to be consulted should include:

- Other central government ministries;
- Regional and local government;
- Water and sewerage companies;
- Industrial users of water;
- Industrial waste water producers;
- Farmers;
- Fishermen and other river users;
- The general public; and
- Environmental NGOs.

Whilst EU water legislation is precise in its objectives, e.g. achieving a maximum elimination rate or minimum effluent concentrations for waste water treatment plants, it is not generally specifically prescriptive as to the means of achieving this objective. Consultation with all relevant parties might in this context also achieve a best cost effectiveness and identify the best combination of measures on a proportionate level. Judgment on such measures is specifically required by Member States as regards consideration of the principle of costs recovery for water services. Therefore preparation of measures to implement those parts of the Water Framework Directive addressing information and consultation of all stakeholder groups and the public should be subject to serious efforts.

Where the achievement of environmental goals relies upon a change in public attitudes or methods, consultation and publicity is essential. This has proved to be effective in increasing awareness of the impact of activities on water quality, for example in farming practice but also in measures to save water or limit pollution of waste water from domestic sources.

Some directives specify public consultation and the availability of information, e.g. the Environmental Impact Assessment Directive (85/337/EEC as amended by 97/11/EC) and the directive on Access to Environmental Information (90/313/EEC, to be replaced by 2003/4/EC) (see

further Section 2)). The competent authorities dealing with the water sector must be aware of, and take action in accordance with, these directives where information relating to the water environment is concerned.

4 Technical Issues

Examples of technical standards within the water sector include:

- Emission standards. Emission standards set maximum concentrations of a substance permissible in a discharge or the maximum quantity of a substance permissible in a discharge over a given period of time;
- Water quality objectives. Quality objectives apply to bodies of water and relate to ambient conditions and are based on the toxicity, persistence and accumulative characteristics of substances. Quality objectives are used as a target standard to aim for in receiving waters;
- Design, construction and maintenance of sewer systems (as in the Urban Waste Water Treatment Directive); and
- Methods of sampling and analysis (in a range of directives).

Earlier EU legislation tried to define the methods, whilst more recent legislation provides references to CEN/ISO standards, at the same time making analytical quality assurance schemes and 'Best Laboratory Practice' mandatory.

Whilst EU water-related standards are clearly defined where mandatory, standards from other international or national bodies might take the character of recommendations. Alternative sources for technical or scientific standards might be WHO, national or international standardisation organisations (DIN, CEN ISO), but also internal industrial and/or accreditation bodies (eg. OECD). As regards standardisation bodies, cooperation within ISO and CEN might facilitate access to information, data and resources.

5 Regulation and Enforcement

5.1 Overview

In order to achieve the objective of maintaining/achieving good status for waters, the measures put in place by the legislation in this sector, and by legislation in other sectors such as the IPPC Directive (96/61/EEC as amended by Directive 2003/35/EC) must be properly implemented and enforced. This can only be achieved by developing a suitable regulatory regime with adequate resources to implement and enforce the law. Regulation in the water sector involves:

- issuing authorisations or permits to abstract water from a water body or discharge waste water;
- monitoring and inspection to ensure that authorisation or permit conditions are being observed;
- considering when and how to amend permit conditions in the light of new developments, further information and/or adverse effects on water bodies involved;
- taking enforcement and other suitable control action if they are not;
- the provision for and application of suitable dissuasive fines and penalties; and
- reporting on implementation and enforcement measures and their success.

5.2 Authorisations and Permitting

The principal tasks related to authorisations or permitting in the water sector are:

- issuing permits for discharges to water, including quantity and quality of the discharge, setting emission limit values according to European and national legislation and bearing in mind the combined approach, i.e. ensuring compliance with water quality objectives; and
- issuing permits for the abstraction of water (from surface waters and groundwater), and for the impoundment of fresh surface water, bearing in mind the principle of a long-term balance between abstraction and natural recharge/low flow; and
- considering when and how to amend these permits.

Common procedures for assessing applications from the discharger and issuing permits should be established to ensure conformity throughout the country, to reduce administrative burden and to avoid problems of differing interpretations or unjustified different application being applied in various parts of the country. There is a need to ensure that permit conditions reflect what is required by a directive, national legislation and any other conditions which are necessary to achieve environmental targets. Transposing and implementing European legislation is mandatory; at the same time, Member States have the right to apply more stringent environmental objectives.

In setting conditions, the competent authority may have to take account of the interests of other statutory bodies and others who may be affected by the discharge or activity through consultation. The details of the permit must, as a rule, be available to the public in some readily accessible form under the Directive on Access to Environmental Information (90/313/EEC, to be replaced by Directive 2003/4/EC).

5.3 Monitoring, Inspection and Enforcement

Monitoring is an essential part for implementation of the whole range of EU water legislation including in particular the Water Framework Directive. Systematic monitoring of surface water and groundwater quality and quantity will arise in several categories:

- surveillance monitoring;
- operational monitoring;
- investigative monitoring; and
- compliance checking.

Proper coordination of monitoring will not only contribute to achieving environmental objectives, but also reduce the administrative and financial burden of monitoring.

Summarising the water legislation, monitoring must be established for:

- surface waters, for ecological, physico-chemical and morphological parameters;
- groundwaters, for physico-chemical parameters;
- discharges of waste water, parameters depending on the particular case;
- bathing waters during the bathing season, for bacteriological and chemical parameters; and
- drinking water, for bacteriological and physico-chemical parameters.

When preparing the monitoring scheme the future 'absorption' and ensuing repeal of certain legislation in a phased approach under the Water Framework Directive should be duly considered.

Providing for the establishment of a monitoring scheme bearing in mind the requirements of the Water Framework Directive, and implementing it step by step, might considerably cut costs.

This legislation in mind here is :

- Surface Water for Drinking Water Abstraction Directive (75/440/EEC), the related Directive on Sampling and Monitoring (79/869/EEC) and the Exchange of Information Decision (77/795/EEC);
- Fish Water Directive (78/659/EEC);
- Shellfish Water Directive (79/923/EEC);
- Groundwater Directive (80/68/EEC); and
- Dangerous Substances Directive (76/464/EEC).

Monitoring required by the IPPC Directive (96/61/EC) may also be accommodated within these base programmes.

Other Directives will require a more targeted and in-depth monitoring in certain sectors:

- Bathing Water Directive (76/160/EEC, but note Proposal COM(2002) 581 Final concerning its eventual replacement): monitoring of bathing areas during the bathing season;
- Urban Waste Water Treatment Directive (91/271/EEC): monitoring of discharges, as well as of affected bodies of water; in case of individually designated sensitive areas monitoring for a review of those areas; and
- Nitrates Directive (91/676/EEC): monitoring requires of nitrates contents in surface waters and groundwaters; in case of individually designated vulnerable zones monitoring for a review of those zones.

To ensure appropriate implementation, the competent authority will require suitable powers to take enforcement action if, as a result of inspection or monitoring, the owner of a permit is found to be breaking the terms of the permit. The competent authority, should also have appropriate powers to revoke or alter the terms of a permit, if for example pollution is found to be occurring despite compliance with its conditions, or in the event of other accidental or natural incidents.

5.4 Data Collection and Reporting

A summary of the type of data collection and reporting required by EC legislation is given in Table 2.

Table 2 Examples of Reporting and Notification Requirements for the Water Sector

Body responsible	Receiver of Information	Type of Information
At EU level		
European Commission	European Parliament, Council, General public	<ul style="list-style-type: none"> Information on implementation of Directives (e.g. Urban Waste Water Treatment Directive, Nitrates Directive, Water Framework Directive)
European Commission	General public	<ul style="list-style-type: none"> Report on quality of bathing waters (under the Bathing Water Directive)
European Commission	General public	<ul style="list-style-type: none"> Synthesis report on the quality of drinking water in all Member States (under the Drinking Water Directive)
Member States	European Commission	<ul style="list-style-type: none"> Notification of transposition of legislation and main texts (all directives) Implementation programmes and/or programmes of measures (e.g. Water Framework Directive, Urban Waste Water Treatment Directive, Dangerous Substances Directive, Surface Water for Drinking Water Abstraction Directive) Reduction programmes for List II substances under the Dangerous Substances Directive 76/464/EEC Reports at set intervals (Directives on Surface Water for Drinking Water Abstraction and on Bathing Water Quality) Derogations and waivers (Drinking Water Directive, Bathing Water Quality Directive, Surface Water for Drinking Water Abstraction Directive) Vulnerable zones; Action Programmes; Codes of Good Practice (Nitrates Directive) Sensitive Areas (Urban Waste Water Treatment Directive)
Within Member States		
Member State	General public	<ul style="list-style-type: none"> River basin plans (under the Water Framework Directive)
Member State	General public	<ul style="list-style-type: none"> Reports on state of urban waste disposal and sewage sludge (Urban Waste Water Treatment Directive)
Member State	General public	<ul style="list-style-type: none"> Report on the quality of drinking water in the Member State (under the Drinking Water Directive)

Organisations with obligations to report should be made aware of their responsibilities. In particular competent authorities must be given the powers to collect information and their duties should include the requirement to set up data collection and reporting systems. This may be achieved through requirements for licensed waste water dischargers and water abstractors or users, as well as those whose activities have a specific adverse impact on water resources, to report information to the competent authority on the activities to which the licence permit or permission relates.

Reporting to the Commission is usually the responsibility of the government of the Member State. In many cases this has been delegated to the competent authority, but in others a Ministry retains the right to make the formal reports.

The Commission has issued a directive harmonising the reporting of water sector data. This replaces the reporting requirements of a number of the water directives (see the Reporting Directive (91/692/EEC) as amended by Decision 94/741/EEC, and the Water Questionnaires of Decision (92/446/EEC) as amended by 95/337/EEC).

6 Priorities and Timing

6.1 Prioritising the Implementation Tasks

In preparing their implementation plans the Candidate Countries will need to prioritise the major tasks to be undertaken. Note the detail in this regard in the fiche on the Water Framework Directive itself.

Legislative Considerations

Candidate Countries must transpose all relevant elements of EC directives into national legislation by the date of accession. However, consideration should be given to the order in which the various items are transposed.

Framework-type directives are usefully transposed at an early stage as these will provide the outline for other daughter legislation, and usually the requirements for competent authorities and administrative infrastructure set up to meet the frameworks will suffice for the whole sector. In the water sector, the Water Framework Directive will become the main lead directive. However, as Candidate Countries have generally been involved in detailed implementation measures for the water sector for some time prior to adoption of the Water Framework Directive, it may well be that some if not all their existing structures in this area of activity can be subsumed in re-organisational steps directed at the better implementation of the latter Directive. The Dangerous Substances Directive (76/464/EEC) has been the framework for another seven daughter directives, but is itself brought within the framework of the Water Framework Directive. The Drinking Water Directive 98/83/EC should be implemented early in the implementation plan as it is of great importance to public health and will continue to have some sort of “stand alone” function. The Urban Waste Water Treatment Directive (91/271/EEC) is an important directive and, in areas with basic sewerage needs, should be implemented at an early stage, at the same time the issue of sewage sludge in the context of wastes legislation has to be addressed as appropriate ways for sewage sludge reuse and/or disposal will be required. The IPPC Directive (96/61/EEC) will also be an influence in implementation of the Water Framework Directive as its provisions are a means to control pollution from large industrial installations, and it will be one of the foundations of the improvement programmes for river basin districts.

Cost-effectiveness

In general, legislation which gives the greatest benefit to the cost of implementation should be given a higher priority than that producing lower cost/benefit ratios. However, legislation which will require major infrastructure renewal or capital spending on industrial improvements should also be given an early place in the phasing process. This is because in order to meet the deadlines in many of the directives, new investment will be needed to be built and operating, and this takes time to plan and implement.

Furthermore, taking into account the provisions of the Water Framework Directive when preparing legislation and implementation will save costs compared to a 'two-step' approach, i.e. first implementing 'old' legislation of the 1970s and then the Water Framework Directive.

Economic Considerations

The Candidate Countries should consider which legislation is likely to have significant consequences for their economies. Legislation which affects industrial or commercial sectors which make a significant contribution to the economy should be addressed before those which relate to small or

insignificant industries. In the water sector the Water Framework Directive will, over a period of time, cause considerable costs only if measures under the river basin management plans have to go beyond those under existing legislation on urban waste water treatment (Directive 91/271/EEC), dangerous substances (Directive 76/464/EEC) and the IPPC (Directive 96/61/EEC). The Nitrates Directive might, depending on the structure of agriculture and the state of surface and groundwaters, affect the agricultural sector in terms of storage capacities for manure. On a shorter timescale, implementation of the terms of the Dangerous Substances Directive 76/464/EEC and its Daughter Directives is likely to have an immediate effect on certain industries, alongside the IPPC Directive (96/61/EEC) due to the impact of the prior authorisation scheme and the application of best available technology. On a medium and long-term timescale, the measures for the 'priority substances' (Article 16 of the Water Framework Directive) will have an additional impact.

6.2 Timescales

The dates by which the Candidate Countries must implement and comply with EC water directives will have been negotiated case by case during the accession negotiations. Experience from earlier enlargements of the EU shows:

- Greece, Spain and Portugal received certain limited transition periods in the 1980s;
- Germany received transition periods of up to five years for its new Länder in 1990; and
- Austria, Finland and Sweden did not receive transition periods on accession in 1995.

Implementation tasks which will require particular effort include:

- waste water treatment: planning, design and construction of sewerage and waste water treatment plants;
- drinking water supply: upgrading of distribution systems and, where necessary, drinking water treatment to meet quality standards;
- developing and implementing new managerial arrangements to implement the Water Framework Directive; and
- developing and implementing emission reduction programmes and monitoring for 'priority substances' and selected dangerous substances under Art. 7 of 76/464/EEC.

Careful technical and financial assessment will be an indispensable precondition for consideration of any requests for transition periods for implementing EU legislation.

7 Economic and Financial Issues

7.1 Introduction

This section provides guidance on the economic and financial issues that will have to be considered in the implementation of the water legislation. The first two sections describe the types of costs likely to be incurred during implementation, the final sections discuss financial options.

7.2 Institutional Development

Although most Candidate Countries will have institutions devoted to the prevention of water pollution and the permitting of installations, they are unlikely to be developed everywhere to the extent required to implement the entire body of water legislation, particularly the Water Framework Directive. The application of new types of standards - emission limits, quality objectives, best

available techniques, and the need for extensive monitoring together with facilities and data processing, with a focus on planning within river basin districts, might sometimes require radical alterations in the method of working and in the institutional arrangements provided. It is therefore important to ensure that adequate budgets are provided for reorganisation and training. Salaries need to be set at a level that enables staff with the necessary training and experience to be retained, and a significant training budget is inevitable. Training needs should be assessed at an early stage and allowance made for any retraining which is necessary.

Human resources are required for:

- Developing strategies, plans and programmes of measures;
- Developing water quality objectives and emission limit values;
- Monitoring: sampling and analysing surface and ground waters as well as discharges;
- Issuing permits and authorisations, and providing for their periodic review;
- Inspection and sampling of facilities;
- Taking enforcement and other suitable control actions; and
- Data collection, analysis and reporting.

It is not possible to generalise on the costs of providing the institutional structures because of the wide variety of organisational structures already in place and the variations in the size and complexity of the countries, but the aspects which are likely to be most costly are:

- Additional professional and technical staff and their training and development;
- Laboratory testing, analytical services and quality assurance;
- Sampling and monitoring equipment; and
- Data collection, storage, analysis and reporting arrangements.

7.3 Facilities

It will be necessary to upgrade the facilities as a result of implementing the standards of water directives. Finance needs to be raised for capital investment expenditures and the recurrent costs incurred during operations. Ultimately costs should be recovered from the users/polluters of waters i.e. the consumers (domestic, industrial and agricultural sector).

The costs incurred in establishing new facilities will depend upon the standards which have to be adopted, and the number, type and size of the facilities required to meet these new standards. The final costs will also depend upon the current levels of treatment available for waste waters, drinking waters, industrial discharges and agricultural practices. Such a wide variety of changes will be needed that it is impossible to give a precise figure of the costs of implementing water legislation.

Few studies are available on the costs of compliance with EC legislation. The Danish Environmental Protection Agency³⁾ estimated the cost of complying with the Urban Waste Water Treatment Directive, Drinking Water Directive and the Nitrates Directive for ten Candidate Countries. Assuming that waste water treatment is carried out for agglomerations with a population equivalent (pe) of 2000 and more, and that elimination of nitrogen and phosphorus is only carried out for settlements with 10,000 pe or more, DEPA estimated the total cost of compliance for the ten Candidate Countries at DKK 100 billion (EUR 13.2 billion). However this figure is an underestimate as it excludes sewerage works. Implementation of the Drinking Water Directive is estimated at DKK 140 billion (EUR 18.6) while agricultural works to comply with the Nitrate Directive were estimated at DKK 30 billion (EUR 4 billion).

³ DEPA, 1997. EU's udvidelse mod øst - miljømæssige perspektiver. Miljøstyrelsen.

A study⁴⁾ prepared for DG ENV has indicated that for the water sector the total investment costs for the ten Candidate Countries would be EUR 3.5 billion per annum over five years with total short term investment costs of EUR 17.5 billion. In the longer term, in order to achieve full compliance over a period of 20 years, the total cost would be of the order of EUR 50 billion and comes to about EUR 500 per capita.

A DISAE study in Latvia⁵⁾ estimated that capital costs to comply with the Urban Waste Water Treatment Directive (91/271/EEC), Drinking Water Directive (80/778/EEC) and Nitrates Directive (91/67/EEC) would total EUR 810 million.

A 2002 study by the UK Department for the Environment, Food and Rural Affairs (DEFRA)⁶⁾ provides figures that can be used to identify estimated average capital costs for complying with the revision of the Bathing Water Directive in England and Wales. Estimated average capital costs are EUR 279 million without agricultural diffuse pollution costs and EUR 1,247 million with agricultural diffuse pollution costs.

Implementation costs for ‘priority’ water pollution directives have been estimated for Poland⁷⁾:

Main directives, investment outlays (million Euro 2000)			
	Implementation year	Required outlays through 2006	Required outlays over the entire implementation period
Priority WATER, including:		7 419.1	10 912.4
91/271 (wastewater treatment)*	2015	4 112.3	6 882.8 ⁽¹⁾
91/676 (agricultural nitrates)	2008	2 424.3	3 062.3
75/440 (drinking water quality)	2002	0	0
76/464 (discharge of dangerous substances + 6 "daughter" directives)	2007	882.4	967.3

Source: K. Berbeka

7.4 Cost Recovery

Part of the EU's environmental principles laid down in the Treaty establishing the European Communities is the "polluter pays principle". This means that anyone whose actions pollute or adversely affect the environment should pay the costs of remedial action. Whilst there are considerable technical difficulties in assessing the value of environmental impacts, it is less difficult to calculate the economic costs of measures such as waste water treatment plants. The polluter pays principle opens the way for the use of economics as an alternative to a regulatory approach for

⁴ EDC Ltd, May 1997, Compliance costing for approximation of EU environmental legislation in the CEEC.

⁵ Halcrow, 1998. Development of the Latvian Approximation Strategy and Programme.

⁶ Cascade Consulting for DEFRA, May 2002, Costing of the Revision to the Bathing Water Directive: Phase 3 Studies, Final Report.

⁷ Source: K. Berbeka, *Kraków* University of Economics, as published on the Institute of Environmental Tax Reform (Instytut Ekologicznej Reformy Podatkowej), *Kraków, Poland*, Website (<http://www.ierp.org.pl/wdrazaniedyrektyw-eng.htm>) - table indicating ‘Main directives, investment outlays (million Euro 2000)’ – for Poland.

controlling pollution. To implement this, all actions which have a detrimental effect on soil, water or air should have an economic value attached to them which is related to the cost of the environmental damage. It follows that activities which are less damaging will incur a lesser cost, and be therefore more economically justifiable. Whilst compliance with emission limit values and water quality standards has to be ensured, financial incentives such as environmental levies would additionally encourage environmentally sounder approaches. Such an 'instrument mix' is also set out specifically in the Water Framework Directive.

What is the attraction of economic instruments? Economic (or market based) instruments rely upon market forces to change the relative prices of goods and services which in turn modifies the behaviour of public and private polluters such that environmental protection or improvements can take place. It is an alternative to regulatory control in that it has the potential to make pollution control economically advantageous to commercial organisations and the citizen.

The main instruments for recovering costs are:

- pricing;
- pollution charges;
- marketable permits;
- subsidies;
- deposit-refund systems; and
- enforcement incentives.

The application of these tools in the water sector is discussed briefly below.

Pricing

Water and waste water tariffs or charges are set at levels which cover the costs for collection plus treatment or abstraction plus distribution, and this can induce organisations to use water-saving devices or bring in recycling or re-use. The costs charged may be set to exceed the actual costs of treatment for example. Marginal cost pricing can reduce water use (and consequent pollution). It is necessary to control the charges for effluent treatment at the same time, in some rational relationship to water use charges. The use of dilution as a means of meeting effluent standards is largely prohibited by EU water legislation. In the water sector the large increases in price for both water supplies and for collection and treatment of waste water, inevitable in Candidate Countries as the standards of quality and environmental protection required in EC legislation are implemented, should encourage water saving and reuse of waste water.

Pollution and use charges

Pollution charges or "taxes" are defined as a price to be paid for use of the environment. There are four main types:

- Effluent charges, based on actual quantities and/or pollution loads of effluents or on some surrogate (e.g. size of industrial installation), though they need to be set at a realistic level to encourage reduction in effluents produced. Such charges can be used to fund both the operating costs and loan charges for capital investment;
- User charges, based on water consumption or on some surrogate (e.g. property values). High sewage treatment costs encourage in-house treatment by industry. The use of water meters will be encouraged as water charges rise;

- Product charges, for example applied to the purchase of pesticides or fertilisers that will cause pollution before, during or after consumption. Their effectiveness will depend on the elasticity of demand for the product and whether there are less polluting substances available. This type of charge is useful for the control of non-point source pollution, as rising charges will tend to cause a reduction in usage; and
- Administrative charges, which are used to cover the costs of operating the regulatory system. In some countries, the basic costs of administering the permitting and regulatory procedures, together with costs of monitoring are paid for by an administrative charge which reflects the total costs of regulation. This is an example of applying the polluter pays principle. The charge does not raise sufficient funds for infrastructural improvement.

Tradeable permits

The responsible authority sets a limit on the total allowable emissions of a pollutant and allocates this amongst the sources of pollution by issuing permits to emit a stipulated amount over a specified period of time. After the initial distribution, permits can be bought or sold. Trade can be external between different organisations or internal between different installations within the same organisation. Tradeable permits work best where:

- the number of polluting sources is sufficient to establish a market;
- sources of pollution are well defined and easily measured;
- there are differences in the marginal costs of pollution control in the firms concerned;
- there is potential for technical innovation; and
- the environmental impact is not dependent on the location of the source or time of year.

It is possible to reduce the costs of regulation in this system, and transfers of polluting loads between dischargers becomes a self-regulated issue within an overall permissible limit for the area.

Subsidies

Subsidies can include tax incentives, tax credits, grants and low interest loans. The removal of subsidies can in itself act as an incentive to better environmental performance by forcing innovation and water use reductions. However, note that the Water Framework Directive expressly does not prevent funding of particular preventive or remedial measures in order to achieve the objectives of the Directive (see Article 9(3)).

Deposit-refund systems

Customers pay a surcharge when buying a potentially polluting product. On returning to an approved centre for recycling or disposal their deposit is refunded. This approach could be used for items such as pesticide containers which otherwise would be dumped in the environment and lead to water pollution. The advantage of such a system is that it can be administered by the private sector. The costs of administration may be high.

Enforcement incentives

These are penalties to induce polluters to comply with environmental standards or regulations. They include fines (for exceeding limits), performance bonds (payments to regulatory authorities before a potentially polluting activity is undertaken, which is returned when the correct regulatory levels are met), and liability assignment (where polluters are made liable for any environmental damage they

cause). Note, too, that discussions continue on a Community Environmental Liability Directive, which is another form of “enforcement incentive” measure.

8 Summary of Key Issues

In order to achieve a successful implementation of water legislation the following key points in Box 5 below should be addressed.

Box 5 Checklist of Key Questions to be considered in implementing EU Water Directives

Is there sufficient knowledge of the existing arrangements for managing water and effluents including particularly:

- existing water quality in surface waters (rivers, lakes, coastal waters) and groundwaters?
- identity of the dangerous substances of concern for the different river basins?
- identity of current point source discharges of waste water?
- effluent quality, treatment and management regimes?
- environmental impact of existing discharges and diffuse point sources?
- existing drinking water quality and treatment?
- existing legislative, institutional and regulatory arrangements?

Have all significant problems associated with the existing arrangements been identified, in particular:

- the legislative/ institutional/regulatory framework?
- the shortfalls in infrastructure to meet the required standards?
- the training/expertise shortfalls?
- the consultation/communications requirements?

Is the institutional framework capable of being reorganised to operate on a river basin basis, in particular:

- are there organisations with expertise and resources to act as competent authorities?
- is available data capable of being assessed on a river basin basis?
- are the organisations capable of undertaking sampling programmes?
- are there laboratories which can analyse water and effluents in the prescribed manner?
- do laboratories use accredited and standardised methods?

Are there clear links established between the competent authorities, central government, and other organisations which have responsibilities for issues which affect the quality of water?

Are the responsibilities for setting and meeting water quality objectives, limit values and issuing permits identified clearly?

Does the legal/institutional framework give sufficient powers to:

- enter premises?
- inspect and sample?
- authorise or otherwise control industrial effluent?
- regulate urban wastewater discharges?
- regulate the quality of drinking water?
- control activities within river catchments?

Are there arrangements in place for monitoring, surveillance and review of water and effluent quality?

Is there an enforcement regime in place with clear lines of accountability and appropriate penalties?

Is there an adequate data processing system available?

Are there adequate means of consultation/reporting with:

- the Commission?
- the public?
- organisations affected by river basin action plans?
- other countries where cross border issues are concerned?

Are there means of undertaking economic assessments of requirements for the water sector?

Is there a means of obtaining adequate funding for the construction of new infrastructure?

Is there an adequate training organisation in place?

The Urban Waste Water Treatment Directive

Official Title: Council Directive 91/271/EEC concerning urban waste water treatment (OJ L 135, 30.5.91), as amended by Commission Directive 98/15/EC (OJ L 67, 7.3.98)

1 Summary of Main Aims and Provisions

The directive concerns:

- the collection, treatment and discharge of urban waste water from agglomerations; and
- the treatment and discharge of biodegradable waste water from certain industrial sectors.

Its objective is to protect the environment from the adverse effects of such waste water discharges. Member States must ensure that urban waste water is collected and treated prior to discharge according to specific standards and deadlines.

In terms of the treatment objectives, secondary (i.e. biological) treatment is the general rule, with additional nutrient removal in so-called sensitive areas (tertiary treatment); for certain marine areas primary treatment might be sufficient.

The deadlines for implementing the directive vary according to the size of the agglomeration and the characteristics of the receiving waters.

The implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also WFD), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook.

The Urban Wastewater Treatment Directive is a specifically mentioned directive in the Water Framework Directive for the purposes of the new “combined approach” to water protection legislation (see Article 10 of the Water Framework Directive), is relevant to the designation of “protected areas” under Article 6 and Annex IV, and is also specifically required to be encompassed as a “basic measure” within programmes of measures for river basin management plans in order to achieve the objectives of the latter directive (see also Annex VI of the same).

2 Principal Obligations of Member States

2.1 Planning

- Identify sensitive areas and less sensitive areas, in accordance with specified criteria, and review the identification of these areas every four years (Arts. 5 and 6 and Annex II) (and see the requirements of the WFD as to identification of such areas and as to presentation of river basin management plans generally and also as to timing for the latter to correlate presentation of such identification and review reporting requirements).
- Establish a technical and financial programme for the implementation of the directive (Art. 17) (see also Article 9 of the WFD as to application of the principle of costs recovery for water

services, a term that includes the activities provided under this Directive).

2.2 Regulation

- Provide for prior regulation or specific authorisation for all discharges of urban waste water (Art.12, Annex IB) and of industrial waste water from the agro-food sector (Art.13, Annex III), as well as for all discharges of industrial waste water into urban collecting systems and treatment plants (Art.11, Annex IC) (and see the WFD for the requirement to provide for a wider base for reviewing such permits and authorisations and for amending their operation in the event of for example emergencies affecting the water status of receiving water bodies).
- Ensure that systems for collection of urban waste water are provided for all agglomerations with a population equivalent of 2000 or more (Art. 3 and Annex IA).
- Ensure that waste water treatment is provided for all these agglomerations, at the level of treatment specified and within the set deadline:
 - The basic rule for the level of treatment is secondary, i.e. biological treatment (Art.4 and Annex IB, table 1).
 - However, the treatment has to be more stringent, i.e. tertiary for discharges into so-called sensitive areas: in those cases, in addition to secondary treatment elimination of nitrogen and/or phosphorus and/or of any other pollutant affecting the quality or specific use of the water has to be provided (Art.5 and Annex IB, table 2) (see also WFD, Article 10 for the role of this Directive within the “combined approach”, and for the obligation to lay down more stringent conditions for permits and so forth as necessary).
 - For certain discharges to coastal waters treatment might be less stringent, i.e. primary, under specific conditions and subject to agreement of the Commission (Art. 6 and 8) (see also the WFD, Article 4(7) for example, where derogations of a certain nature are provided for including for because of sustainable development measures).
 - For agglomerations with a population equivalent of less than 2000, but equipped with a collecting system, 'appropriate treatment' has to be provided, i.e. treatment that ensures good quality of the receiving water (Art.7)
 - The deadlines set for Member States are end-1998, end-2000 and end-2005 respectively, with the more ambitious deadlines for discharges into sensitive areas and for the larger agglomerations (population equivalent above 15000).
- Ensure that the disposal of sludge from urban waste treatment plants is subject to general rules, registration or authorisation; and impose a ban on the disposal of sludge to surface waters (Art. 14) (see the reference to the WFD above in this regard).
- Ensure that treatment plants are designed, constructed, operated and maintained to meet specified performance requirements (Art. 10).

2.3 Monitoring

- Ensure appropriate monitoring capacity (bearing in mind the detailed provisions of the WFD as regards monitoring – see its Annexes II and V) for:
 - monitoring discharges from urban waste water treatment plants; and
 - monitoring waters receiving discharges of waste water covered by the directive (Art. 15 and Annex ID).
- If you consider applying for derogations (primary treatment for discharges into less sensitive

areas), carry out comprehensive studies to determine the effect on the environment of discharges of urban waste water in less sensitive areas (Arts. 6 and 8). Bear in mind that, inter alia, the Baltic Sea, the North Sea, the Black Sea and the Adriatic do not qualify as 'less sensitive areas'. (See generally the WFD as regards such matters, and see above for specific reference to derogations thereunder)

2.4 Information and Reporting

- Ensure that the relevant authorities publish reports to the public, every two years, on the disposal of urban waste water and sludge in their areas (Art. 16) (and see Article 14 of the WFD as to the more extensive provisions for public consultation and reporting).
- Report to the Commission on:
 - transposition of the directive into national legislation, with texts of the main provisions of national law adopted in the field covered by the directive (Art. 19).
 - implementation programmes (Art. 17 and Commission Decision 93/481/EEC);
 - situation reports on the disposal of urban waste water and sludge (Art. 16);
 - (in the case of applications for a derogation for less sensitive areas) comprehensive studies carried out in respect of discharges in less sensitive areas (Arts. 6 and 8);
 - upon request by the Commission: report on information collected through monitoring (Art. 15);

2.5 Additional Legal Instruments

There are several other legal instruments that should be borne in mind during the implementation of this directive. These include:

- Water Framework Directive (2000/60/EC).
- Nitrates Directive (91/676/EEC).
- Landfill Directive (99/31/EC) (see Section 4 of Handbook).
- Waste Incineration Directive (2000/76/EC) (see Section 4 of Handbook).
- Dangerous Substances Directive (76/464/EEC) and its seven daughter directives (but note that Article 6 thereof was repealed with effect from 22.12.00, that the remainder will be repealed with effect from 22.12.13, that a list of priority substances has been adopted as Annex X to the WFD by Decision 2455/2001/EC, and that, by way of transitional provision, for the purposes of Article 7 of 76/464/EEC the WFD (Art.22(3)(b)) Member States may apply the principles for identification of pollution problems and the substances causing them, the establishment of quality standards, and the adoption of measures, laid down in the WFD).
- Sewage Sludge Directive (86/278/EEC) (see Section 4 of Handbook).
- Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC) (see Section 7 of the Handbook) (and see the fiche on the WFD for the specific role of this Directive in the new regime under the WFD, but note the particular comments below) (see Section 7 of Handbook).
- Reporting Directive (91/692/EEC) and the amending Decision 94/741/EEC concerning questionnaires for certain waste sector Directives including sewage sludge.
- Directive on Access to Environmental Information (90/313/EEC, to be replaced by Directive 2003/4/EC) (see Section 2 of Handbook).
- Environmental Impact Assessment Directive (85/337/EEC) as amended by Directive 97/11/EC and Directive 2003/35/EC (see Section 2 of Handbook).

Particularly relevant issues in these directives concern:

- The provisions under the Urban Waste Water Treatment Directive which are an integral part of the basic measures in the programmes of measures under the Water Framework Directive, without any change to the deadlines set under the 1991 Directive;
- The provision of adequate facilities for either incineration or landfill of sewage sludge;
- The quality requirements for sewage sludge used in agriculture;
- IPPC Directive (96/61/EC) covers certain industrial installations covered by this directive as well, setting more stringent objectives and using, as does the Water Framework Directive, a 'combined approach' of emission controls and water quality standards; in each particular case the more stringent approach applies.

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are set out in chronological order wherever possible in the checklist below.

THE URBAN WASTE WATER TREATMENT DIRECTIVE – KEY IMPLEMENTATION TASKS	
1	Planning and Administrative Arrangements
1.1	Ensure a competent authority/competent authorities and institutional arrangements at national, regional and local levels for the implementation and enforcement of the directive. These should include the authority or organisation responsible for developing programmes for construction of new urban waste water treatment infrastructure; providing public finance for construction (i.e. delivering the implementation programme under art.17); and monitoring the progress during construction of infrastructure. (see, too, the WFD for the new arrangements to be put in place to address water protection issues on a river basin district basis, which may influence decisions for the allocation of competent authorities)
1.2	Ensure adequate laboratory capacities either within the administration and/or commercial laboratories under contract. The laboratories must use the methods specified in Annex I of the directive and be subject to regular quality control.
1.3	Decide whether to identify individual sensitive areas or to apply the more stringent tertiary treatment criteria to the whole territory. (see, too, Article 6 and Annex IV on the designation of “protected areas”)
1.4	Identify agglomerations of more than 2000 population equivalents.
1.5	Determine, in cooperation with local and regional authorities, the current state of existing sewerage networks and waste water treatment plants, and identify those which need a sewerage network to collect waste water and the provision of a waste water treatment plant.
1.6	Identify sensitive areas, i.e. those waters fitting into one or more of the criteria set in Annex II. Information may be obtained by carrying out studies and/or using available data. (see also point 1.2)
1.7	Within sensitive areas determine which of the parameters for more stringent treatment stipulated in Annex I.B have to apply in the particular situation. As a general rule most marine waters have nitrogen as the limiting factor for eutrophication, whilst phosphorus is the limiting factor for most freshwaters. (see the WFD Annex II as to the approach to classification of the status of water bodies)
1.8	Identify the catchment limits of sensitive areas. Within the whole catchment of the sensitive area all discharges from agglomerations of more than 10,000 will have to be provided with the more stringent treatment.
1.9	Establish an implementation programme for the construction of sewerage networks and waste water treatment plants, addressing both the treatment objectives and the deadline. As for the deadlines, there are three phased deadlines in the Directive: <ul style="list-style-type: none"> • by end 1998 sewerage systems and tertiary treatment for all agglomerations in sensitive areas with a population equivalent of more than 10000, • by end 2000 sewerage system and waste water treatment for all agglomerations with a population equivalent of more than 15000, plus appropriate treatment for discharges from the agro-food industry, • by end 2005 sewerage system and waste water treatment for all the other agglomerations covered by the Directive. Derogations from these deadlines ('transition periods') might be part of the Accession Treaty. Careful technical and financial assessment will be an indispensable precondition for all consideration of transition periods. See, further, on derogations and extensions of time for complying with the obligations to meet the objectives of the WFD, Article 4(4)-(9), and also on suggestions for considering transitional periods for compliance with the WFD. As for the treatment objective: <ul style="list-style-type: none"> • secondary (i.e. biological) treatment is the general rule, • additional nutrient removal or further measures are mandatory in so-called sensitive areas (tertiary treatment); • in certain marine areas primary treatment (less sensitive areas) might be sufficient; less stringent objectives might also apply for agglomerations in high mountain areas. • For agglomerations with a population equivalent of less than 2000, but equipped with a collecting system, 'appropriate treatment' has to be provided, i.e. a treatment that ensures good quality of the receiving water.
1.10	Assess whether there are marine waters in your territory that might qualify as less sensitive areas. (In this context bear in mind that, inter alia, the Baltic Sea, the North Sea, the Black Sea and the Adriatic do not qualify as 'less sensitive areas')
1.11	Impose a ban on any disposal of sewage sludge to surface waters.
1.12	Ensure an environmentally and technically sound reuse or disposal of sewage sludge. Options may be: <ul style="list-style-type: none"> • agricultural re-use, subject to the requirements of the Sewage Sludge Directive (86/278/EEC); • incineration, subject to the Waste Incineration Directive (2000/76/EC) ; • landfill, subject to the Directive on Landfill of Waste (99/31/EC).
1.13	Establish treatment and effluent standards for biodegradable waste water from the industrial sectors listed in Annex III of the directive where waste waters do not enter sewer networks for treatment at municipal plants. These may be on a nation-wide basis or specific to the local situation. The standards must be appropriate to the particular industries concerned and will involve consultation with the industry sectors. Bear in mind in this context that the IPPC Directive (96/61/EC) covers certain industrial installations also covered by the Urban Waste Water Treatment Directive , setting more stringent objectives and using, as does the Water Framework Directive, a 'combined approach' of emission controls and water quality standards; in each particular case the more stringent approach applies (see Article 10 of the latter). Ensure that such industrial discharges are subject to a prior authorisation regime.
1.14	Specify requirements for industrial waste waters discharging into the sewerage network. Such requirements have to comply with the provisions for pre-treatment according to Annex I C. Ensure that such industrial discharges are subject to a prior authorisation regime.
1.15	Identify a means of recovering costs for design, construction and maintenance of sewerage systems and waste water treatment plants from the users and set up the charging system.
2	Regulation and Monitoring (noting the further requirements for authorisations and as to monitoring set out in the WFD)

THE URBAN WASTE WATER TREATMENT DIRECTIVE – KEY IMPLEMENTATION TASKS	
2.1	Provide for a legally binding requirement that agglomerations in the size ranges set out in the directive are provided with collecting systems by the dates specified.
2.2	Provide for a legally binding requirement that discharges of urban waste water are subject to secondary treatment or tertiary treatment (depending on the size of the agglomeration and the characteristics of the receiving water) before discharge.
2.3	Provide for a legally binding requirement that discharges to freshwaters and estuaries from agglomerations with sewerage systems with less than 2,000 p.e., and from agglomerations of less than 10,000 p.e. to coastal waters are subject to appropriate treatment.
2.4	Establish a prior authorisation procedure for discharges of treated urban waste water ensuring permission by the competent authority.
2.5	Establish a prior authorisation procedure for all relevant industrial wastewater discharges from the agro-food industry (Annex III) of more than 4,000 p.e. that are not connected to urban waste water systems.
2.6	Establish a prior authorisation procedure for the disposal of sludge under which general rules, registration or authorisation procedures are used to give the competent authority control of the disposal route.
2.7	Establish a monitoring and inspection programme for compliance assessment of discharges from urban waste water treatment plants and for assessing the amounts and composition of sludge.
2.8	Ensure quality control with the laboratories involved. Sampling and analysis methods have to comply with the directive. Accreditation schemes for laboratories are a means of constantly ensuring such quality control.
2.9	Re-assess sensitive and less-sensitive areas at four yearly intervals. Plan for follow-up surveys of all sensitive and less-sensitive areas during this period. Review the criteria to ensure that they remain valid.
3	Technical Standards (see also the WFD as to classification of water body status, and standards)
3.1	The competent authority should develop and issue guidance on the precise definition of sensitive areas to be used in the territory, using the directive standards as the basis. In particular this should specify the scientific criteria by which the eutrophic state of waters is to be judged.
3.2	Prepare, in cooperation with experts as well as local and regional authorities, guidance documents for the design, construction and maintenance of sewerage networks, based at least on the provisions of the directive (Annex I.A). Such guidance documents should also address the issue of limiting pollution from overflows in combined sewage systems. Comparable technical guidance documents from other countries, prepared by national or regional authorities, technical associations or others, might be useful in this context.
3.3	Prepare, in cooperation with experts as well as local and regional authorities, guidance documents for the design, construction and maintenance of waste water treatment plants, to ensure compliance with the provisions of the directive (Annex IB, table 2 "tertiary treatment" for sensitive areas and their catchments, table 1 "secondary treatment" for other waters). Comparable technical guidance documents from other countries, prepared by national or regional authorities, technical associations or others, might be useful in this context. Where appropriate, prepare guidance documents on suitable alternatives (art.3) to collecting systems, ensuring at least the same level of environmental protection.
3.4	Prepare a guidance document for "appropriate treatment" for particular situations, giving examples, at the same time underlining that such treatment has to ensure the necessary good quality of the receiving water.
4	Consultation and Reporting
4.1	Ensure adequate cooperation and exchange of information with other Member States in cases where discharges of waste water have a transboundary effect on water quality of shared waters. (see, particularly, in this regard the provisions of the WFD as to international river basin districts and for management plans for the same – especially Articles 3 and 13)
4.2	Set up an adequate reporting procedure and data bases so that request from the Commission for information on efficiency of treatment plants and/or water quality of receiving waters as well as national reports can be addressed, and the public has access to relevant information under the Directive on Access to Environmental Information 90/313/EEC (to be replaced by Directive 2003/4/EC). In the case of dealing with the requests by the Commission on waste water treatment plants, an electronic questionnaire on CD-ROM has been developed by the Commission and will be available free of charge.
4.3	Report to the Commission (see the extensive reporting provisions under the WFD) on: <ul style="list-style-type: none"> • on transposition of the directive into national legislation, with texts of the main provisions of national law adopted in the field covered by the directive (Art. 19). • on implementation programmes (Art. 17 and Commission Decision 93/481/EEC); • on situation reports on the disposal of urban waste water and sludge (Art. 16); • in the case of applications for a derogation for less sensitive areas: on comprehensive studies carried out in respect of discharges in less sensitive areas (Art. 6 and 8); (In this context bear in mind that, inter alia, the Baltic Sea, the North Sea, the Black Sea and the Adriatic do not qualify as 'less sensitive areas'). • upon request by the Commission: on information collected through monitoring (Art. 15); see electronic questionnaire mentioned under 4.2.) • standards applicable to industrial discharges from the agro-food industry (Annex III) to surface waters; • two yearly reports to the public on waste water treatment and disposal of sludge (article 16); • All requests for derogations for using primary treatment only, or for delaying the completion of waste water treatment plants due to technical problems, are subject to individual applications to the Commission.

3.2 Phasing Considerations

Implementation of the Urban Waste Water Treatment Directive ranked amongst the most challenging and expensive tasks throughout the range of EU legislation. It is now fair to say that this place has been taken by the WFD. That notwithstanding, early and careful consideration of the environmental and technical aspects of the Directive remains of significant importance to this end.

There are a number of tasks that must be carried out at a very early stage in order to be able to proceed. These relate primarily to the administration of the directive and the collection of data to enable plans to be developed. The later stages involve construction of sewers and waste water treatment facilities and the timescale will depend upon the availability of finance, and construction engineering resources in the Candidate Country. A key issue will be the phasing of programmes to enable the construction work to be accomplished at an achievable and affordable rate. Consideration of the requirements and deadlines in the WFD may influence any phasing considerations remaining for Candidate Countries in this regard.

The first phase of implementation should include:

- Identify the 'agglomerations' in your country covered by the Directive;
- Identify sensitive areas in your country;
- Identify existing infrastructure (sewerage systems and waste water treatment plants), and assess where improvements are required;
- Assess your existing monitoring and inspection system, and provide for adaptation to the requirements of the Directive where necessary; and
- Prepare the institutional and administrative structure (establishment of competent authorities, authorisation system) and other institutional structures.

The second phase should involve:

- Establish, based in particular on the findings of the first phase on numbers/locations of 'agglomerations', 'sensitive areas' and 'existing infrastructure', an implementation programme for the construction of sewerage networks and waste water treatment plants. Within such a programme the issue of reuse and/or disposal of sewage sludge will have to be addressed as well. Such an implementation programme will also be a major factor in all considerations as regards transition periods, i.e. derogations from compliance with certain obligations by the time of Accession. Careful technical and financial assessment will be indispensable. The services of the European Commission (DG Environment) will be available for information, advice and interpretation;
- Prepare, based on the environmental and technical requirements established, investment plans;
- Ensure a system of cost recovery for sewerage and waste water treatment, considering inter alia construction and maintenance costs;
- Make monitoring and inspection schemes operational, as well as enforcement of the standards laid down in national legislation (pursuant to the directive); and
- Reviewing sensitive and less sensitive areas every four years.

The third phase will involve

- Completion of the construction and upgrading of infrastructure (sewerage networks, waste water treatment plants).

Time for completion including will form an important part of the negotiations on Accession. Careful technical and financial assessment will, in this context, be indispensable.

5 Costs

The main types of costs arising during the implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred To Implement the Directive (note the questions of costs set out under the fiche for the WFD)

Initial set-up costs

- Identifying agglomerations, sensitive areas, less sensitive areas.
- Establishing administrative structure and permitting system.
- Establishing implementation programme including investment for new infrastructure.

Capital Investment

- Construction of new and upgrading of existing sewerage networks.
- Construction of new and upgrading of existing waste water treatment plants in accordance with the set secondary treatment.
- Construction of tertiary treatment plants in sensitive areas.

On-going costs

- Operation and maintenance of infrastructure (sewerage, treatment plants).
- Monitoring and any necessary ongoing regulatory action and also enforcement action.
- Administrative costs.

The major factors influencing the costs of investment have been found to be:

- the initial state of the infrastructure for the collection and treatment of urban waste water before the implementation of the directive;
- the improvements required in terms of collection of waste water within the agglomerations addressed by the directive, including those for prevention of leaks and for reduction of pollution from overflows in combined systems;
- improvements required to urban waste water treatment plants to comply with the standards set by the directive;
- constraints due to urban planning and site requirements, and climatic factors; and
- costs of labour and equipment.

There are also considerable preparatory costs due to the amount of assessment required to identify agglomerations and sensitive and less sensitive areas, and the introduction of an adequate sampling and monitoring system.

Costs can vary widely between Member States. The 1998 Commission Report "Implementation of Council Directive 91/271/EEC concerning Urban Waste Water Treatment, as amended by Commission Directive 98/15" provides figures both on the overall investment forecasts and on investment per population equivalent.

The Nitrates Directive

Official Title: Council Directive 91/676/EEC on the protection of waters against pollution caused by nitrates from agricultural sources (OJ L 375, 31.12.91)

1 Summary of Main Aims and Provisions

The objectives of the Directive are twofold:

- to reduce water pollution caused or induced by nitrates from agricultural sources; and
- to prevent further pollution of this type.

To this aim Member States must identify waters affected by such pollution and waters which could be affected by such pollution and designate them and all known areas draining into those waters as 'vulnerable zones'. For these zones they must then establish and implement action programmes to reduce pollution. Such action programmes contain mandatory measures including maximum amounts of manure that can be applied to land every year. For areas outside the vulnerable zones reduction of pollution has to be promoted by (voluntary) codes of good agricultural practice. Member States are in this context obliged to monitor the nitrate concentrations in groundwaters and surface waters as well as eutrophication in surface waters.

Note the encompassing nature of the Water Framework Directive here, and the further specific reference therein to the Nitrates Directive for the purposes of applying the “combined approach” of water quality and emission limits control, together with control over diffuse sources (Article 10 of the former), and inclusion of the Nitrates Directive further as a “basic” measure to be included in the required programmes of measures for river basin management plans.

2 Principal Obligations of Member States

2.1 Planning

- Identify, based on comprehensive monitoring, waters that are, or that could be, affected by pollution by nitrates from agricultural sources (Art. 3 and Annex I). Criteria under Annex I are:
 - waters that contain or could contain more than 50 mg/l of nitrate;
 - waters which are found to be eutrophic or in the near future may become eutrophic.

Note that these criteria apply to ALL waters. Member States are therefore required to assess all waters, not just those currently used for the abstraction of drinking water.

- Designate as ‘vulnerable zones’ all known areas of land in your territory which drain into the identified waters under the above criteria.

Such a designation of vulnerable zones is not necessary if action programmes (under Article 5, below) are implemented throughout the whole territory.

Designations of vulnerable zones should be reviewed every four years (Art. 3).

- Establish a code (or codes) of good agricultural practice to be implemented by farmers on a

voluntary basis, and, where necessary, establish a programme to promote the application of the codes (Art. 4 and Annex IIA). Note that codes of practice are designated as “supplementary” measures under the Water Framework Directive for river basin management plans.

- Establish and implement action programmes, either in respect of designated vulnerable zones or throughout the whole territory. These programmes must take into account certain information and must contain, as a minimum, the measures specified in the Directive (Art. 5 and Annex III).

2.2 Monitoring

The Directive distinguishes between two different kinds of monitoring rules. These are presented in Article 5 and Article 6:

- If you have chosen to apply mandatory action programmes throughout your territory under article 3(5): You are required 'to monitor the nitrate content of waters (surface waters and groundwater) at selected measuring points which make it possible to establish the extent of nitrate pollution in the waters from agricultural sources.': article 5(6). At the same time Member States applying mandatory action programmes throughout their territory are exempt from the monitoring requirements under article 6.
- If you designate individual vulnerable zones: Article 6 provides guidance as to the monitoring methods for all waters. It is necessary to review the eutrophic state of fresh surface waters, estuarial and coastal waters every four years. Monitor nitrate concentration in fresh waters every four-year period. The only exception to this and subsequent revisions is for sampling stations with values below 25 mg/l nitrate for all previous samples, where a new factor likely to increase nitrate content has appeared; in such a case the monitoring programme might be repeated at intervals of eight years.

2.3 Reporting

- Report to the Commission (note that such reporting is also likely, too, to be subsumed in practice, to some extent at least, within the reporting obligations under the Water framework Directive) on:
 - designation of vulnerable zones (Art. 3);
 - codes of good agricultural practice (Art. 4);
 - changes made to action programmes (Art. 5);
 - implementation of the Directive, every four years (Art. 10 and Annex V);
 - measures taken to comply with the Directive (Art. 12); and
 - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art. 12).
- The Commission is obliged to provide a Summary Report to the European Parliament and to the Council, based on Member States' reports (Article 11). In parallel, the Commission regularly publishes an Implementation Report to the European Parliament and to the Council

2.4 Additional Legal Instruments

A number of other legal instruments should be borne in mind when implementing this directive. These include:

- Water Framework Directive (2000/60/EC).

- Urban Waste Water Treatment Directive (91/271/EEC).
- Drinking Water Directive (98/86/EC).
- Directive on Surface (Drinking) Water (75/440/EEC).
- Sewage Sludge Directive (86/278/EEC).

Particularly relevant provisions in these instruments include:

- River basin management plans and programmes of measures, ensuring 'good status' for all surface waters and groundwaters under the Water Framework Directive: The implementation of, inter alia, the Nitrates Directive, are, as indicated briefly above, part of the basic measures under the Water Framework Directive, 'vulnerable zones' being part of the 'protected areas' under Annex IV of that Directive.
- Identification of sensitive areas in the Urban Waste Water Treatment Directive (91/271/EEC): This identification should be seen in close context with the Nitrates Directive and its identification of vulnerable zones, as both directives address in many cases the same phenomenon, pollution of waters by nitrates. The Urban Waste Water Treatment Directive sets the obligation for more ambitious treatment (nutrient removal) inter alia for waste waters discharges into waters and catchments subject to eutrophication (or in danger of become eutrophic) and/or subject to nitrate contents above 50 mg/l.

3 Implementation

3.1 Key Tasks

The key tasks to implement the Nitrates Directive are summarised in the checklist below. The tasks are grouped under key headings and arranged in chronological order wherever possible. Some of the tasks might be found in parallel under more than one heading. Note, too, the Water Framework Directive generally here, and the river basin district approach, and note the provision for international river basin districts.

THE NITRATES DIRECTIVE - KEY IMPLEMENTATION TASKS	
1	Planning
1.1	Competent authority: Appoint a competent authority/competent authorities to implement the directive.
1.2	Laboratory capacity: Ensure the necessary laboratory capacity for measuring nitrate in surface waters and groundwater, as well as for carrying out measurements to determine the degree of eutrophication of surface waters.
1.3	Decide whether to: <ul style="list-style-type: none"> • identify nitrate vulnerable zones on an individual basis, • establish action programmes for the whole of their territory. Such a decision by the Competent Authority must take into account the binding criteria of the directive, but might as well look for cutting costs for regular monitoring and assessment in the case of individual vulnerable zones.
1.4	Develop criteria for eutrophication and for other affected waters: Prepare criteria and issue guidance on how to identify the degree of eutrophication of surface waters and the identification of waters affected by nitrate pollution. The criteria should include those set out in Annex 1 of the Directive. Scientific advice on what constitutes eutrophication, taking account of the natural physical and environmental conditions in the territory, should be considered in drawing up the criteria. Experience gained in the framework of international water protection conventions such as OSPAR (for the North-East Atlantic) and HELCOM (for the Baltic Sea) might be valuable in this context. <p>Bear in mind that there is no choice between EU legislation and obligations under International Conventions: You will have to comply with the rules under EU water legislation and those under International Conventions such as HELCOM, if you are a EU Member State and a Signatory Party to a convention. Note, too, the objectives of the Water Framework Directive include assisting in greater compliance with obligations of the Community and/or Member States in certain international conventions, including those mentioned above.</p>

THE NITRATES DIRECTIVE - KEY IMPLEMENTATION TASKS	
1.5	<p>Identification of sampling points for surface waters and groundwaters. Surface waters should include estuaries, coastal and marine waters. As regards sampling stations, consider making use of already established ones (under your national monitoring systems, or Directive 75/440/EEC or Decision 77/795/EEC – note, to be repealed under the Water Framework Directive, Article 22, by 22.12.07), or other stations representative of surface and or groundwater conditions of the country. Or stations representative of groundwater aquifers of the country.</p> <p>Initial monitoring: Set up monitoring programme which would include sampling and testing over at least one year initially to obtain data on nitrate levels and the degree of eutrophication of surface and groundwaters, and be repeated at least every four years. The sampling programme should apply to inland freshwaters, estuaries, coastal and marine waters where agricultural land can drain to these either directly or via rivers.</p> <p>(If you have chosen to apply mandatory action programmes throughout your territory under article 3(5), you are exempt from the monitoring obligations under article 6. However, your sampling and monitoring system has to provide information on the extent of nitrate pollution as well as on the progress achieved by implementing the action programmes.)</p>
1.6	<p>Review of data obtained: Set up a procedure to review the data obtained from the sampling programmes. The competent authority may undertake the review on a national or local scale.</p>
1.7	<p>If you have decided to identify individual nitrate vulnerable zones: Use the results of sampling, and information concerning agricultural activities to identify waters which are affected by nitrate pollution.</p> <p>Plan for the development of:</p> <ul style="list-style-type: none"> • a code or codes of good agricultural practice across your whole territory. • an action programme or several action programmes for the vulnerable zones, including those measures that have to be mandatory (minimum storage capacities, restrictions to application of manure in terms of time and location, etc.). <p>Plan for disseminating information on those codes and on the action programmes in cooperation with other interested and involved parties (brochures, information meetings, training, pilot projects).</p> <p>'Vulnerable zones': Identify those waters which are above 50 mg/l or in danger of becoming so, and those which are subject to eutrophication (or in danger of becoming eutrophic; compare with the criteria in Annex I or with further criteria developed by the competent authority to identify eutrophic waters). Identify and establish the hydrological boundaries of land draining into waters polluted by nitrate pollution.</p> <p>Plan for developing an action programme or several action programmes including those measures that have to be mandatory (minimum storage capacities, restrictions to application of manure in terms of time and location, etc.). Arrange for information on those action programmes in cooperation with other interested and involved parties (brochures, information meetings, training, pilot projects). However, stress within this information the mandatory character of the forthcoming measures.</p>
1.8	<p>If you have decided to apply mandatory action programmes throughout your territory:</p> <p>Plan for developing an action programme or several action programmes including those measures that have to be mandatory (minimum storage capacities, restrictions to application of manure in terms of time and location, etc.). Arrange for information on those action programmes in cooperation with other interested and involved parties (brochures, information meetings, training, pilot projects). However, stress within this information the mandatory character of the forthcoming measures.</p>
2	Regulation, Monitoring and Enforcement
2.1	<p>Prepare legislative measures for the mandatory measures under the action programmes (e.g. minimum storage capacities, restrictions to applications of manure in terms of time and location, maximum amount of nitrogen per hectare and year). Note that such measures may have to be revised in the light of the Water Framework Directive obligations. Of the restrictions listed in Annex III, the most significant are:</p> <ul style="list-style-type: none"> • land application of fertilisers to be based on a balance between nitrogen requirements of the crops and the nitrogen supply to the crops from the soil and from fertilisation, • maximum of 170 kg of nitrogen per hectare per year to be applied to land in the form of animal manure. There is an option for derogations, but only on condition that they are justified on the basis of objective criteria, do not prejudice the achievement of the objectives of the directive, and are subject to approval by the Commission.
2.2	<p>Establish an enforcement regime to ensure compliance with the regulations.</p>
2.3	<p>Identify other actions that will contribute to a reduction in nitrate levels in water bodies, e.g. from industrial and urban waste water sources.</p>
2.4	<p>Monitoring cycle and review of measures:</p> <ul style="list-style-type: none"> • Repeat the monitoring programme and assessment of designated waters, and all other waters (except where nitrate levels are less than 25 mg/l), every four years in order to designate further zones if necessary • Set up a review process to check the effectiveness of the measures, in particular the action programmes in nitrate vulnerable zones, as a basis for the necessary follow-up measures along the same lines, along more stringent lines etc.
3	Preparation of Technical Advice and Guidance Notes
3.1	<p>Prepare a voluntary code or several codes of good agricultural practice for reducing nitrate pollution from agricultural sources. The code should take account of the issues set out in Annex II of the directive.</p> <p>Prepare dissemination of information on those codes in cooperation with other interested and involved parties such as farmers' associations, regional and local authorities, other ministries. Means of information might include brochures, booklets, information meetings, training schemes, pilot projects etc.</p>

THE NITRATES DIRECTIVE - KEY IMPLEMENTATION TASKS	
3.2	Prepare an action programme (or several action programmes) for nitrate vulnerable zones. The action plan has to take account of the issues set out in Annex III of the directive. Prepare dissemination of information on those action programmes, including those measures that have to be mandatory (minimum storage capacities, restrictions to application of manure in terms of time and location, maximum amount of nitrogen to be applied per hectare and year, etc.). Preparation of those activities should be done in cooperation with other interested and involved parties such as farmers' associations, regional and local authorities, other ministries
4 Communication and Consultation	
4.1	Assess with relevant Ministries and other bodies at national, regional and local level, as well as farmers' organisations the scope of options for awareness raising and training about the implications of the directive, and decide on the necessary steps
4.2	If you have chosen the option of applying mandatory action programmes throughout your territory, arrange for information on the requirements (minimum storage capacities, restrictions to application of manure in terms of time and location, etc.), in cooperation with other interested and involved parties (brochures, information meetings, training, pilot projects).
4.3	If you have chosen to designate individual vulnerable zones, arrange for information on codes of good agricultural practice in cooperation with other interested and involved parties (brochures, information meetings, training, pilot projects).
4.4	Arrange your government's representation at the Management Committee established under articles 8 and 9 of the directive.
5 Reporting	
5.1	Establish a reporting system and databases to enable the recording and reporting of information gathered as a result of implementing the directive's requirements.
5.2	Ensure the necessary reporting by a body within your administration on: <ul style="list-style-type: none"> • designation of nitrate vulnerable zones, including monitoring results; • action programmes, including storage requirements and restrictions in manure application; • codes of good agricultural practice; • review of designations of vulnerable zones; • timescales for expected improvements.

3.2 Phasing Considerations

There are several distinct phases in the implementation of this directive which require early involvement and careful consideration. These are set out below in chronological order, distinguishing whether individual vulnerable zones are identified or action programmes are applied throughout the national territory:

Designation of individual nitrate vulnerable zones:

Phase One:

- Establishing a measuring and monitoring programme to collect information from which it is possible to identify the waters that are polluted by nitrates. This requires the collection of data over a period of at least one year.
- Identifying the areas of agricultural land that may be classified as vulnerable zones.
- Identifying the causes of high nitrate levels in waters from activities in the adjacent areas of land, and identifying means to reduce the nitrate inputs to water, including consultation with farmers and others to differentiate agricultural from non-agricultural sources.

Phase Two:

- Preparation of Action Programmes including mandatory measures and the preparation of voluntary codes of good agricultural practice for each vulnerable area.

Phase Three:

- Implementing the Action Programmes, undertaking training of farmers and establishing an ongoing monitoring programme and undertaking a review of their effectiveness every four years.

Application of Action Programmes throughout the national territory:

Article 5 of the Directive contains information on Action Programmes.

Action Programmes are to be established within a two-year period following the initial designation of a vulnerable zone or within one year of each additional designation (Art. 5(1)). They shall be implemented within four years of their establishment (Art.5 (4)).

Activities are restricted to two phases:

Phase One:

- Identifying the causes of high nitrates throughout the country and preparation of a series of measures within an Action Programme or several Action Programmes to improve nitrate levels throughout the country. There could be different Action Programmes for different parts of the country.

Phase Two:

- Implementing the Action Programme or several Action Programmes and establishing a programme to monitor and review the effectiveness of the measures taken to reduce nitrate pollution in intervals of four years.

4 Implementation Guidance

Note, too, the fiche for the Water Framework Directive on the matters set out below.

Planning

- This directive encourages ministries of environment and agriculture to collaborate in identification of waters vulnerable to nitrate pollution and to reduce inputs of nitrate by controlling fertiliser usage and manure spreading. The ministry of health could also be involved relating to the pollution of drinking water. In deciding upon the most appropriate body to be appointed to the position of competent authority for the implementation of this directive the relationships between the proposed bodies should be examined to ensure that there are effective consultation arrangements and links between them, and also ensure that the arrangements decided are compatible with the Water Framework Directive core basis for water protection arrangements – the river basin district. The directive requires action to be taken by the farming industry, and in most Member States a Ministry of Agriculture will have jurisdiction over farming issues. An effective code of good agricultural practice could be drawn up by the Ministry of Agriculture in consultation with the environment ministry or agency, or drawn up with the advice of specialists within the Ministry of Agriculture. As codes of conduct are supplementary measures, but otherwise also within programmes of measures for river basin management plans, the consultation provisions in the Water Framework Directive will need to be complied with.
- The relationship with the Urban Waste Water Treatment Directive (91/271/EEC) is an important consideration as the designation of “sensitive areas” under that directive uses similar criteria, and requires action plans which may have an impact on action taken under this directive.
- Surface waters and groundwater areas must be designated as vulnerable zones if they contain or

could contain more than 50mg/l of nitrate.

- There are two options in the way this directive may be implemented. The directive requires the identification of land which drains into waters which are affected by pollution by nitrates to be designated as “vulnerable zones”, and to establish action plans to improve the situation in each zone. Under Article 3(5), however, a State may choose to apply an action plan to the whole of its territory. The first alternative requires extensive monitoring and investigation. The second option limits the amount of monitoring which must be undertaken in the first instance, but applies any agricultural changes that are required to the whole country.

Examples of Designation of Vulnerable Waters

Five Member States have chosen to designate their whole territory as vulnerable zones.

In one Member State (UK) the decision was taken to designate individual areas which are eutrophic or exceed the drinking water nitrate limit. The basis for this was that restrictions on fertiliser usage where the water was not vulnerable or where there were other reasons for high nitrate (such as sewage works discharges) would unnecessarily increase crop production costs for farmers living outside the vulnerable zones. Step by step procedures were issued by the then Department of Environment on how to identify vulnerable zones. These specify the chemical and biological criteria for surface freshwaters, marine waters and groundwaters.

In one Member State (Fin) a decision was made to designate all waters where nitrate level was above 15 mg/l. On this basis four areas with a concentration greater than 25 mg/l and seven with a concentration above 15 mg/l have been designated.

Action plans were officially adopted by regulations issued in 1996. These incorporate the provisions in the directive and specify the amount of nitrate manure to be used as that containing a maximum of 170 kgN per hectare, subject to certain exceptions. It may be necessary to store manure at certain times of the year and this is also specified by the regulations. Farm grant schemes have been made available to help farmers inside vulnerable zones to pay for the construction of manure storage facilities in accordance with Council Regulation 2328/91/EEC (as amended by 2843/94/EEC). Enforcement of the regulations is a matter for the national Environment Agency. A Code of Good Agricultural Practice has been drawn up by the Ministry of Agriculture.

In another Member State (EL) some coastal gulfs have been designated. Another Member State which identified eutrophic coastal waters, found that the problems were due to phosphate and therefore not relevant to this directive.

In a third Member State (F) the investigations were carried out on a river basin basis, involving the establishment of a “working group” and incorporating a high level of consultation. About half the available agricultural land falls within designated vulnerable zones in the areas so far surveyed.

In a fourth Member State (S) monitoring is carried out at a number of different levels, national, regional and local. Marine waters are sampled at outstations and along the coast. In addition nitrogen transport to coastal areas from the larger estuaries is calculated. The effects of agriculture are measured in small so-called representative areas. All inland waters have been found to be less than 50mg/l and no freshwaters have been designated. However, significant portions of the coastline were found to be eutrophic and the waters draining into these areas have been designated as vulnerable.

Another Member State (P) has found that groundwater has exceeded the criteria and five vulnerable zones have been established, whereas surface waters are eutrophic due to phosphate, and no surface waters have been designated. Furthermore, a Vulnerable Zones Integrated Action Plan has been adopted and three vulnerable zones have been designated on the basis of groundwater nitrate concentrations that exceed the drinking water limit for nitrates. Only farmers living in vulnerable zones have been involved in this Action Plan, and no compensation has been granted to farmers living within them.

- In drawing up Action Plans the possible role of non-agricultural sources of nitrates in causing an

exceedance of the 50 mg/l limit for drinking waters or as a contribution to eutrophication, must be taken into account. The most likely source of non-agricultural nitrate is from domestic sewage works. This is an important issue if the decision has been taken to implement the directive through the identification of individual zones. The implementation of the Urban Waste Water Treatment Directive (91/271/EEC) may have a significant impact where nitrate removal is installed in waste water treatment plants on the grounds that the sewage effluent discharges into a sensitive area under the terms of that directive. The relative contributions of nitrate from agriculture and sewage effluent are not always easy to determine. Ensuring that plans made under the nitrate directive take account of the plans to be implemented for the Urban Waste Water Treatment Directive (91/271/EEC) should be a duty undertaken by the competent authority.

Examples of Member State Action Plans

In one Member State (S) action plans were transformed into laws to ensure that nutrient supplies matched the needs of plants. Measures included maintaining a higher proportion of vegetation cover near the coast, a reducing farming intensity, restricting the level of manure spreading during autumn and winter, and increasing manure storage capacity. Economic instruments such as grants for catch-crop cultivation, manure storage construction and environmental taxes on nitrogen have been used.

Another Member State (DK) has set mandatory standards for the design and operation of such facilities as manure stores and milking parlours. The times that manure may be spread are specified in law, and mandatory crop rotation and fertiliser plans must be submitted to the authorities. Some crops such as catch crops, and crops with long growing seasons are known as green crops and 65% of the growing area must be used for these. Fertiliser use plans must be drawn up and submitted. The minimum storage capacity for manure must be six months. There are maximum limits for manure applications based on livestock numbers.

In one Member State (P), because there is no experience of deciding whether nitrates come from agriculture or sewage effluents, a decision was taken to implement the Vulnerable Zones Integrated Action Plans.

Technical Advice and Guidance

- In order to identify waters which are subject to eutrophication, common criteria, such as levels of chlorophyll-a, or the presence of excessive algal growths should be established. Existing definitions developed by organisations such as PARCOM for coastal and estuarial waters (nitrate, algal blooms), and OECD for freshwater (phosphate, chlorophyll, Secchi disc) may be useful for this purpose. Sampling to establish eutrophication should take account of seasonal variations in the parameters selected. Guidance documents should be prepared prior to the final assessment. To provide a consistent application of the directive throughout the country, a network of sampling points should be established. The guidance for this directive must not conflict with that issued under the Urban Waste Water Treatment Directive (91/271/EEC) for the identification of sensitive areas. If different competent authorities are appointed, consultation should be arranged between them on this issue. (See the fiche on the Urban Waste Water Directive for guidance on defining the eutrophic status of waters).

Monitoring and Regulation

- The competent authority, in collaboration with other relevant ministries and experts, should identify periods for each zone (or more generally) when application of fertilisers or manure must be prohibited (by reference to meteorological conditions, soil characteristics and farming practices). These should be made mandatory. The codes of good agricultural practice may refer to the use of fertilisers in terms of when and how they should be used, and the precautions to take to prevent run-off from land into watercourses which may occur during their application, particularly from land which is close to watercourses and direct run-off may occur under conditions such as steeply sloping land, or in very wet periods. Nitrate release from ploughing of land should also be

discussed in the codes. The need for manure storage facilities should be covered. Such codes are voluntary but Candidate Countries should consider what means are available to encourage their general adoption by farmers.

- Adequate training in the new techniques of farming is essential, and a training programme should be a feature of the Action Plans. A means of judging the effectiveness of training should be set up.

Examples of Codes of Good Agricultural Practice

Codes of good agricultural practice have been drawn up in most Member States. These usually comprise a single document. However, in several Member States such codes were already part of existing agricultural legislation. In at least two states which have designated the whole of their territory as vulnerable zones, the measures within the codes of good agricultural practices have been combined with the action plans into a single law.

In one Members State (UK) although the code of good agricultural practice is voluntary, it has been given a statutory basis. This means that if a farmer causes pollution and is subsequently prosecuted, the Court can take the degree to which the farmer adhered to the code into account in its decision. This is seen as a significant encouragement for the adoption of the code by farmers.

- It is a requirement of the directive that Member States monitor the effectiveness of the measures implemented to reduce nitrate pollution. This means not only monitoring to assess the level of nitrate pollution in order that new designations can be made, or existing designations reviewed, but also the effectiveness of the agricultural regime put into place.

Consultation and Reporting

- It is important to involve the farming community in consultation over the action required by the directive as the action plans may result in farmers having to alter the ways in which they have worked for many years, including changes to the cropping patterns, and how they deal with livestock and livestock wastes. The storage of wastes during parts of the year may be required, and the construction of new storage facilities may be required. It is difficult to visit and inspect farms over a large area at frequent intervals, and therefore the cooperation of farmers in ensuring that they accept and incorporate the new methods into their everyday working practices is important. Consultation with farmers, their representative bodies and their Ministry is essential. Such consultation may be useful in resolving disputes where the boundaries of vulnerable zones cross individual farm boundaries and more than one farmer is involved in meeting the improvement criteria.

5 Costs

In accordance with the 'polluter pays' principle of the Treaty establishing the European Community, the costs of measures necessary to change current practices to reduce nitrate pollution should be borne by agricultural operators. The checklist below shows the main areas of cost generated from implementation of this directive. Note, however, on all elements set out below, the Water Framework Directive fiche.

Checklist of the Types of Cost Incurred To Implement the Directive

Initial set-up costs

- Establishment of the competent authority/authorities
- Laboratory capacity.
- Initial sampling programme and analysis.
- Data interpretation of first survey.
- Consultation with farmers.
- Designating vulnerable zones and preparation of action programmes.
- Preparation and publication of codes of good agricultural practice.

Capital Expenditure

- Construction of manure storage facilities.

On-going costs

- Changes to farming practices
- Follow-up surveys at four yearly intervals.
- Designation of additional zones (unless action programmes cover whole country).
- Preparation of additional action programmes.

The Dangerous Substances Directive

Official Title: Council Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (OJ L 129, 18.5.76)

1 Summary of Main Aims and Provisions

The aim of the directive is to eliminate, or to reduce, pollution of water by certain dangerous substances listed in the directive. The implementation of this directive must be closely co-ordinated with the implementation of the Water Framework Directive.

This directive is to be integrated into the Water Framework Directive, and is to be repealed with effect from 22.12.13 (see Article 22 of the Water Framework Directive, save that Article 6 was repealed with effect from 22.12). In place of the provisions under Article 6, a list of priority substances has been adopted as Annex X to the WFD by Decision 2455/2001/EC, effective as from 16.12.01.

The implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also “WFD”), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook. This is all the more important as the WFD provides (Art.22(3)(b)) that, by way of transitional provision, for the purposes of Article 7 of 76/464/EEC Member States may apply the principles for identification of pollution problems and the substances causing them, the establishment of quality standards, and the adoption of measures, laid down in the WFD).

See also the WFD fiche for details of the specific requirements for monitoring, regulation and as to implementation. Note, in particular, that under the WFD water control is effected on a river basin district basis. Note, too, that the WFD provides for particular administrative and regulatory control in the case of international river basin districts.

In respect of discharges of listed substances, Member States must set emission standards, establish a system of prior authorisation, and implement programmes to prevent or reduce pollution. See the note above as to using the WFD provisions for the purposes of Article 7 of this Directive.

Selected substances are regulated further by ‘daughter directives’ (see list below), which establish emission limit values and water quality objectives for List I substances. However, see Decision 2455/2001/EC establishing a list of priority substances in the field of water policy, and the obligations on Member States to act as regards protective measures, in the absence of further action at Community level, under Articles 16 and 17 of the WFD in this regard.

The daughter directives establish emission limit values and water quality objectives for List I substances. However, note the prospects for repeal of these daughter directives under the WFD, Article 16, and see Annex IX. For now, in any event, in tackling water pollution from substances prescribed under this directive and its daughter directives, Candidate Countries should use the “combined approach” set out in the WFD (Article 10). That is to say, rather than basing emission standards on emission limit values or on water quality objective, both approaches should be used to mutually reinforce each other, taking into requisite account the control provisions for diffuse sources of water pollution. In any particular situation, the more rigorous approach will apply.

The daughter directives are:

- Council Directive 82/176/EEC on Limit Values and Quality Objectives for Mercury Discharges by the Chlor-alkali Electrolysis Industry (OJ L 81, 27.3.82);
- Council Directive 83/513/EEC on Limit Values and Quality Objectives for Cadmium Discharges (OJ L 291, 24.10. 83);
- Council Directive 84/156/EEC on Limit Values and Quality Objectives for Mercury Discharges by Sectors other than the Chlor-Alkali Electrolysis Industry (OJ L 74, 17.3.84);
- Council Directive 84/491/EEC on Limit Values and Quality Objectives for Discharges of Hexachlorocyclohexane (OJ L 274, 17.10.84); and
- Council Directive 86/280/ EEC on Limit Values and Quality Objectives for Discharges of Certain Dangerous Substances included in List I of the Annex to Directive 76/464/EEC (OJ L 181, 4.7.86), as amended by Directive 88/347/EEC and Directive 90/415/EEC.

The directive applies to inland surface water, territorial waters, and internal coastal waters (referred to below as ‘waters’). Groundwater is regulated through Directive 80/68/EEC and is not covered by this directive. However, note that the WFD will extend to include all such waters under a single control regime structure.

The WFD provides, as indicated above, for the repeal of directive 76/464/EEC and its daughter directives. The current status of the integration of the directive into the Water Framework Directive can be summarised as follows:

- Art. 6 of Directive 76/464/EEC (which authorises the Council to lay down limit values for emission standards for various dangerous substances) was repealed on the date of entry into force of the Water Framework Directive i.e. 22.12.00 (Art. 22(2) of the WFD).
- The list of priority substances adopted under the WFD and set out in Decision 2455/2001/EC replaces the list of substances set out in the Commission Communication to the Council of 22 June 1982 (Art. 21(3a) of the WFD). Articles 10 and 16 of the WFD set out the requirements for controlling priority substances (see fiche on the WFD).
- The whole of Directive 76/464/EEC will be repealed after 13 years of the date of entry into force of the WFD, namely, 22.12.13 (Art. 21(2) of the WFD).
- Member States may apply the principles and procedures laid down in the WFD for the purpose of implementing Article 7 of the Dangerous Substances Directive (which obliges Member States to establish programmes to reduce water pollution caused by List II substances) (Art. 23(3)(b) of the WFD), and see the note at the beginning of this fiche.
- As will be seen from the above, although the directive is to be repealed in the future, it is still in force. Candidate Countries will therefore still need to transpose and implement the requirements of the Directive. However, it is crucial that in doing so they take into account the way in which the WFD impacts on the implementation of this directive.

As a general rule, Candidate Countries should be able to use the programmes under Directive 76/464/EEC to fulfil the relevant parts of the requirements of the WFD (for example the provisions of Art. 11 relating to the adoption of a programme of measures to achieve the environmental objectives set out in Article 4 of the WFD; and Article 13 which contains provisions relating to river basin management plans). In considering the remainder of this fiche, Candidate Countries might wish to bear the comments made above in mind, as they may save duplication or wastage of effort in implementation terms.

This fiche deals with the principal obligations and implementation requirements and guidance that are common to the framework directive and its daughter directives. Obligations and implementation requirements that are specific to particular daughter directives are dealt with in separate sections on the relevant directives.

2 Principal Obligations of Member States

2.1 Planning

- Draw up an inventory of discharges into waters that may contain List I substances (Art. 11).
- Establish and implement programmes:
 - to avoid or eliminate pollution of waters by certain List I substances (Art. 5 of 86/280);
 - to avoid or eliminate pollution of waters by certain mercury discharges (Art. 4 of 84/156);
and
 - to reduce pollution of waters by List II substances (Art. 7).

2.2 Regulation

- Take measures to eliminate pollution of waters by substances in List I and to reduce pollution of waters by substances in List II (Art. 2 and Annex).
- Issue authorisations laying down emission limit values for discharges of List I substances into waters and sewers. These emission limit values must not exceed the limit values specified in the relevant daughter directives or, alternatively, they must ensure that the quality objectives laid down in the daughter directives are met and maintained in areas potentially affected by the discharge (Art. 3, 6 and Annexes to daughter directives). These standards must take into account the best technical means available, and must not be less stringent than the most nearly comparable limit value set out in Directive 86/280.
- Issue authorisations laying down emission limit values for discharges of List II substances. These emission limit values must be based on the quality objectives laid down in the relevant daughter directives (Art. 3, 7 and Annexes to daughter directives).
- Require prior authorisation (which would include emission limit values) of discharges liable to contain List I and List II substances (Arts. 3, 5, 6 and 7, and Annexes to daughter directives).
- Only grant authorisations to new industrial plants if those plants apply standards corresponding to best technical means available necessary for elimination of pollution or to prevent distortion of competition.
- In cases of non-compliance with emission standards, take steps to ensure compliance with conditions of authorisation and, if necessary, prohibit the discharge (Art. 5).
- Ensure that measures adopted to implement the requirements of the directive do not increase pollution of waters not covered under the directive, or increase pollution of waters covered by the directive. Such measures would include a prohibition against all acts that circumvent the provisions of the directive (Art. 8 and 9).

2.3 Monitoring

- Establish monitoring procedure to check whether discharges comply with emission limit values.
- Carry out monitoring of:
 - discharges (Annexes to daughter directives);
 - waters affected by discharges (Annexes to daughter directives); and
 - waters affected by discharges, where it is necessary to prove to the Commission that quality objectives are being met and maintained, as an alternative to limit values (Art. 6).

2.4 Consultation and Reporting

- Co-operate with other Member States, with a view to harmonising monitoring procedures, where discharges also affect their waters (Art. 4 or 5 of daughter directives).
- Report to the Commission on:
 - the results of monitoring by the national network (Art. 13);
 - the selection of appropriate quality objectives (Annexes to daughter directives);
 - summaries of programmes and results of their implementation (Art. 7);
 - other relevant information, as requested (Art. 13, Arts. 5 or 6 of daughter directives, and Council Directive 91/692/EEC amended by Directive 94/741/EEC; and Water Questionnaire Decision 92/446/EEC as amended by 95/337/EEC);
 - reasons why measures to be authorised do not correspond to best technical means (Art. 3 of daughter directives);
 - reasons for non-compliance with the cadmium quality objective (Annex II of Council Directive 83/513/EEC);
 - results of inventory of discharges into waters containing List I substances;
 - measures taken to comply with the directive (Arts. 6 and 7 of daughter directives); and
 - transposition, with texts of the main provisions of national law adopted in the field covered by the directive (Arts. 6 and 7 of daughter directives).

2.5 Additional Legal Instruments

The Dangerous Substances Directive is a framework directive for controlling the discharge of certain dangerous substances. Implementation of this directive is linked to a series of daughter directives listed in Section 1. This group of directives is also linked to several other legal acts including:

- Water Framework Directive (2000/60/EC).
- Groundwater Directive (80/68/EEC) (to be repealed by the WFD as from 22.12.13 – Art.22)..
- Integrated Pollution Prevention and Control (IPPC) Directive (91/61/EEC, and see the WFD for the particular position of this directive thereunder, and see, too, Section 7 of the Handbook).
- Reporting Directive (91/692/EEC) as amended by Decision 94/741/EEC.
- Directive on Access to Environmental Information (90/313/EEC, to be replaced by Directive 2003/4/EC) (see Section 2 of the Handbook).

Under the WFD River Basin Management Plans must contain water quality objectives for additional substances of regional concern that are not regulated within the framework of Article 16 of the Directive (i.e. provisions relating to priority list substances).

Many of the industries that discharge dangerous substances will be controlled through the authorisation procedures set up to implement the IPPC Directive (91/61/EEC).

3 Implementation

3.1 Key Tasks

The Dangerous Substances Directive requires Member States to control all discharges of dangerous substances into water by an authorisation procedure. Note the impact of Decision 2455/2001/EC establishing a list of priority substances in the field of water policy, and set as Annex X in the WFD. List I substances must be *eliminated* and action must be taken to *reduce* pollution from dangerous substances in List II.

The Dangerous Substances Directive requires Member States to control all discharges of dangerous substances into water an authorisation procedure. List I substances have to be eliminated where for list II substances emission reduction programmes have to be established including water quality objectives. Where these objectives are exceeded authorised emission limit values have to be set.

Authorisations should be time limited in order to review whether the measures were successful to meet the objectives. The defaults in the Directive for list I substances are minimum requirements and therefore Member States can set more stringent values if necessary. So far 17 substances are considered to be list I and have been regulated at Community level in Daughter Directives under 76/464/EEC. The results of the programmes and measures under the Directive have to be reported to the Commission every five years.

Under Directive 76/464/EEC the Candidate Countries still have to decide whether they want to use a 'emission limit based approach' or a 'water quality based approach'. However, both approaches have certain drawbacks for the efficient reduction and elimination of dangerous substances in the aquatic environment.

The WFD is a step forward by introducing the 'combined approach'. In addition, a list of priority substances has been established by Decision 2455/2001/EC and provides Community wide water quality objectives and emission controls. Candidate Countries should take these developments into account when defining the main tasks and initiatives for any remaining implementation of Directive 76/464/EEC.

3.2 Phasing Considerations

With regard to measures to control pollution by List I substances, the general experience of Member States suggests that the most time consuming elements are:

- the establishment of a prior authorisation procedure and the subsequent issue of permits to the dischargers of dangerous substances; and
- the collection of sufficient data on water quality in the receiving watercourses to enable water quality objectives to be set.

An important phase will be the establishment of an administrative structure to allow authorisations of emission limit values to be issued. This will involve the staffing and training of an inspectorate capable of determining applications.

Additionally, there will be the need to establish an organisation to identify waters which are affected by dangerous substances, and collect quality information on the levels of the substances, in order to set quality objectives, and to assess the impact of discharges and other sources on these waters.

- Identifying the plants which discharge prescribed substances and relevant waters that receive the discharged effluent from such plants.

- Collecting data about the plants and the watercourses.
- Setting standards and issuing authorisations.
- Establishing a monitoring regime to measure the compliance of the discharges and/or the receiving watercourses with the water quality objectives.
- There will be a need to establish an inspection and enforcement programme, with suitably trained staff and resources to ensure the continued adherence of dischargers to their permit conditions, and to assess compliance of waters with the quality objectives set.
- Taking action to improve the situation if the results are unfavourable. The preparation of pollution reduction programmes will be necessary as a result of compliance assessment work.
- A reporting system and the establishment of an inventory are required for an overview on the current pollution situation, and to fulfil the reporting requirements to the Commission.

Taking remedial action depends upon the investment timescale available to construct improvement works at the plants and might require a longer period of time. The timescale for this will have to be agreed with the plant operators and the Commission.

4 Implementation Guidance

Administrative Arrangements (note generally that the WFD establishes a regime for control based on river basin districts and future administrative arrangements will have to be effective for providing the degree of regulation and coordination that such a regime requires. These tasks may be more challenging in the case of international river basin districts.

- The objective is to eliminate pollution of the aquatic environment and both water quality objectives and limit values should be set with this in mind. The water quality objectives will apply where the effluent is discharged to waters from an industrial site and where discharges enter waters from a treatment plant after treatment. If the treatment plant removes List I substances the limit values should also be applied at the outlet of the works. Discharges into the plant can be allowed to contain higher concentrations than the limit value, however the effects of releases from storm water overflows must be considered. The substances should not be allowed to contaminate sewage sludge to such an extent that the use of the sludge is compromised.
- The competent authority may be established as a national or local body, but it is essential that it has jurisdiction over the authorisation of discharges to the aquatic environment, and the capacity to inspect, sample and analyse discharges and waters. It also needs enforcement powers to take action against dischargers who fail to meet their permit conditions. In view of the potential for using the IPPC Directive (96/61/EEC) as a means of authorising industrial producers and users of dangerous substances, and the links with the WFD the competent authority should be in a position to establish links with the competent authorities responsible for those two directives (if they are separate authorities). Co-ordination with other agencies such as Agriculture Ministries that deal with industries which may use List I and List II substances (for example, pesticides) will be necessary to assist in the formulation of pollution reduction programmes.

Examples of Institutional Arrangements in Member States

In one Member State (UK) the national Environment Agency has been appointed the competent authority for this directive. The Agency also has responsibility for IPPC and river basin management, so that there is close co-operation between the individual inspectors who deal with industrial pollution and water management. This ensures that water quality objectives and limit values are co-ordinated. The government has chosen the quality objective approach in accordance with its earlier policies for the control of polluting discharges. Quality objectives have been set for surface waters for general pollution control, and specific regulations have been issued for the group of Dangerous Substances Directives.

In another Member State (P) the competent body for defining the national strategy is the Water Institute, which reports to the Commission and funds the Regional Directorates of the Environment. The Regional Directorates are also funded from licence fees and dredging rivers, and are not obliged by law to report to the national Water Institute or inform or co-ordinate with other Regional Directorates. In this country the Dangerous Substances Directive (76/464/EEC) and the daughter directives have been transposed in three different national laws. The national law 74/90 establishes the legal framework, sectoral laws contain specific regulations which are less restrictive for some sectors. Transposition of the Dangerous Substances Directive was not adequate because it allowed an adoptive period for the industries to comply with the directive without specifying a time limit. Also, the procedure for granting of licences is onerous because it requires compliance with three different laws.

In another Member State (S) the national Environmental Protection Agency is responsible for implementing the provisions of the directive. The directive has been partially implemented into national legislation, and by the end of March 1999, the EPA should give proposals to the government on how to implement the rest of the directive.

- At present most Member States utilise the limit value approach in setting emission standards but there are variations, including a partial use of the quality objective approach.
- In practice most of the daughter directives specify single values for freshwater or seawater. Because the framework directive aims to eliminate pollution from dangerous substances consideration should be given to setting more stringent standards where these are achievable. The setting of a particular standard should not allow dischargers to increase their input if the quality is already much better than required.

Examples of Approaches in Member States

In one Member State (D) the basis of water protection is the “emission principle” under which emission standards based on "state-of-the-art" technology are mandated as minimum requirements for wastewater discharges for point sources. Standards for receiving water quality are “mandated goals" which act as guidelines. According to Article 2 of the Federal Water Act, the discharge of substances into surface waters is regarded as a “use”. Framework law is subject to more detailed interpretation by the regions, but its provisions are very prescriptive so little variation is available. Only a revocable permit may be issued to discharge to effluent containing dangerous substances and, for substances subject to the Dangerous Substances Directive (76/464/EEC), an additional requirement is added. The aim is taking the quantity of harmful substances discharged as low as possible in accordance with “best available technology”. Even levels of environmental pollution which fall below the danger threshold must be reduced if this is technologically feasible.

In another Member State (P) the national law contains limit values to control emissions of List I substances to water. This law does not transpose the quality objectives that can only be established after the conclusion of the National Hydrological Plan or the compilation of the inventories of discharge that are being prepared by industry. The main discharges are to the sea from textile, metals and tannery industries. The National Hydrological Plan will allow the auditing and monitoring of the implementation of the directive among 18 different industrial sectors in order to avoid or reduce pollution from substances listed in the directive. After the results of the inventories and the conclusions of the plan have been made available, a single national law will replace the emission standards with quality objectives under the co-ordination of the national Water Institute. Public consultation is now being undertaken. The National Hydrological Plan will define programmes for the reduction of the discharges liable to contain dangerous substances in order to achieve the objectives contained in Art.7 of the directive. For dangerous substances not present in the country, a national monitoring plan is being developed to highlight that fact and consultation procedures are being undertaken with a neighbouring Member State to confirm that no discharges of those substances will be made to shared international watercourses. In this country, prior authorisation of the discharges is always required. The General Directorate of Environment is the competent authority to issue licences for discharge according to the objectives and values set by the Institute of Water.

In another Member State (F) the regulation of discharges of List I and List II substances is dealt with by the application of the law on classified installations. All installations on a prescribed list must apply for permits to discharge to watercourses. The assessment of the content of discharges including dangerous substances is assessed through an inquiry procedure before permits are issued. The operator will be required to back up the application with an impact assessment that would include the likely impact of dangerous substances. The operator must comply with the provisions of any order issued and must notify important changes and expansions of its activities. The Regional Offices mainly carry out inspection for Industry, Research and Environment. The inspectors are responsible for investigating authorisation requests, new installations and changes to old installations.

- Programmes for the reduction of pollution by List II substances may be drawn up on a national, or local basis. They could be integrated with river basin plans to be established under the WFD . Plans must cover the entire territory of the country and provide for the practical reduction of pollution from listed substances.

Examples of Practice in Member State

In one Member State (UK) the quality objectives approach has been used for many years and the objectives specified in the daughter directives have been adopted generally. Individual emission limits to achieve these are fixed for most discharges. Some very small discharges containing insignificant quantities of List I substances are excluded. Because List I substances fall within the definition for central control, authorisations are granted under the Integrated Pollution Control (IPC) regime which takes account of pollution of all environmental media. Central guidance is given on best technical means by way of formal descriptions of best available techniques not entailing excessive cost (BATNEEC). Discharge limits must take account of the guidance, which may lead to more stringent limit values than are specified by the directives. Discharges to sewer containing List I substances are also authorised by the national Environment Agency. If sewage treatment works receive significant quantities of List I substances as trade wastes discharges from the works are also subject to emission standards. All emission limits are based on the achievement of quality objectives. There are a few cases where quality objectives cannot be achieved in the short term. In such cases the emission limit values are set in accordance with the daughter directives. There is a national monitoring programme carried out by the Environment Agency, but under IPC, dischargers also sample their effluents and supply data to the Environment Agency. Mixing zones are recognised in deciding the sampling points.

For List II substances, national Regulations were issued in 1997 and 1998, specifying quality objectives for 31 substances discharged to surface fresh waters and 31 substances to marine waters (the two lists are not identical). The reduction programmes relate to the use of legislation that is available to control both point source and diffuse sources of pollution.

UK has also adopted government regulation quality objectives for lead, chromium, zinc, copper, nickel, arsenic, boron, iron, vanadium and pH value; the organisation compounds tributyltin and triphenyltin; and the mothproofing agents PCSD, cyfluthrin, sulcofuron, flucofuron and permethrin. Some other EC directives specify these substances and where the values specified are more stringent, these values are adopted. The objectives are divided into two classes - those applicable to salmonid waters and those applicable to cyprinid waters. They are further divided according to the hardness of the water. More stringent values are adopted where there are special reasons such as the protection of flora or fauna, for example where trout are breeding the value for lead is set at 50% of the normal value. Special values are also adopted for irrigation water. The values must be met in 95% of samples in most cases. Quality objectives are achieved by the prior authorisation of discharges under existing legislation including discharges from industrial plants and sewage works. Industrial effluents, which are discharged into sewers, are also authorised, but as an internal matter by the sewerage network undertaker. Individual emission limits are determined so that the receiving water quality is maintained as far below the quality objective as is possible. Reports comprising lists or maps of waters affected by List II substances and the quality standards, annual results of monitoring showing where the standards are not achieved, and an explanation of the reasons for failure together with improvement programmes are communicated to the government annually.

Regulation

- When issuing authorisations for discharges, the emission limit values must be the most stringent of the concentration values or the maximum quantities permitted per kg of the relevant List I substance handled or produced. The use of a dilution factor to reduce artificially the concentration of the substance before discharge is not permitted, and the values of grams of substance discharged per kg of the substance processed are absolute values. Authorisations for new plant can only be issued if they intend to operate in accordance with best technical means. If it is not possible for technical reasons to use best technical means, it is necessary to inform the Commission. If best technical means allow a more stringent limit to be attained, this should be adopted as the emission limit value. Limit values may be applied at the outlet to a special treatment plant if this is in place, rather than at the outlet from the industrial process. Agree with the dischargers an improvement plan for existing plants to ensure that limit values are met.
- In the quality objective approach, water and fish flesh may be affected by discharges other than those controlled by this directive. An investigation may be required to identify those discharges and to take additional steps to reduce their input of the prescribed List I substance. This may

involve controls on the use of the substance or changes to the ways in which it is used, substitution of alternative substances where this is possible, controls on discharges into sewers, and controls on small discharges. A programme of pollution prevention may be required to deal with small discharges or diffuse sources where emission limits are not practicable.

- Waste treatment and disposal practices should be dealt with through the Hazardous Waste Directive (91/689/EEC, see at Section 4 of the Handbook). Also, as the Dangerous Substances Directive (76/464/EEC) requires the elimination of pollution by List I substances, all discharges of such substances must be subject to authorisation using a regime based on the use of best technical means.

The Directive on the Discharge of List I Substances (86/280/EEC):

- For discharges containing carbon tetrachloride, details of production capacity should be obtained on a monthly and daily basis from production records in order to calculate the limit values as grams per tonne. Industrial laundries and plants using carbon tetrachloride as a solvent require special attention due to their large usage and pollution potential. The competent authority on the basis of limit values or quality objectives must decide individual limits for discharges. Pollution of air must be avoided where a process involving agitation in the open is in use. Simplified monitoring arrangements can be used if the annual discharges do not exceed 3 kg per year. For carbon tetrachloride, the directive does not contain a standstill provision (that is, there is no provision to ensure that the concentration in the environment does not increase with time).
- In the case of chloroform, in view of its volatility, there is a special provision that if the waste water treatment plant uses a process in the open air involving agitation, the limit values must apply upstream of this plant. Additional sampling points will therefore need to be agreed with the operator.
- In the case of DDT, the directive contains a ‘standstill’ provision, which applies to molluscs, shellfish, fish and sediment. Concentrations of DDT in water, sediments, and certain biota, must not be allowed to rise significantly with time. Although DDT has been banned for many years, general monitoring should continue to confirm that concentrations in the environment remain at current levels or lower.
- For Pentachlorophenol (PCP), Hexachlorobenzene and Hexachlorobutadiene a ‘standstill’ provision exists and concentrations in sediment and fish flesh must be maintained. A long term sampling programme should be established to confirm that this is the case. Candidate Countries should be aware of a link between this directive and the Directive on Discharge of Mercury from the Chlor-alkali Electrolysis Industry (82/176/EEC) which may influence the means of setting limit values.
- Although the use of Aldrin, Dieldrin, Endrin, Isodrin is much reduced, point source discharges are likely to derive from historic use or from washing contaminated imported animal skins. Precautions are necessary to prevent pollution. A standstill provision exists, for these substances as a long-term monitoring programme needs to be established.
- There is no standstill provision for Chloroform. Article 3 of the Dangerous Substances Directive (76/464/EEC) only applies to discharges from industrial processes that contribute to the level of chloroform in the effluent. Authorisations under this directive are not necessary for discharges where the level of chloroform is due to the result of background concentrations in, for example, the water supply.
- Standstill provisions need to be observed for PCP and trichlorobenzene but not for hexachlorobenzene, hexachlorobutadiene, 1,2-dichloroethane and perchlorethylene and trichlorethylene. Trichloroethylene and perchloroethylene industries which use an open air agitation process for effluent treatment must have the limits applied upstream of the waste water

treatment plant.

Directive on Discharges of HCH (84/491/EEC):

- Hexachlorocyclohexane (HCH) occurs in discharges from plants producing HCH and extracting lindane. The Framework Directive sets specific emission standards and quality objectives for HCH for discharges from industrial plants producing the substance and/or extracting lindane. Some pollution may occur from sites which process raw materials contaminated with lindane, also due to the persistence of HCH it is possible that contamination may occur from sites that discontinued its use some time ago.

Directive on Other Discharges of Mercury (84/156/EEC):

- In addition to those industries listed in Annex I, there are many others that use mercury and the competent authority should also identify these. These industries should exclude the chlor-alkali electrolysis industry, and non-industrial sites. The competent authority should note that some non-industrial sites such as hospitals, dental surgeries and laboratories may use mercury and it may occur in the effluent. Ensure that industries using mercury are legally obliged to inform the competent authority of their existence and that this obligation is used. Annex I identifies industries for which limit values have been agreed.

Directive on Discharges of Cadmium (83/513/EEC):

- Cadmium occurs in discharges from a large number of industries and causes water pollution. This daughter directive sets specific emission standards and quality objectives for cadmium discharges from industrial plants in a number of sectors; specifically the mining and refining of metals, manufacture of cadmium compounds, pigments and cadmium based stabilisers, battery manufacture and electroplating. Problems from phosphoric acid and fertiliser manufacture are recognised by no limits are given.

Monitoring

- In order to assess compliance with water quality objectives and the emission limit values, a sampling programme should be set up. The precise requirements vary between directives, and are a matter largely for decision by the competent authority. Sufficient samples must be taken to undertake the statistical assessments such as annual means required by individual daughter directives. The location of the sampling sites should be chosen carefully and will depend on the objectives of the monitoring programme.
- Sampling and flow measurements should normally be effected at the point where waste waters containing dangerous substances leave the industrial plant, although in circumstances specified in the directive other points can be used.
- In the case of the national network monitoring scheme required under Article 13, the frequency of sampling should be decided by the competent authority and should be sufficient to assess whether water is affected by discharges. Methods of analysis are specified in daughter directives and these methods must be used unless alternative methods give equivalent results and evidence is provided to show that this is the case.

Directive on Discharges of Cadmium (83/513/EEC)

- A simplified sampling regime may be put in place if the amount of cadmium does not exceed 10 kg per annum, or the volume of electroplating tanks is less than 1.5 cubic metres.

Technical Guidance

- Council Directive 82/176/EEC on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry: In issuing guidance on best technical means for preventing mercury discharges, the competent authority should take note of the Commission's view that it is possible to design plants to limit discharges to less than 0.5 g/tonne of installed chlorine capacity.

5 Costs

As this is a framework directive, costs arise mainly from the implementation of the daughter directives. These are considered in further sections of this document.

Checklist of the Types of Costs Incurred To Implement the Directive (see the WFD fiche on costs generally)

Initial set-up costs:

- Establishment of the competent authority;
- Identification of plants discharging dangerous substances;
- Establishment of prior authorisation system;
- Data collection on affected waters;
- Establishment of data collection system and inventory;
- Authorisation of discharges.

Capital expenditure:

- Laboratory equipment (if not already available);
- Construction of improved industrial waste water treatment facilities if necessary (cost borne by industry);
- Construction of new plants to meet emission limits and quality objectives.

On-going costs:

- Enforcement costs, including inspection and sampling programmes;
- Maintenance of authorisation process, inventory and data processing provisions;
- Reporting to the Commission.

The main costs will be that of bringing the existing plants up to a level of operation that will allow them to meet the emission limit values or quality objectives if these are used. This may involve the closure of some plants if it is not economic to install additional treatment or improve the processes and, as a result, the construction of new plant may be required.

There are specific costs for monitoring List II substances but in general if national monitoring programmes are established for water pollution control and general environmental assessment reasons, the additional cost should be relatively small and relate only to adding additional parameters to the suite of analysis undertaken. Costs of monitoring should be covered by the industries using List I and List II substances under the "polluter pays principle". There may be additional costs to industry for improving their effluent discharges. Note under the WFD, Article 9, the requirement to have regard to the principle of recovery of the costs of water services, and the obligation to set water pricing policies in place by 2010 to provide adequate incentives for efficient water use and an adequate contribution to the recovery of the costs of water services from different groups of users.

The Bathing Water Directive

Official Title: Council Directive 76/160/EEC concerning the quality of bathing water (OJ L 131, 5.2.76) (and Commission Proposal COM(2002)581 Final, proposing to replace Directive 76/160/EEC)

1 Summary of Main Aims and Provisions

The Directive seeks to ensure the quality of bathing water throughout the EU, both for fresh water and for coastal water bathing areas, in order to protect the environment and public health. It lays down bacteriological, chemical and physical water quality standards ('imperative' values as well as 'guide' values), and requires Member States to monitor their bathing waters and to take measures to ensure that they comply with the standards within a set deadline.

This Directive dates back to the 1970s and has been the subject of a major review, both as regards the quality objectives and the managerial approach. The Commission's Proposal COM(2002) 581 Final (addressed further below) is the outcome of this review. A new Bathing Water Directive may be adopted and in force within a few years.

The further implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also "WFD"), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive, and keeping a close watch on developments for adoption of the Commission's Proposal. It is therefore recommended that further implementation of this Directive take place after careful consideration of the WFD and the fiche on it in this Handbook, and also with a view to the content of the Commission's Proposal which contains various provisions designed expressly to align the Bathing Water regime to that required under the WFD. Although the Commission's Proposal in fact provides for a greatly simplified scope of monitoring, attention should also be paid to the WFD fiche for details of the specific requirements for monitoring, regulation and as to implementation. Note, particularly, that under the WFD water control is effected on a river basin district basis, and that the WFD provides for administrative and regulatory control in the case of international river basin districts. Note, too, the importance for areas identified as "bathing waters" as "protected areas" under Article 6 and Annex IV of the WFD, and the special protective measures so required in their regard under the WFD.

2 Principal Obligations of Member States

2.1 Planning

- Identify bathing waters, in accordance with the definition set out in the Directive (Art. 1). Note that these will be "protected areas" under the WFD, Article 6 and Annex IV.

2.2 Regulation

- Establish water quality standards applicable to bathing waters for the parameters specified in the Directive (Art. 3 and Annex).
- Take measures to ensure that the quality of bathing water conforms to the standards within specified time limits (Arts. 4 and 8).

2.3 Monitoring

- Carry out sampling and analysis of bathing waters at frequencies not less than those specified in the Directive. The sampling and analysis must be carried out using the methods specified in the Directive, or other methods that will achieve equivalent or comparable results (Art. 6 and Annex).
- Assess the extent to which bathing waters comply with the water quality standards, in accordance with specified assessment criteria (Art. 5).

2.4 Reporting

- Report to the Commission on:
 - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art. 12);
 - cases where the provisions of the Directive are waived (Art. 8);
 - the quality of bathing water based on the annual sampling and monitoring programme (Art. 13 and Council Directive 91/692/EEC);
 - measures taken to comply with the Directive (Art. 12).

2.5 Additional Legal Instruments

A number of other legal instruments have particular relevance to the implementation of the Bathing Waters Directive. These include:

- Urban Waste Water Treatment Directive (91/271/EEC) (see the WFD fiche for the particular role of Directive 91/271/EEC under the WFD regime).
- Water Framework Directive 2000/60/EC.
- Reporting Directive (91/692/EEC).
- Directive on Access to Environmental Information (90/313/EEC, due to be replaced by 2003/4/EC) (see Section 2 of the Handbook).

The issues of particular relevance are:

- Although the Bathing Water Directive will not be repealed by the WFD, the requirements of the Bathing Water Directive must be included in the programme of measures required under the WFD for river basin management plans.
- Implementation of the Urban Waste Water Treatment Directive will make a significant contribution to the bacteriological quality of bathing waters. However, depending on the particular situation, pollution from agricultural and industrial sources might provide a major negative impact on bathing water quality as well. This has been established as a matter of fact as a result of the Commission's research activities in relation to its proposed replacement of Directive 76/160/EEC.

3 Implementation

3.1 Key Tasks

The key tasks associated with implementation are set out in the checklist below. The tasks are grouped under key headings and arranged in chronological order wherever possible. General note should be taken of the changes to approach in relation to water protection that result from the WFD, and the possible need for new administrative structures to adequately meet the requirements for regulation on the river basin district basis, including where applicable on an international river basin district basis.

THE BATHING WATER DIRECTIVE - KEY IMPLEMENTATION TASKS	
1	Planning
1.1	Appoint a competent authority to take responsibility for implementing the directive.
1.2	Appoint a laboratory / laboratories to carry out analysis of samples of bathing water. The laboratory must be competent in the methods of analysis listed in the Directive.
1.3	Decide upon the criteria for the selection of bathing waters, and commence a survey of possible sites. Local councils often have knowledge of popular bathing places, and may give guidance.
1.4	On basis of criteria in the Directive set legally binding water quality standards for the protection of bathing waters. Where necessary, set common quality objectives with neighbouring countries.
1.5	Designate the chosen bathing areas.
1.6	Assess whether there is a need for waivers in accordance with the provisions of the Directive (certain exceptional conditions).
1.7	Decide on the length of the bathing season, which will vary from country to country due to climatic conditions.
1.8	Establish sampling and monitoring programme which would include: <ul style="list-style-type: none"> • Fix sampling points in all designated bathing waters at the point where the highest density of bathing occurs. Prior knowledge of where most people bathe is needed to decide upon the precise sampling point. Once fixed this should be the position at which all future samples are taken; • frequencies for carrying out sampling, complying at least with the minimum requirements of the Directive. • standard sampling methodology and analytical methods
2	Regulation, Monitoring and Enforcement
2.1	Commence sampling two weeks before the beginning of the bathing season and continue at fortnightly intervals (or more frequently if you have so decided) until the end of the season.
2.2	Analyse the samples for the parameters specified in the Annex, using methods which are the same as, or equivalent to, those in the Annex.
2.4	Use the results to assess compliance with the directive at the end of each bathing season.
3	Preparation and Implementation of Improvement Plans
3.1	Where bathing waters fail the standards, determine the cause of the problem and what action is required to bring the waters into compliance. This may require investigation of inputs of pollutants from sewage treatment works, agricultural sources and run-off, industrial discharges or other sources.
3.2	As a result of the investigations draw up plans for water quality improvements.
4	Technical Standards
4.1	The competent authority should decide which of the optional parameters should be assigned values, if any. Member States are free to set more stringent values and/or to use additional parameters. Once set, the values will be legally binding.
4.2	Laboratories and laboratory methods should be subjected to regular quality control schemes, and the laboratories accredited to ensure inter-comparability of results as well as a sound basis for improvement schemes where necessary.
5	Preparation of Technical Advice and Guidance Notes
5.1	Prepare guidance on the identification of bathing waters. The directive provides a definition of bathing waters, but the precise interpretation will depend upon local circumstances, as traditional practice as well as number might differ from country to country.
5.2	Prepare advice on the interpretation of the definition of exceptional weather or geographical conditions and how to assess natural enrichment, in order to ensure a coherent approach when assessing waivers.
5.3	Prepare and issue guidance on the analytical methods to be used in the laboratories, to supplement the information on the outline methods listed in the directive.
6	Cross Border Communication
6.1	Where sea or inland freshwater bathing areas cross national boundaries, or may be affected by activities in other countries, establish means of communication between the countries on measures to be taken. The Commission may be involved in such discussions.
7	Reporting
7.1	Establish reporting systems and databases to ensure that the data are collected and collated on a national scale; the reporting to the Commission is done electronically, using a specific format.
7.2	Establish a means of reporting to the public.
7.3	Report to the Commission on: <ul style="list-style-type: none"> • transposition measures; • improvement plans for the management of bathing water;

THE BATHING WATER DIRECTIVE - KEY IMPLEMENTATION TASKS

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| <ul style="list-style-type: none">• waivers under Article 8; and• comprehensive reports on designations and characteristics of bathing waters in accordance with the Reporting Directive (91/692/EEC), using the format provided by the Commission. |
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3.2 Phasing Considerations

The main time-consuming tasks to implement this directive are the following.

- The establishment of the administrative arrangements to implement the directive;
- The identification of bathing waters by the competent authority;
- Establishing and carrying out the sampling and monitoring programme;
- Identifying the causes of non-compliance; and
- Preparation and implementation of a programme of improvement measures.

The time taken to establish the competent authority together with sampling, monitoring and data interpretation facilities will depend upon the existing institutional structure. The transposition of the legislation may be required before the planning can be undertaken.

Identifying bathing waters which fall within the remit of the directive is often a lengthy process, requiring the collection of data on bathers using the waters, investigation of local facilities, and discussions with local authorities. This phase should be introduced as early as possible.

Sampling and monitoring programmes for each bathing water will follow on from designation and should be instituted as soon as each bathing water is designated. Quite frequently one year's data alone might not be sufficient for a decision to establish an improvement plan.

The time taken to prepare an improvement plan may be considerable as it is not always easy to identify the causes of the problem and to determine strategies to resolve it. Taking account of the requirements for bathing waters to meet the quality standards within 10 years of designation, the work required to prepare a plan for each water should be started as soon as possible after the first year's assessment.

4 Implementation Guidance

Planning

- The competent authority has to identify bathing waters and carry out the sampling and monitoring programme. This could be a national or locally based organisation. It should have sufficient resources to undertake a sampling and monitoring programme at all relevant waters, inland and coastal locations, analytical facilities to carry out bacteriological, chemical and physical testing of waters, and interpretation of the results.
- In view of the likely interaction between the results of testing and pollution control activities, in particular the need to assess what is required to bring waters up to standard, it is necessary that the necessary enforcement action against polluters can be taken without inadequate delay.

Monitoring

- It is necessary to obtain sufficient samples at a minimum frequency of fortnightly intervals to enable percentiles to be assessed. It should be born in mind that specific compliance rates are

required for the parameters. In cases where only the minimum number of samples is taken, there possibility for 'failing samples' without the beach being assessed 'failing' is rather limited.

- Establish a standardised sampling protocol to facilitate samples being taken 30 cm below the surface except for mineral oils. This will be difficult where there is significant wave action, and it may be necessary to wade into the sea to obtain sufficient depth of water. Safety precautions are needed in such circumstances. In very rough weather the water quality may be adversely affected by wave action and repeat samples on calmer days may be required, and the waiver provisions of the directive brought into effect. For the granting of waivers a suitable "meteorological return period" could be adopted reflecting weather conditions in the particular area.

Examples of Sampling Programmes in Member States

In one Member State (P), over 360 bathing waters were designated, 26 of which were inland waters. The Municipalities advised the National Water Institute (via the Regional Directorates of the Environment) which waters should be designated, based on the criteria of 100 or more bathers in any one day during the bathing season. Samples were collected every fifteen days starting from 15 May, in advance of the bathing season which begins on 1 June and ends on 30 September. This provided 9 samples per bathing beach per bathing season. This meant that every sample had to achieve the required microbiological, chemical and physical standards, in order to comply with the directive's requirement that 95% of samples must be within standards. The samples were taken in advance of the bathing season because the results are used by the Regional Directorates of Health to forecast the health of their local bathing waters, as well as for monitoring compliance with national law and reporting to the EC by the Water Institute.

Preparation and Implementation of Plans

- This directive aims to ensure a common quality of freshwater and sea bathing waters throughout the EU to provide protection to public health and the environment; tourism is in this context of course a major factor. The bacteriological parameters that have to be achieved will be influenced by a range of environmental impacts, not only discharges of urban and industrial waste water, but also agricultural and other diffuse sources of pollution. Therefore the success in meeting the terms of the directive in designated bathing waters is intimately connected with other environment improvement measures, particularly the measures adopted through the Urban Waste Water Treatment Directive (91/271/EEC).
- If waters fail the directive values, it is necessary to identify the causes of the problem and prepare plans for the waters to be brought up to the required standards.

5 Costs

The main type of costs arising during the implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred To Implement the Directive (see, too, generally the WFD fiche as to costs)

Initial set-up costs

- Establishment of competent authority.
- Establishment of laboratory facilities (if not already available).
- Identification of bathing waters.
- Sampling and analysis to establish compliance.

Capital expenditure

- Laboratory equipment (if not already available).
- Construction of infrastructure as part of improvement programme.

On-going running costs

- Annual sampling and monitoring programme.
- Annual operating costs of infrastructure.
- Administrative costs including reporting; information of the public.

Direct costs of implementation are related to the sampling and analysis programme and minor costs of administration. After the first year's sampling programme has identified waters that fail the directive, further direct costs are connected with work need to identify the causes of failure, and to propose solutions. This may involve the collection of much more detailed information, in order to select the appropriate measures.

Indirect costs may be very substantial, but to a considerable extent overlapping with those under other directives such as the Urban Waste Water Treatment Directive (91/271/EEC).

Commission Proposal COM (2002) 581 Final: Proposed Directive of the European Parliament and the Council concerning the quality of bathing water (24.12.02)

The main changes set out under the proposal are set out below, but broadly Member States may build on the actions taken or to be taken (as set out above) for the implementation of Directive 76/160/EEC, and use the relevant structures and operations designed for that purpose, also bearing in mind the steps that are required to implement the WFD.

The Community's 6th Environment Action Programme identified as priority areas for future development "public health" and "natural resources". The Proposal (building on earlier proposals starting in 1994) is intended to be coherent with this objective for action, with sustainable development, with other water-related Directives adopted since 1976, and the WFD in particular, and provide greater compatibility with the enhanced managerial requirements of the latter, providing for integrated quality management (see Art. 18, and the express obligation to cooperate as appropriate in implementing the proposed directive in cases of shared river basins) and so promote Good European Governance¹.

It is also intended to give effect to developments based on new scientific evidence and in water use deriving from changes in leisure activities due, too, to developments in new materials allowing for water-related recreational activities to take place further from shore. As a result, and bearing in mind the comprehensive monitoring requirements under the WFD, it is proposed that monitoring requirements be reduced significantly from 19 parameters to 2 key microbiological parameters, complemented by visual inspection (algae bloom and oil) and pH measurement in fresh waters (Art. 4 and Annex I), and a monitoring regime is proposed that provides for less frequent monitoring where sampling has indicated that less sampling is justified as less problems may be anticipated in the case of such waters (Arts. 7, 10, 14 and Annex IV)². The comparability of monitoring results is enhanced by setting harmonised standards to be used in the handling, analysis, storage and transport of samples in order to reduce the risk of contamination of samples (Art.11 and Annex V). Participatory processes are enhanced to provide for a deeper and more extensive consultation, as well as a wider-ranging dissemination of material information through modern communication methods, including the internet (Arts. 3,4, 15 and 16, and Annex II).

The proposed directive fits within the existing water-related framework in that the WFD provides an objective of achieving "good ecological status" for all waters and specific objectives for "protected areas" such as bathing waters. It is linked, as with the current Bathing Water Directive, to the Urban Waste water treatment Directive (91/271/EEC), as effects from compliance with the latter can clearly affect the results to be achieved under a bathing waters quality directive, and also to the Nitrates Directive (see the Explanatory Memorandum, section 2). Studies of the Commission in support of its considerations for a new directive indicated that pollution of waters from agricultural practices and land were a significant factor affecting bathing water quality, and improved bathing water quality controls will contribute to good agricultural practices as envisaged under the Nitrates Directive (see the Explanatory Memorandum, para. 2.1.3).

Further, the proposal will be coherent in its provisions for greater dissemination of and access to relevant information on the quality of bathing waters and reasons for any detraction from the results to be achieved with Directive 90/313/EEC (to be replaced by Directive 2003/4/EC), and will take into account Integrated Coastal Zone Management principles (Arts. 3, 4, 12, 15, 16 and 17, and Annex II)³. With this in mind, it is to be noted that the Commission rejected suggestions to include new recreational uses of waters in the definition of bathing waters as imposing too great a burden on

¹ See on this the Commission White Paper of October 2001

² See the Commission Explanatory Memorandum at paras. 4.4-4.6 for the reasons for this.

³ As to which see COM(2000)547.

Member States, but has met this by improving the level of protection for such water use users by a requirement on Member States to ensure that relevant information is supplied to the public, identifying clearly whether water quality monitoring and other management practices ensure an equal level of protection (and see Arts. 3, 4 and Annex II). This will have an impact on the classification that bathing waters should receive under the proposal.

Relevant waters are to be identified as “bathing water” and that list to be reviewed and updated annually to take account of newly identified bathing waters and to remove from the list those that no longer fulfil the requirements of the directive as such (Arts. 1,3 and 5).

Bathing waters are to be classified as “Excellent”, “Good” or “Poor” (Arts. 10 and 13). “Poor” is for waters that fail the parametric values in any event. “Excellent” is obtainable where the waters comply with the more stringent Guide Values for parametric values and if management measures have taken into account the range of recreational uses practised at the bathing area. The “management measures” in mind include: establishing and maintaining a bathing water profile (and see anyway this requirement in Art. 6, and Annex III); establishing a monitoring calendar and monitoring the bathing waters (but see also Art. 7 and Annex IV); assessing bathing water quality (but see also Art. 8); assessing risks related to pollution; setting up emergency plans and surveillance systems (and see Art. 12); giving information on bathing water quality to the public; and performing actions to reduce the risk of pollution and contamination (and see Art. 12). Note that such provision for “emergency plans” fits with the WFD and the requirements for programmes of measures under Article 11 for river basin management plans.

“Good” status is obtainable on the waters complying with the legally binding parametric values, and where there is full monitoring of all parameters. However, if “Good” status was not reached, a bathing water will still be able to be considered as conforming to the proposed directive provided that appropriate measures are taken to bring the waters to compliance within 3 years. Measures must be taken also to inform the public and to prevent human exposure to pollution (Art. 13).

The Directive on Surface Water for Drinking Water

Abstraction

Official Title: Council Directive 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water in the Member States (OJ L 194, 25.7.75)

1 Summary of Main Aims and Provisions

This Directive belongs to the 'first wave' of EU water legislation adopted in the 1970s and 1980s. The Directive aims to protect public health by ensuring that surface water abstracted for use as drinking water reaches certain quality standards before it is supplied to the public. The Directive lays down non-binding 'guide' values and binding 'imperative' values and requires Member States to monitor the quality of surface waters from which drinking water is abstracted and to take measures to ensure that it complies with the minimum quality standards. This directive is to be integrated into the Water Framework Directive, and is to be repealed with effect from 22.12.07 (see Article 22 of the Water Framework Directive). Any further steps to be taken by Candidate Countries for its implementation should have regard to the Water Framework Directive.

2 Principal Obligations of Member States

2.1 Planning

- Divide surface waters used for the abstraction of drinking water into three categories, according to the quality of the water (Art. 2).
- Establish water quality standards applicable to surface water used for the abstraction of drinking water, for the parameters specified in the Directive (Art. 3).
- Prepare an action plan to ensure that the quality of surface waters continues to improve (Art. 4).

2.2 Monitoring

- Carry out sampling and analysis of surface waters used for the abstraction of drinking water, in accordance with the methods laid down in the Directive on the Measurement of Surface (Drinking) Water (Council Directive 79/869/EEC) (Art. 5).
- Assess the extent to which surface waters used for the abstraction of drinking water comply with the quality standards, in accordance with specified assessment criteria (Art. 5).

2.3 Regulation

- Take measures to ensure that surface waters used for the abstraction of drinking water comply with the minimum quality standards; and do not allow waters that do not meet these standards to be used for the abstraction of drinking water, other than in exceptional circumstances (Art. 4).
- Ensure that measures taken to implement the Directive do not lead to deterioration of surface water quality (Art. 7).

2.4 Reporting

- Report to the Commission on:
 - grounds for allowing surface waters to be used for the abstraction of drinking water in - exceptional circumstances, despite failing to meet the minimum quality standards (Art. 4);
 - cases where the provisions of the Directive are waived (Art. 8);
 - implementation of the Directive (Art. 9a and Council Directive 91/692/EEC); and
 - measures taken to comply with the Directive (Art. 10).

2.5 Additional Legal Instruments

This directive is linked to several other legislative instruments including:

- Directive on the Measurement of Surface (Drinking) Water (79/869/EEC).
- Drinking Water Directive (98/83/EC).
- Water Framework Directive (2000/60/EC).
- Reporting Directive (91/692/EEC) as amended by Decision 94/79/EEC.
- Directive on Access to Environmental Information (90/313/EEC, note to be replaced by Directive 2003/4/EC) (see Section 2 of the Handbook).

The methods of sampling and analysis used in implementing this directive are set out in the Directive on the Measurement of Surface (Drinking) Water (79/869/EEC) which is a subsidiary directive.

The issues of particular relevance are:

- The incorporation of the Directive into the provisions of the Water Framework Directive in due course, and the subsequent repeal of the former with effect from 22.12.07; and
- The expansion of water protection to all waters, surface waters, including coastal waters and groundwaters, provision for addressing transboundary waters in international river basin districts, the obligation to achieve/maintain "good status" for all these waters, plus the obligation to specially protect those waters used for drinking water abstraction.

3 Implementation

As this legislation is to be integrated into the Water Framework Directive (in its operative obligations), emphasis should be put on the content, but not too much on the formal transposition. The main obligation will – within the Water Framework Directive – be the establishment of an adequate sampling and monitoring system. This overall approach should also contribute to avoiding duplication of effort in the field of measuring and monitoring.

Key tasks relating to sampling and monitoring are presented in the checklist below, but due regard must be had to the detailed provisions for monitoring set out in the Water Framework Directive.

SAMPLING AND MONITORING - KEY TASKS
<ul style="list-style-type: none">• The competent authority, in collaboration with the organisations responsible for treating and supplying drinking water under the Drinking Water Directive (80/778/EEC, as amended by 98/83/EC), should identify existing, future and potential surface water abstraction points and agree a sampling point in each case.• In conjunction with the laboratory appointed under the Directive on the Measurement of Surface (Drinking) Water (79/869/EEC), carry out a sampling programme to ascertain the quality of the water. Existing data may be used provided the samples have been analysed using methods that are the same as, or equivalent to, those set out in the said directive.• Using this data the competent authority must assign the waters to a quality class - A1, A2 or A3, but note the different approach to classification under the Water Framework Directive.• The competent authority must establish an ongoing sampling programme in accordance with the Directive on the Measurement of Surface (Drinking) Water (79/869/EEC) (but see, too, the requirements of the Water Framework Directive).• In conjunction with the laboratory appointed under the Directive on the Measurement of Surface (Drinking) Water (79/869/EEC), the competent authority should issue guidance on sampling and analytical methods to ensure that these conform to the requirements of the said directive.

4 Costs

The main costs associated with this directive are indicated in the checklist below. However, note generally the Water Framework Directive, and the different organisational costs likely for the future with management to be on a river basin district basis, the detailed monitoring requirements, and the further detailed and comprehensive reporting and consulting obligations.

Checklist of the Types of Cost Incurred To Implement the Directive

Initial set-up costs:

- Establishing the competent authority.
- Establishing a laboratory.
- Initial sampling programme and data interpretation.

Capital expenditure:

- Laboratory building and equipment (if not already available).
- New or upgraded drinking water treatment plants.
- New or upgraded waste water treatment plants (as a result of improvement plans).

On-going running costs:

- Annual sampling and analysis costs.
- Reporting to Commission.

Although initial costs are likely to have been fairly small for the Candidate Countries and related to the institutional arrangements for sampling, measurement and interpretation of results, this may not remain the case with organisation under river basin districts, especially in the case of international river basin districts. Moreover, once the initial programme has provided sufficient information, costs will be incurred in drawing up a programme of improvements, and instigating the improvement measures themselves, particularly on the river basin district basis.

Water supply organisations will have additional costs where there is an immediate need to upgrade the water treatment processes, so that the water treatment process is appropriate for the quality of the water abstracted. Water suppliers may need to install physical treatment such as coagulation, filtration and disinfection where none exists at present, but this is unlikely to be greater than any costs which would have to be borne to ensure treated water meets the requirements of the Drinking Water Directive (80/778/EEC, as amended by 98/83/EC). Plans for the improvement of waters below Class A3 quality (note the basis for classification of water status in the Water Framework Directive) will be part of general water quality and pollution controls in programmes of measures for river basin districts and costs are likely to be absorbed within the scope of the requisite river basin management plan. Such costs may be very high and include pollution control measures for industry and changes to agricultural practices. However, some of the costs should be borne by the polluters, where appropriate, under the polluter pays principle. Note that the Water Framework Directive does not prevent funding for particular preventive or remedial measures in order to meet the objectives of that Directive (see Article 9(3)).

The Directive on the Measurement of Surface (Drinking) Water

Official Title: Council 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 (OJ L 271, 29.10.79)

1 Summary of Main Aims and Provisions

This Directive belongs to the 'first wave' of EU water legislation adopted in the 1970s and 1980s. The Directive lays down the methods of measurement and frequencies of sampling and analysis that must be used to monitor the quality of surface waters intended for the abstraction of drinking water under Council Directive 75/440/EEC.

This directive is to be integrated into the Water Framework Directive, and is to be repealed with effect from 22.12.07 (see Article 22 of the Water Framework Directive). The implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also “WFD”), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook. See that fiche in particular for details of the specific requirements for monitoring and as to implementation. Note, in particular, that under the WFD water control is effected on a river basin district basis. Note, too, that the WFD provides for particular administrative and regulatory control in the case of international river basin districts.

2 Principal Obligations of Member States

2.1 Monitoring

- Carry out sampling and analysis of surface waters, as required by the Directive on Surface (Drinking) Water (Council Directive 75/440/EEC, also due to be repealed by the WFD by 22.12.07 – Article 22) in accordance with the methods of measurement and frequencies of sampling and analysis laid down in the Directive (Arts. 3, 4, 5, 6 and 7 and Annexes I and II).

2.2 Reporting

- Report to the Commission on:
 - methods and frequencies of sampling and analysis (Art. 8 and Council Directive 91/692/EEC);
 - measures taken to comply with the Directive (Art. 13); and
 - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art. 13).

2.3 Additional Legal Instruments

This directive is linked to several other legislative instruments including:

- Directive on Surface (Drinking) Water (75/440/EEC, but to be repealed by the WFD, see above).
- Drinking Water Directive (98/83/EC).
- Water Framework Directive (2000/60/EC).
- Reporting Directive (91/692/EEC) as amended by Decision 94/79/EEC.
- Directive on the Access to Environmental Information (90/313/EEC, due to be replaced under Directive 2003/4/EC) (see Section 2 of the Handbook).

The methods of sampling and analysis outlined in this directive must be used in the implementation of the Directive on Surface (Drinking) Water (75/440/EEC, to be repealed under the WFD) which is the primary directive on water abstraction.

The issues of particular relevance are:

- The incorporation of the Measurement of Surface Waters (Drinking) Directive (79/869/EEC) into the provisions of the Water Framework Directive in due course, and the subsequent repeal of the 1979 Directive (for details see above); and
- The expansion under the WFD of water protection to all waters, surface waters and groundwaters, and the obligation to achieve/maintain "good status" for all these waters, plus specific protection for waters used for the abstraction of drinking water, and the change in regime for water resource management to the river basin district.

3 Implementation

As this legislation will be integrated into the Water Framework Directive in its operative obligations, emphasis should be put on the content, but not too much on the formal transposition. The main obligation— within the Water Framework Directive – is the establishment of an adequate sampling and monitoring system. This overall approach should also contribute to avoiding duplication of effort in the field of measuring and monitoring.

Key actions relating to the contents of the Directive are set out in the checklist below. Those relate to the establishment of a sampling and monitoring system. Note, the detailed provisions in this regard in the WFD, and also the administrative alterations that may have to take place in order to manage water resources on a river basin district basis, including cases of international river basin districts.

KEY IMPLEMENTATION TASKS	
1	Planning
1.1	The competent authority appointed should establish a laboratory to undertake the water analyses of the directive.
1.2	The competent authority should fix the frequencies of sampling and analysis for each parameter at each sampling point.
2.	Monitoring
2.1	The laboratory should compare the existing methods of sampling and analysis in use with those specified in the directive. Where these are found to be different to the methods specified, adopt the methods set out in the directive, or methods which give equivalent results.
2.2	If alternative methods are used, demonstrate that they are equivalent to the directive methods in analytical accuracy and precision.
2.3	Train staff in the new methods.
2.4	Check that the existing frequency of taking samples, and the methods used in sampling match those specified in the directive.
2.5	Where frequencies of sampling are too low, increase them. Frequencies must not be less than those specified by the directive except where there is no risk of pollution and results obtained are always better than the recommended limits.
2.6	If sampling techniques are not satisfactory, re-train staff using updated guidance.
3	Technical Guidance and Advice
3.1	The competent authority should prepare and issue guidance on the circumstances when a reduced frequency or no sampling is acceptable and guidance on what the frequencies should be.
3.2	The competent authority should prepare and issue to the laboratory detailed guidance on methods of analysis including acceptable alternatives.
3.3	The laboratory should prepare and issue detailed guidance on laboratory quality control and methods of checking accuracy and precision so as to conform to the directive requirements.
3.4	The laboratory should prepare and issue detailed guidance on sampling methodology, in particular to prevent deterioration of the sample between sampling and analysis.
4	Reporting
4.1	The competent authority should establish a database containing details of methods of analysis, frequency of sampling and information on the results obtained.
4.2	The competent authority must, in response to a request from the Commission, report on: <ul style="list-style-type: none"> • the methods of analysis adopted; and • the frequency of sampling adopted.

4 Costs

The cost of implementing this directive will depend upon the availability of existing laboratories which are capable of undertaking water analysis to the performance standards indicated in the directive. Where Candidate Countries have laboratory organisations the costs will be limited to upgrading to the new requirements. Costs are likely to arise only if analytical methods currently in use for testing raw water used for drinking purposes do not meet the new specifications laid down. The specifications for accuracy and precision are straightforward and should be readily achievable by competent analytical laboratories.

If no laboratories are in existence, then capital costs will be substantial. The use of accredited contract laboratories, not necessarily based in the territory of the Candidate Country, is one alternative method of reducing capital costs. Laboratories are necessary for implementing a number of other directives in the water sector, and costs for this particular directive may be absorbed within the overall organisational costs for the sector.

Sampling costs for this directive are minimal compared with the overall sampling burden for the water sector directives.

Checklist of the Types of Cost Incurred To Implement the Directive (see also the WFD fiche as to costs)

Initial set-up costs:

- Checking sampling methodology and frequency.
- Checking analytical methods.
- Changing methods where necessary.
- Training.
- Preparing technical guidance notes.

Capital expenditure:

- Laboratory premises.
- Laboratory equipment and instrumentation.
- Sampling equipment and transport.

On-going costs:

- Sampling and analysing surface waters.
- Re-checking and updating analytical methods.
- Data processing and reporting.

The Groundwater Directive

Official Title: Council Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (OJ L 20, 17.12.79)

1 Summary of Main Aims and Provisions

This Directive belongs to the 'first wave' of EU water legislation adopted in the 1970s and 1980s. The purpose of the Directive is to prevent the pollution of groundwater by certain dangerous substances. Member States are required to prohibit the discharge into groundwater of certain listed substances, and to subject the discharge of other listed substances to prior authorisation. They must also monitor the effects of discharges on groundwater.

References to 'List I substances' and 'List II substances' are references to the substances listed in List I and List II of the Annex to the Directive.

This directive is to be integrated into the Water Framework Directive, and is to be repealed with effect from 22.12.13 (see Article 22 of the Water Framework Directive). The implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also "WFD"), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook. See also that fiche for details of the specific requirements for monitoring, regulation and as to implementation. Note, in particular, that under the WFD water control is effected on a river basin district basis, and that groundwaters should be allocated to the nearest or most appropriate one. Note, too, that the WFD provides for particular administrative and regulatory control in the case of international river basin districts.

2 Principal Obligations of Member States

2.1 Regulation

(note the more extensive regulatory control regime required as regards water protection generally, but also as regards the grant, review and amendment of permits or authorisation for discharges to groundwaters)

- Prohibit the discharge into groundwater of List I substances, unless the groundwater is permanently unsuitable for other uses, in which case the discharge may be allowed subject to specified conditions (Art. 4).
- Ensure that the discharge into groundwater of List I or List II substances (where it is not prohibited by the Directive) is subject to prior authorisation; and ensure that authorisations are only granted subject to the procedures and conditions laid down in the Directive (Arts. 4, 5, 8, 9, 10, 11 and 12).
- Ensure that competent authorities keep an inventory of authorisations granted (Art. 15).

2.2 Monitoring

(see the comment under 2.1 to like effect as regards monitoring)

- Investigate certain activities that may lead to the discharge of List I or List II substances into groundwater, before deciding whether or not to authorise the activity (Arts. 4, 5 and 7).
- Monitor activities that are subject to an authorisation, to ensure compliance with the conditions of the authorisation (Art. 13).
- Monitor the effects of discharges on groundwater, and ensure that measures taken to implement the Directive do not lead to the pollution of groundwater (Arts. 13 and 18).

2.3 Consultation and Reporting

(see the WFD as to the detailed consultation and reporting requirements, and for cross-border arrangements in the event of international river basin districts)

- Consult with other Member States before granting authorisations for the discharge of substances into groundwater that crosses national borders (Art. 17).
- Report to the Commission on:
 - measures to prevent the indirect discharge of List I substances from activities other than disposal or tipping (Art. 4);
 - the results of prior investigations, monitoring and inspection operations, and other relevant information as requested (Art. 16 and Council Directive 91/692/EEC);
 - measures taken to comply with the Directive (Art. 21); and
 - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art. 21).

2.4 Additional Legal Instruments

There are several other legal instruments that should be borne in mind during the implementation of this directive. These include:

- Water Framework Directive 2000/60/EC.
- Dangerous Substances Directive (76/464/EEC) and its seven daughter Directives (but note that Article 6 thereof was repealed with effect from 22.12.00, that the remainder will be repealed with effect from 22.12.13, that a list of priority substances has been adopted as Annex X to the WFD by Decision 2455/2001/EC, and that, by way of transitional provision, for the purposes of Article 7 of 76/464/EEC the WFD (Art.22(3)(b)) Member States may apply the principles for identification of pollution problems and the substances causing them, the establishment of quality standards, and the adoption of measures, laid down in the WFD).
- Waste Framework Directive (75/442/EEC) (see Section 4 of the Handbook).
- Hazardous Waste Directive (91/689/EEC) (see Section 4 of the Handbook).
- Sewage Sludge Directive (86/278/EEC) (see Section 4 of the Handbook).
- Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC) (see the WFD for the particular position of this directive thereunder, and see, too, Section 7 of the Handbook).
- Reporting Directive (91/692/EEC) and Decision (94/741/EEC).
- Directive on Access to Environmental Information (90/313/EEC, due to be replaced under and by Directive 2003/4/EC) (see Section 2 of the Handbook).
- Landfill Directive (99/31/EC) (see Section 4 of the Handbook).

The issues of particular relevance are:

- The incorporation of the Groundwater Directive (80/68/EEC) into the provisions of the WFD in due course, and the subsequent repeal of the Groundwater Directive (see above for details);
- The expansion under the WFD of water protection to all waters, surface waters and groundwaters, and the obligation to achieve/maintain "good status" for all these waters. Good status is comprehensively defined in verbal terms; and
- The other directives are largely concerned with means of preventing dangerous substances affecting the groundwater.

3 Implementation

As this legislation, including a ban on direct discharges of dangerous substances to groundwater, will be integrated into the Water Framework Directive (in its operative obligations), emphasis should be put on the content, but not too much on the formal transposition of this Directive. The main obligation will – within the Water Framework Directive – be the establishment of an adequate sampling and monitoring system. This overall approach should also contribute to avoiding duplication of effort in the field of measuring and monitoring.

4 Costs

The costs associated with implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred To Implement the Directive (see also the WFD as to the issue of costs, and the regime of international and non-international river basin districts)

Initial set-up costs:

- Establishment of a competent authority.
- Establishment of an administrative system for applications and permits.
- Survey work to identify groundwater areas and source of List I and List II substances.
- Investigative work on the likely impacts of proposed discharges on groundwater.
- Investigative work on classifying substances.
- Training.

Capital expenditure:

- Vehicles and other sampling equipment.
- Establishment of a laboratory (if none exists).
- Action to be taken by dischargers to eliminate or reduce discharges of dangerous substances (borne by the polluters).

On-going running costs:

- Implementing the measures to prohibit/limit the impact of dangerous substances on groundwater.
- Annual costs of monitoring, inspection and enforcement.
- Annual costs of maintaining inventory.

The Freshwater Fish Directive

Official Title: Council Directive 78/659/EEC on the quality of fresh waters needing protection or improvement in order to support fish life (OJ L 222, 14.8.78)

1 Summary of Main Aims and Provisions

This Directive belongs to the 'first wave' of EU water legislation adopted in the 1970s and 1980s. The Directive aims to protect and/or improve the quality of fresh waters that support, or could support, certain species of fish. It lays down standards for the quality of designated waters ('guide' values as well as 'imperative' values) and requires member states to monitor the quality of designated waters and to take measures to ensure that they comply with the minimum standards.

This directive is to be integrated into the Water Framework Directive, and is to be repealed with effect from 22.12.13 (see Article 22 of the Water Framework Directive). The implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also "WFD"), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook. See also that fiche for details of the specific requirements for monitoring, regulation and as to implementation. Note, in particular, that under the WFD water control is effected on a river basin district basis. Note, too, that the WFD provides for particular administrative and regulatory control in the case of international river basin districts.

2 Principal Obligations of Member States

2.1 Planning

- Identify fresh waters that need protection or improvement in order to support fish life, and designate these waters as salmonid waters or cyprinid waters, according to the species of fish that live, or could live, in them (Art. 4) (see, too, the detailed provisions in the WFD as to the characterization and classification of such water bodies – Annexes II and V).
- Establish water quality standards applicable to designated waters for the parameters specified in the Directive and for other parameters if required (Arts. 3, 9 and Annex I) (see, too, the WFD in this regard).
- Establish programmes to reduce pollution and to ensure that designated waters comply, as a minimum, with the binding/imperative quality standards within 5 years of designation (Art. 5) (see the WFD Article 11 for the designation and content of programmes of measures for river basin management plans in this regard).

2.2 Monitoring and Enforcement

- Carry out sampling and analysis of designated waters at frequencies not less than those specified in the Directive. The sampling and analysis must be carried out using the methods specified in the Directive, or other methods that will achieve equivalent or comparable results (Arts. 6 and 7 and

Annex I) (see the detailed provisions of the WFD in this regard, especially Annex V).

- In cases of non-compliance with the water quality standards, establish the cause of non-compliance and take appropriate measures to rectify the situation (Art. 7) (see the WFD for the more extensive responses to be provided for in such cases).
- Ensure that measures taken to implement the Directive do not lead to an increase in pollution (Art. 8) (see the WFD, Article 4(4)-(9) as to extensions for and derogations from meeting the objectives of the WFD).

2.3 Consultation and Reporting

- Consult with other member states before designating fresh waters that cross or form national frontiers with the other member state (Art. 10) (note the change in regime under the WFD to (international) river basin districts – Articles 3 and 13).
- Report to the Commission (note the more extensive requirements under the WFD for consulting and reporting – Article 14) on:
 - the designation of fish waters (Art. 15);
 - the quality of designated waters (Art. 16 and Council Directive 91/692/EEC);
 - provisions relating to new parameters (Art. 15);
 - cases of derogation from the Directive (Art. 15);
 - other information relating to the application of the Directive, as requested (Art. 15);
 - measures taken to comply with the Directive (Art. 17);
 - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art. 17).

2.4 Additional Legal Instruments

A number of other legal instruments are relevant to the management of fresh water fish waters. These include:

- Water Framework Directive (2000/60/EC).
- Dangerous Substances Directive (76/464/EEC) and its Daughter Directives (but note that Article 6 thereof was repealed with effect from 22.12.00, that the remainder will be repealed with effect from 22.12.13, that a list of priority substances has been adopted as Annex X to the WFD by Decision 2455/2001/EC, and that, by way of transitional provision, for the purposes of Article 7 of 76/464/EEC the WFD (Art.22(3)(b)) Member States may apply the principles for identification of pollution problems and the substances causing them, the establishment of quality standards, and the adoption of measures, laid down in the WFD).
- Urban Waste Water Treatment Directive (91/271/EEC and see the WFD for the particular position of this directive thereunder).
- Nitrates Directive (91/676/EEC and see the WFD for the particular position of this directive thereunder).
- Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EEC, and see the WFD for the particular position of this directive thereunder, and see, too, Section 7 of the Handbook).
- Reporting Directive (91/692/EEC) as amended by Decision 94/741/EEC.
- Directive on Access to Environmental Information (90/313/EEC, due to be replaced by Directive 2003/4/EC) (see Section 2 of the Handbook).

The issues of particular relevance are:

- The incorporation of the Fresh Water Fish Directive (78/659/EEC) into the provisions of the Water Framework Directive in due course, and the subsequent repeal of the Fresh Water Fish Directive (see above for details);
- The expansion under the WFD of water protection to all waters, surface waters and groundwaters, and the obligation to achieve/maintain "good status" for all these waters. Good status is comprehensively defined in verbal terms, ensuring *inter alia* environmental conditions suitable for fish life, and the change in water management regime to that of the river basin district, and note also the provision for international river basin districts; and
- The use of provisions in the Urban Waste Water Treatment Directive (91/271/EEC), the IPPC Directive (96/61/EEC) and the Dangerous Substances Directive (74/464/EEC, to be repealed by the WFD – see above for details)), to control pollutants which affect freshwater fish and the Nitrate Directive (91/676/EEC) to reduce eutrophication.

3 Implementation

As this legislation will be integrated into the Water Framework Directive (in its operative obligations), emphasis should be put on the content, but not too much on formal transposition. The main obligation— within the Water Framework Directive – is the establishment of an adequate sampling and monitoring system. This overall approach should also contribute to avoiding duplication of effort in the field of measuring and monitoring. Reference should be made generally to the WFD in these regards, but noting especially the administrative and regulatory arrangements to be indicated in river basin management plans, and for coordination in the case of international river basin districts.

A checklist of key actions concerning sampling and monitoring is presented below.

KEY TASKS - SAMPLING AND MONITORING
<p>Planning</p> <ul style="list-style-type: none"> • The competent authority should appoint a laboratory to undertake testing. the laboratory should be using, or able to bring into use, the methods specified in the directive, or methods which give equivalent results. • The competent authority should carry out a survey of fish, and take advice of fishery experts, in order to identify waters which support or could support fish life in the specified categories of salmonid or cyprinid fish.. The waters may be static as in lakes, or flowing, as in rivers. • Using the information obtained as a result of the fish survey, place each of the surveyed waters in one of the two categories - salmonid or cyprinid. It is possible to change category at a later stage, but a move from the salmonid class to the cyprinid class must not result from, or lead to, a deterioration in water quality. Additional designations may be made as a result of new information. Whilst rivers may be identified by location and length, lakes and ponds will be identified by location and surface area. • The competent authority should decide whether to classify cyprinid waters through which salmonids pass on their way to breeding grounds as cyprinid or salmonid. The need for the presence of a breeding population of salmonids to place waters in that category may be a deciding factor. • Apply legally binding parametric values appropriate to the category to the identified waters. • For each designated water, fix values for the parameters listed in the legislation, in so far as they are specified, and any additional parameters that will apply to waters that are designated. The values will depend upon the classification of the water as salmonid or cyprinid. National standards may be set for parameters for which no values are given in the directive. • The competent authority should decide whether parameters in addition to those set out in the EU legislation are required. • The competent authority should set values for the chosen parameters which are not less stringent than "I" values. If the "I" values are not used (i.e. more stringent values are set) factors that might influence water quality and lead to a breach of the chosen values should be taken into account, such as local geology, industrial sources and the nature of local activities, before adopting the values, as this may give rise to insuperable problems of achieving the set values. • If as a result of sampling it is shown that the parametric values are not met, the competent authority should establish the cause of non-compliance and prepare programmes to reduce the pollution. This may involve liaison with other organisations at a local level.
<p>Monitoring and Enforcement</p> <ul style="list-style-type: none"> • The competent authority must fix representative sampling points for a on-going monitoring programme. • Establish a sampling and testing programme for the relevant parameters which have been set for each designated water. • Compare the annual percentile, percentage and average values obtained as a result of the sampling programme with the parametric values quoted in the EU legislation. This comparison must take account of all reasons for possible exceedences and verifying that the individual results are valid and not the result of chance, or floods or other natural disasters. Standard statistical techniques should be employed to verify results. • Where a designated body of water does not comply with the values set, carry out local investigations to identify the reasons for non-compliance. This may involve identifying industrial or urban waste water treatment discharges, or the non-compliance could be due to natural causes. • Prepare action plans for improving or maintaining water quality in the designated waters.

Technical Standards and Guidelines
<ul style="list-style-type: none"> • The laboratory organisation should prepare and issue guidance on the techniques of sampling and sample preservation and transport. The laboratory carrying out the analysis should ensure that sampling methods do not adversely influence the results of analysis. The methods for sample preservation where samples have to be stored for some time or during transport to the laboratory before analysis can commence should be described in detail. • The competent authority should ensure that laboratories use methods that are the same as, or equivalent to, those specified by issuing guidance of suitable methods and instrumentation. If methods are in use which are different from those specified issue analytical quality control guidance on how to confirm equivalence with the methods in the directive. The laboratories should be accredited by the national accreditation organisation to a standard of good laboratory practice.
Consultation and Reporting
<ul style="list-style-type: none"> • Where rivers or lakes containing fish cross international borders, arrangements should be made to facilitate discussions between the states so that common standards may be adopted. • Establish a database for recording the results of regular sampling, and other information concerning the implementation of the directive. This should be in such a form that reports to the Commission can be made, and information can be made available to the public under the terms of the Directive on Access to Environmental Information (90/313/EEC, to be replaced by Directive 2003/4/EC), and the Reporting Directive (91/692/EEC) and Decision 94/741/EEC. • Report to Commission at three yearly intervals in accordance with the Reporting Directive (91/692/EEC) on: <ul style="list-style-type: none"> • A list of designated waters; • Any future changes to designations; • New parameters adopted by the member states; and • Derogations.

4 Costs

The main types of costs likely to be incurred in implementing this directive are indicated in the checklist below.

Checklist of the Types of Cost Incurred to Implement the Directive (see generally the WFD fiche as to costs)

Initial set-up costs:

- Establishment of the competent authority.
- Costs of setting up laboratory and sampling systems (if these are not already available).
- Training.
- Identification of fish waters.
- Collection of data on current quality.
- Identifying causes of poor water quality.
- Preparation of improvement plans.

Capital expenditure:

- Laboratory equipment (if this is not already available).
- Capital works in the improvement programme.

On-going running costs:

- Annual sampling programme.
- Re-assessing compliance, reviewing authorisations and taking enforcement action.
- Revising improvement programmes.

The set-up costs for this directive will depend upon the amount of monitoring already undertaken, and the data which are available on water quality and freshwater fisheries. Where fishing, either as a sport or for a commercial purposes, is widespread, or where the conservation of fish species is currently an activity undertaken by government or environmental bodies, sufficient data may already be available to assist in the designation.

If the information indicates that large areas of water currently support fish or, bearing in mind the habitat, could support fish if pollution sources were to be removed, then the costs of improvement plans could be significant. Costs of dealing with major polluting activities such as the construction of waste water treatment plants, or changing the way that industry deals with its wastes are very high. Where significant failures are detected, action plans may involve high levels of capital expenditure. However, this may be absorbed into the requirements of other directives such as the Urban Waste Water Treatment Directive (91/271/EEC) or the Dangerous Substance Directive (76/464/EEC, but to be repealed under the WFD – see above for details) which already have significant investment profiles irrespective of water quality issues raised by this directive. It could be argued that this directive focuses the improvement works to specific areas, or changes the priority of pollution control activities. Seen in this way, the capital expenditure specifically required as a result of the introduction of this directive may be modest. The capital costs will have to be borne by the polluters rather than the State when the "Polluter Pays Principle" is applied, and see the WFD, Article 9, for the obligation to take account of the principle of recovery of the costs of water services).

Provided the laboratory used is that employed by the competent authority for other similar directives, or national water quality assessment programmes, the additional cost of laboratory facilities is relatively small.

The Shellfish Water Directive

Official Title: Council Directive 79/923/EEC on the quality required of shellfish waters (OJ L 281, 10.11.79)

1 Summary of Main Aims and Provisions

This Directive belongs to the 'first wave' of EU water legislation adopted in the 1970s and 1980s. The Directive aims to protect and/or improve the quality of coastal and brackish water bodies in which shellfish live, in order to contribute to the quality of edible shellfish products. It lays down standards for the quality of designated waters ('guide' values as well as 'imperative' values) and requires Member States to monitor the quality of the waters and to take measures to ensure that they comply with the minimum standards.

This directive is to be integrated into the Water Framework Directive, and is to be repealed with effect from 22.12.13 (see Article 22 of the Water Framework Directive). The implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the extensive provisions of the Water Framework Directive (2000/60/EC) (also "WFD"), which has altered the legislative framework for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook. See also that fiche for details of the specific requirements for monitoring, regulation and as to implementation. Note, in particular, that under the WFD water control is effected on a river basin district basis. Note, too, that the WFD provides for particular administrative and regulatory control in the case of international river basin districts.

2 Principal Obligations of Member States

2.1 Planning

- Identify coastal and brackish waters needing protection or improvement in order to support shellfish life and growth and designate these waters as shellfish waters (Art. 4) (note coastal waters should be assigned to the nearest or most appropriate river basin district under the WFD – Article 3).
- Establish water quality standards applicable to designated waters for the parameters specified in the Directive and for other parameters if required (Arts. 3 and 9) (note that the WFD sets down detailed provisions as to the characterization and classification of the water status for such water bodies – Annexes II and V).
- Establish programmes to reduce pollution and to ensure that designated waters comply, as a minimum, with the binding/imperative quality standards (Art. 5) (note the WFD requires the establishment of programmes of measures within river basin management plans to similar, but more pervasive, end).

2.2 Monitoring and Enforcement

(note generally the more detailed requirements of the WFD in these regards)

- Carry out sampling and analysis of designated waters at frequencies not less than those specified in the Directive. The sampling and analysis must be carried out using the methods specified in the Directive, or other methods that will achieve equivalent or comparable results (Arts. 6 and 7 and the Annex).
- In cases of non-compliance with the water quality standards, establish the cause of non-compliance and take appropriate measures to rectify the situation (Art. 7).
- Ensure that measures taken to implement the Directive do not lead to an increase in pollution (Art. 8) (see the WFD, Article 4(4)-(9) for circumstances for extensions of time and for derogations from the requirements set out thereunder).

2.3 Consultation and Reporting

(note generally the more detailed requirements of the WFD in these regards)

- Consult with other Member States before designating shellfish waters in the immediate vicinity of a frontier with the other Member State (Art. 10) (note the provision in then WFD for river basin districts and international river basin districts and the requisite measures for coordination there).
- Report to the Commission on:
 - the designation of shellfish waters (Art. 13);
 - the quality of designated waters (Art. 14 and Council Directive 91/692/EEC);
 - provisions relating to new parameters (Art. 13);
 - cases of derogation from the Directive (Art. 13);
 - other information relating to the application of the Directive, as requested (Art. 13);
 - measures taken to comply with the Directive (Art. 15); and
 - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art. 15).

2.4 Additional Legal Instruments

A number of other legal instruments have relevance to the management of shellfish waters. These include:

- Shellfish Health Directive (91/442/EEC).
- Water Framework Directive (2000/60/EC).
- Dangerous Substances Directive (76/464/EEC) and its Daughter Directives (but note that Article 6 thereof was repealed with effect from 22.12.00, that the remainder will be repealed with effect from 22.12.13, that a list of priority substances has been adopted as Annex X to the WFD by Decision 2455/2001/EC, and that, by way of transitional provision, for the purposes of Article 7 of 76/464/EEC the WFD (Art.22(3)(b)) Member States may apply the principles for identification of pollution problems and the substances causing them, the establishment of quality standards, and the adoption of measures, laid down in the WFD)..
- Urban Waste Water Treatment Directive (91/271/EEC).
- Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC, and see the WFD for the particular position of this directive thereunder, and see, too, Section 7 of the Handbook).
- Reporting Directive (91/692/EEC) and Decision 94/741/EEC.

- Directive on Access to Environmental Information (90/313/EEC, due to be replaced under Directive 2003/4/EC) (see Section 2 of the Handbook).

The issues of particular relevance are:

- The incorporation of the Shellfish Water Directive (79/923/EEC) into the provisions of the proposed Water Framework Directive in due course, and the repeal of this directive (see above for more details);
- The expansion under the WFD of water protection to all waters, surface waters and groundwaters, and the obligation to achieve/maintain "good status" for all these waters. Good status is comprehensively defined in verbal terms, ensuring inter alia environmental conditions suitable for fish and shellfish life, and the provision for river basin districts as the basis for managing water resources;
- The inclusion of shellfish waters in river basin plans and programmes of measures to improve water status;
- The establishment of water quality objectives under the Dangerous Substances Directive (76/464/EEC, but see above as to its repeal and transitional provisions able to operate now under the WFD in this regard); and
- The use of provisions in the Urban Waste Water Treatment Directive (91/271/EEC) and the IPPC Directive (96/61/EC) to control pollutants which affect shellfish waters, and see the WFD fiche for the particular place these Directives have under the regime for management provided thereunder.

3 Implementation

As this legislation will be integrated into the Water Framework Directive in its operative obligations, emphasis should be put on the content, but not too much on the formal transposition. The main obligation will – within the Water Framework Directive – be the establishment of an adequate sampling and monitoring system. This overall approach should also contribute to avoiding duplication of effort in the field of measuring and monitoring. Further consideration should be given to the WFD as to future steps for implementing this Directive in the Candidate Countries.

The checklist below sets out the key actions related to sampling and monitoring of relevance to the protection of shellfish waters.

KEY SAMPLING AND MONITORING TASKS
<ul style="list-style-type: none">• Decide upon sampling points for each designated body of water. Examine the local conditions in the designated areas to identify the discharges and other factors likely to affect the water in order to assist in deciding upon the most suitable positions for sampling to take place. Sampling must include molluscs so the ease of obtaining such organisms is also an important consideration.• Determine the most representative point for sampling.• The competent authority, must establish a sampling and testing programme for designated waters using the sampling frequencies required by the EU. The laboratory appointed for testing should specify any special conditions which must be observed during sampling to ensure accurate results.• Assess compliance at the end of each period of twelve months using the percentile conformity requirements set out in the EU legislation.• If exceedance of the standards is detected after applying the percentiles, the competent authority should identify the reasons for the exceedance. All possible causes of non-conformity should be identified.• Arrange consultation with dischargers and local authorities to involve them in identifying problems.• Where the cause of the problem is identified establish programmes for the reduction of pollution to ensure compliance with the standards.• The competent authority should set up a system for notifying the competent authorities appointed for the Dangerous Substances Directive (76/464/EEC, but see above as for its repeal and operable transitional provisions) and the IPPC Directives (96/61/EEC) of any problems in achieving the standards for the Shellfish Water Directive and request assistance in improving shellfish waters through improving control of discharges.

4 Costs

The main types of costs likely to be incurred in implementing this directive are indicated in the checklist below.

Checklist of the Types of Cost Incurred To Implement the Directive (but see also the WFD fiche as to costs)

Initial set-up costs

- Establishment of the competent authority(ies).
- Establishment of a laboratory (or contracts) with correct methods of analysis.
- Identification of shellfish waters (survey or consultation).
- Sampling programme, hire of sea-going sampling boats and crew.
- Training.

Capital expenditure

- Purchase of specialised sampling equipment for marine/sediment samples.
- (Note: Construction of new waste water treatment plants/ installation of UV disinfection is an obligation under the provisions of the Urban Waste Water Treatment Directive and therefore not listed here).

On-going running costs

- Annual monitoring programmes.
- Any necessary ongoing regulatory action (in the light of the WFD).
- Enforcement action

Where improvement programmes are needed there are potentially large capital costs for the construction of new or improved sewage works to reduce the impact of sewage effluent discharges. This may involve the installation of UV disinfection plants to reduce bacteria levels as well as the construction of secondary treatment plants. Sewerage networks may influence the water quality through the operation of storm overflows, and these may have to be modified to reduce the frequency of operation. Costs for enlarging sewer networks are considerable. However, it is likely that many of the improvements will be identified as a needed under other directives, in particular the Urban Waste Water Treatment Directive (91/271/EEC).

The Drinking Water Directive

Official Title: Council Directive 98/83/EC on the quality of water intended for human consumption (OJ L 330, 5.12.98)

1 Summary of Main Aims and Provisions

This Directive replaces, with effect from at the latest 25.12.2003, the original drinking water Directive (80/778/EEC). It was necessary to adapt the original Directive in the light of scientific and technical progress, but also in accordance with the principle of subsidiarity by reducing the number of parameters for which Member States were obliged to set water quality objectives and by focusing on compliance with essential quality and health parameters. The Directive is also aimed at providing for the safeguarding and promotion of sustainable use of water intended for human consumption (and in this can be considered as foreshadowing the Water Framework Directive). The key aim of the Directive is to protect human health from the adverse effects of contamination of water intended for human consumption by ensuring that it is 'wholesome and clean' (Arts. 2(1) and 3). It applies to all water intended for human consumption, as well as water used in the production and marketing of food, subject to certain exceptions including natural mineral waters which are regulated pursuant to Council Directive 80/777/EEC (Art. 2(1)). Member States are required to monitor the quality of drinking water and to take measures to ensure that it complies with the minimum quality standards (see Arts. 4 and 7). It also lays down a number of requirements for reporting to the Commission, and for making information available to the public, regarding the quality of drinking water (Art. 13).

The steps still required for implementation and operation of this Directive in Candidate Countries should be effected bearing in mind the pervasive provisions of the Water Framework Directive (2000/60/EC) (also WFD), which has altered the legislative framework generally for Community water-related legislation, and provided an altered structure for practical application of this Directive. It is recommended that any further implementation of this Directive take place after careful consideration of the Water Framework Directive and the fiche on it in this Handbook. See also that fiche for details of the specific requirements for monitoring, regulation and as to implementation, for example, under Articles 4, 5, 7, 10-13, 16 and Annex IV. Note, in particular, that under the WFD water control is effected on a river basin district basis, and that the WFD provides for particular administrative and regulatory control in the case of international river basin districts.

2 Principal Obligations of Member States

2.1 Planning

- Consider generally what steps to take in legislative, administrative and executive terms to implement this Directive taking into account the requirements of the WFD.
- In so doing, consider what steps are required to meet the requirements of this Directive for the purpose of establishing programmes of measures for river basin districts (WFD, Art. 11)
- Decide, further to any monitoring to be adopted in compliance with the WFD, whether to exempt any categories of water from the provisions of the Directive, pursuant to Article 3(2) (Art. 3), and taking into account the WFD.
- Decide whether to provide for any derogations from the parametric values set out in the Directive, and if so ensure that these are only granted in accordance with the conditions laid down (Art. 9) (and see the WFD, Arts. 4 and 7).

2.2 Regulation

(note the more extensive regulatory control regime required as regards water protection generally, but also as regards the grant, review and amendment of permits or authorisation in the WFD)

- Take the necessary measures to ensure that water intended for human consumption (referred to in this fiche as 'drinking water') is wholesome and clean, i.e. that it complies, as a minimum, with the requirements laid down in the Directive (Art. 4 and Annex I, and see the WFD, Art. 7, but note also the WFD, Art. 4).
- Ensure that measures taken pursuant to the Directive do not lead to a deterioration in the quality of drinking water, with regard to human health, or to an increase in pollution of waters used for the production of drinking water (Art. 4).
- Establish water quality standards applicable to drinking water, for the parameters specified in the Directive and for other parameters where necessary for the protection of human health (Art. 5 and Annex I, and see the WFD as to classification of the status of water bodies, Art. 5) and Annexes II and III).
- that the water quality standards set in accordance with Article 5 of this Directive are complied with at the point at which the water is made ready for human consumption (as described in the Directive) (Art. 6).
- Where drinking water is supplied from a distribution network to premises or establishments, and the water does not comply with the water quality standards at the point where it emerges from the tap, Member States will not be in breach of the Directive provided that:
 - a) non-compliance is due to a domestic distribution system which is not the responsibility of the water supplier;
 - b) the water is not being supplied to the public (e.g. schools, hospitals and restaurants);
 - c) appropriate measures are taken to reduce or eliminate the risk of non-compliance with the quality standards (e.g. advising property owners of possible remedial action); and
 - d) consumers are informed and advised of any possible additional remedial action that they should take (Art. 6).
- Ensure that measures are taken to limit the quantity of substances or materials for new installations used in the preparation or distribution of drinking water (Art. 10).

2.3 Monitoring

(note generally here the WFD requirements)

- Establish monitoring programmes, in accordance with the minimum requirements laid down in the Directive (Art. 7 and Annex II, but see also the WFD, Arts. 7 and 8 and Annex V).
- Ensure that regular monitoring of drinking water quality is carried out to ensure compliance with the requirements of the Directive and consider tying this activity in for the purposes of the WFD. Monitoring must be carried out in accordance with the requirements specified in the Directive, although other methods of analysis may be used if they will achieve equally reliable results (Art. 7 and Annex III, and see the WFD, Arts. 7, 8 and Annex V).
- Where there is a potential danger to human health from the presence, in drinking water, of substances and micro-organisms for which no parametric value has been set, ensure that additional monitoring of these substances and micro-organisms is carried out, on a case by case basis (Art. 7).
- Ensure that any failure to meet the water quality standards is immediately investigated in order to identify the cause, and that remedial action is taken to restore the water quality (Art. 8).
- Where the supply of drinking water constitutes a potential danger to human health, ensure that the supply is prohibited or restricted or that other necessary action is taken to protect human health (Art. 8).

2.4 Information and Reporting

(note generally here the WFD requirements)

- Inform the population concerned of any exemptions granted pursuant to Article 3(2)(b) and provide advice to them on measures to be taken to protect human health from the adverse effects of contamination of drinking water (Art. 3).
- Inform and advise consumers where the supply of drinking water constitutes a potential danger to human health, and (except in trivial cases of non-compliance) notify consumers of remedial action taken (Art. 8).
- Inform the population affected by a derogation of the derogation and the conditions on which it is granted (Art. 9).
- Publish a report every three years on the quality of drinking water (Art. 13).
- Ensure that adequate and up-to-date information on the quality of drinking water is available to consumers (Art. 13).
- Report to the Commission on:
 - cases of derogation from the requirements of the directive (Art. 9);
 - the quality of drinking water (Art.13);
 - requests for an extension of time for implementation (Art. 15);
 - measures taken or to be taken to fulfil the obligations under the directive pursuant to Art. 6(3) and Annex I, Part B, note 10 (Art. 13); and
 - transposition, with texts of the main provisions of national law adopted in the field covered by the directive (Art. 17).

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the checklist below. The key tasks are arranged under sub-headings and organised in chronological order of implementation whenever possible.

Key Implementation Tasks	
1	Planning
	Designate a competent authority or authorities to review the process for implementing the requirements of the directive and to consider integrating compliance with this directive with measures to ensure compliance with the WFD, and in any event, to set quality standards, to establish compliance procedures and monitoring systems, and set up and implement information reporting procedures.
2	Regulation
	<p>Set quality standards for water intended for human consumption.</p> <p>Establish compliance monitoring procedures to ensure compliance with monitoring standards.</p> <p>Establish procedures for dealing with incidents of non-compliance and the instigation of remedial action.</p> <p>Establish procedures for informing the public of actions needed to address non-compliant sources of drinking water.</p> <p>Establish a monitoring network able to fully meet the requirements of the Directive including the relevant sampling protocols</p> <p>Establish procedures for assessing the efficiency of any disinfection treatment which is applied to water for human consumption</p> <p>Establish analytical procedures in line with the requirements of the Directive or where an equivalent alternative method is selected provide details to the Commission</p> <p>Develop and disseminate guidelines to assist the competent authorities fulfil the obligations under the directive, including guidance on deciding what actions to take to restrict use of waters which may pose a threat to human health.</p> <p>Establish procedures for providing for derogations from the Directive.</p> <p>Establish procedures for informing the public as to the nature and timescale of any derogations.</p> <p>Establish procedures for the review of derogations.</p> <p>Establish guidelines/criteria for the implementation of Article 15.</p> <p>Establish guidelines and procedures to meet the requirements of Article 10 of the Directive on quality assurance of equipment and materials used in the preparation or distribution of water intended for human consumption.</p> <p>Ensure that a programme of actions is developed to ensure that the quality of water intended for human consumption complies with the Directive within 5 years of its entering into force.</p>

3	<p>Report on the measures taken to implement the Directive within two years of its entry into force</p> <p>Reporting to the Commission on :</p> <ul style="list-style-type: none"> • Requests to grant a second derogations (Art. 9) • Requests to grant third derogations (Art. 9) <p>In both cases the derogation request will contain the information specified in Article 9 paragraph 3 of the Directive.</p> <ul style="list-style-type: none"> • On any derogations concerning individual sources of water supply exceeding 1,000 in ³ a day as an average or serving more than 5,000 people. • Every three years. report on the quality of water intended for human consumption with the objective of informing consumers. Reports are to be sent to the Commission within two months of their publication. • The first triennial report will be accompanied by a report on tile measures taken to fulfil Article 6(3) and Annex I, Part B, note 10 of the Directive. <p>Commission reporting on:</p> <ul style="list-style-type: none"> • Every three years, the Commission will publish a synthesis report on the quality of water intended for the consumption in the Community based on information supplied by the Member States.
4	<p>Public Information</p> <p>Inform the public of any exemptions from the provisions of the Directive and on measures to be taken to protect human health.</p> <p>Inform consumers where there is a risk of water not complying with the required quality standards and advise them of any remedial action they should take.</p> <p>Inform consumers of any action taken by the authorities to deal with sources of water for human consumption not in compliance with the requirements of the Directive.</p> <p>Inform any population affected by a derogation of the details of the derogation and any conditions that govern it.</p> <p>Provide advice to any groups within the population for whom the derogation could present a special risk.</p>

3.2 Phasing Considerations

This was a key directive in the water sector when adopted because of its then role in regulating water quality for consumers. The primary place has been taken in this regard by the WFD. Nonetheless, time will be needed to develop the monitoring, sampling and information systems required by the directive, and particularly with a view to any desired integration of the requirements of this directive with those of the WFD in this regard. Where existing water quality standards for drinking water will need to be replaced, this will also require careful planning and scheduling with the appropriate authorities, utilities, consumer groups, etc.

4 Implementation Guidance

The provision of drinking water of acceptable quality is clearly fundamental to the well being of the population and any deterioration in water quality at the local or national level is likely to cause widespread concern among the general public.

Implementation of the directive requires a system which (intending to be part of the integrated movement generated by the WFD):

- sets clear water quality standards for water destined for human consumption;
- has the capacity to effectively monitor and sample sources of drinking water and to report on the results of these activities;
- has the resources to ensure that the public is kept informed of key action at national, regional and local level on this issue.

Planning

- The choice of a competent authority or authorities will require care, because of the need to consider the structure for the provision of drinking water, the role of utilities/water supply companies and the need to have a strong inspection and monitoring network, and also because of the need to have regard to the river basin management system to be implemented under the WFD, bearing in mind also the establishment, as necessary, of international river basin districts and relevant competent authorities in this regard (see further the fiche on the WFD). In addition, because of the health-related aspects of the directives, health authorities may need to be involved in the implementation of the directive. Similarly, bodies responsible for consumer issues may wish to become involved in implementing or monitoring certain elements of the directive. Where more than one competent authorities is appointed, tasks must be clearly allocated between them so that all of the obligations of the Directive are met.
- This directive has implications for a number of stakeholders and, especially where implementation of the directive will necessitate amendment or replacement of existing standards, it will be necessary to carry out consultation with a wide range of stakeholders. This activity, along with supporting information on the Directive, needs to be very carefully thought out by the competent authorities. This element of planning has all the more resonance bearing in mind the principle of costs recovery for water services to be implemented pursuant to the WFD (see especially the WFD, Art. 9 and Annex III)
- Governments may benefit from consultation with the Commission, international agencies involved with drinking water and health standards such as WHO (the influence of which in establishing water quality standards is expressly recognized in the directive, Preamble, para 16) and other national governments (also bearing in mind the WFD requirements regarding international river basins, see its Art. 13) by, for example, exchange of information, discussion of best practice or pooling of resources.
- Given that the implementation of this directive will almost certainly involve some changes to previous drinking water regulations and standards, and a greater consideration of the integration of water services policy pursuant to the WFD, it is important that all relevant stakeholders are involved in the development and implementation of national legislation and regulations to implement this directive.
- The development of a monitoring programme and sampling protocols will require the involvement of a number of organisations and agencies and also representatives of accredited laboratories. It may also be necessary to provide guidance and training support.
- Consideration needs to be given to how to regulate the management of the situations of non-

compliance both in terms of responsibility for dealing with incidents of non-compliance and their remediation and in terms of the management and dissemination of information to consumers and other affected parties.

- It may be necessary to establish a specific agency/inspectorate to deal with drinking water issues. This will need to have clearly defined responsibilities. Care should be taken to make such a role consistent with and to promote achievement of the objectives of the WFD.
- Existing providers of analytical services for the testing of drinking water samples will need to be advised of the requirements of the directive and the WFD and may need to introduce new sampling and reporting procedures and quality standards.

Standards and Reporting

- The Directive requires Member States to report to the Commission on several aspects of implementation. These are summarised in the checklist in section 3 of this fiche.
- The Directive requires that the first three yearly report on the quality of water intended for human consumption covers the years 2002, 2003 and 2004. The first report (and all subsequent reports) must be published within one calendar year of the end of the reporting period and forwarded to the Commission within two months of its publication. It is important that reports comply with the formats stipulated by the Commission.

5 Costs

The main cost associated with the implementation of this directive relate to the costs of implementing and maintaining a monitoring system which is compliant with the requirements of the directive. Costs may also be incurred when existing quality standards are superseded. This will relate mainly to new documentation, training of staff, etc. If it is decided to create a specific agency to deal with drinking water issues, this too will clearly have costs implications. See also the WFD as to costs.

The Water Framework Directive

Official Title: Directive 2000/60/EC of the European Parliament and the Council establishing a framework for Community action in the field of water policy (OJ L 327/1 of 22.12.2000), as amended by Decision 2455/2001/EC of the European Parliament and the Council establishing the list of priority substances in the field of water policy (OJ L 331/1 of 12.12.2001)

1 Summary of Main Aims and Provisions

The Water Framework Directive establishes the basic principles of sustainable water policy in the European Union on an integrated basis through the establishment of a management structure for future European water policy, relying on close cooperation and coherent action at the Community, Member State and local levels, with the close involvement of the public, and with hoped for close cooperation with non-Member States and assistance of relevant international water protection bodies.

The Directive is an ambitious and far-reaching instrument in relation to which Member States may wish to consider whether they should repeal existing, possibly disparately-organised water legislation and replace it under a single framework law, and as part of that process to consider whether to codify their water legislation. An indication of the scale of measures required, and as to the timescale extending far into the future may be gleaned from the timetable of key measures to be taken by Member States set out below.

The Directive may be considered to embody a new approach to environmental legislation including the “combined approach” of water quality control with emission limit values, and reflecting not only in a clear and practically important manner the key environmental protection requirements of Community policy on the environment, but also key principles for Community legislation affecting the environment, such as the precautionary principle and the polluter pays principle, and aiming at the implementation of the same in a comprehensive and integrated fashion in relation to water-related legislation. The Directive aims to integrate the latter within one framework by their incorporation within the structure of the Directive and the consequent phased repeal of the individual pieces of such legislation.

The principle of integration can be seen as given further effect by the explicit objective of contributing to compliance with Community and Member States obligations under international conventions, by the provision of an obligation on Member States to endeavour to establish cooperation on water management objectives with non-Member States where the effects of or river basins themselves are part within and without the Community, by the promotion of existing international water protection bodies, but also by reference to and implementation in practice of the principle of subsidiarity and the express requirement for publication of designs for and actual river basin management plans for the improved participation of the public and all concerned in the implementation of the Directive.

The Directive provides for a programme of action that extends far into the future, but in relation to which the deadline for completion of certain obligations has already past.

The following are key objectives of the Directive (where relevant, specific Articles are identified by way of further guidance):

- the development of an integrated Community policy on and for the sustainable use of water, and its application in accordance with the principle of subsidiarity (Arts. 1 and 4);

- the adoption, to this end, of a coherent, transparent and effective legislative framework (including by streamlining legislation) pursuing common principles and, as necessary, laying down technical specifications and minimum requirements for common environmental quality standards and emission limit values (Arts. 16 and 17, Annexes II and III, V, VI, VIII, IX and X);
- the further integration of protection and sustainable management of water into other Community policy areas such as energy, transport, agriculture, fisheries and tourism (Arts. 1, 4, 5 and 9);
- contributing to enabling the Community and Member States to meet their obligations under various international agreements containing important obligations on the protection of marine waters from pollution and under other international agreements on water protection and management (Arts. 1, 3, 4(1), 12, 16(3) and (5));
- contributing to other areas of cooperation between Member States, such as the European Spatial Development Perspective;
- expanding the scope of water protection to all waters, surface waters, groundwater, coastal and where relevant territorial waters (Arts. 1-5, 7-8, 11-12, 16-17);
- contributing to mitigating the effects of floods (Art. 1 and 11(3)(l));
- protecting aquatic ecosystems, and terrestrial ecosystems and wetlands directly dependent on them (especially Art. 6 and Annex IV));
- to safeguard and develop the potential uses of Community waters (esp. Arts. 1, 4, 9, 11, 13 and Annex VII);
- the establishment of a water management approach based on river basins, and providing for cooperation between Member States where river basins or the effects of the same are transboundary and for further cooperation with non-Member States where river basins are only partly within the Community (Art. 3);
- the establishment of common definitions of the status of water in terms of quality, and where relevant for the purpose of environmental protection, of quantity (Arts. 2, 4(1)(a) and 16(7), and Annexes V, VIII and IX);
- maintaining and improving the aquatic environment in the Community, primarily through the “combined approach” of controls on quality, but also through regulation on quantity, both also to be therefore more closely integrated (Art. 10 and Annex IX);
- ultimately the elimination of priority hazardous substances into water (Arts. 4 and 16);
- contributing otherwise to the progressive reduction of emissions of hazardous substances to water;
- contributing to achieving near background values for naturally occurring substances in marine waters (Art. 4);
- achieving “good status” for all waters by a certain deadline, and maintenance of “good status” where it already exists (Art. 4);
- the identification and reversal in groundwaters of any significant and sustained upward trend in the concentration of any pollutant (Art. 4);
- requiring account to be taken of the principle of recovery of costs of water services, including environmental and resource costs, and to establish water pricing policies setting adequate incentives to use water efficiently and to require an adequate contribution to the recovery of the costs of water services from different water users (Art. 9 and Annex III);
- encouraging the active participation of all interested parties in the implementation of the Directive, especially as regards the production, review and updating of river basin management plans (Art. 14).

Several pieces of legislation dating from about 1975 to 1980 will thus, in terms of their provisions, become integrated into the Water Framework Directive, and consequently repealed in a phased approach. The particular Directives concerned are:

- Directive 75/440/EEC on Surface Water for Drinking Water Abstraction;
- the Dangerous Substances Directive 76/464/EEC and its daughter directives;

- Council Decision of Exchange of Information 77/795/EEC;
- the Fishwater Directive 78/659/EEC;
- the Shellfish Water Directive 79/869/EEC;
- the Directive of Measurement and Sampling of Surface Waters 79/869/EEC; and
- the Groundwater Directive 80/68/EEC.

See further on this, Article 22.

All transposition and implementation considerations concerning these directives should therefore take account of this fact.

The Directive will complement and further complete other key pieces of water-related legislation: in particular, the 1991 directives on urban waste water treatment (Directive 91/271/EEC) and on nitrates pollution from agriculture (Directive 91/676/EEC), the body of rules governing the authorisation and use of pesticides and biocides (for example, the Biocides Directive (98/8/EC)), as well as the 1996 directive on integrated pollution prevention and control (IPPC) (Directive 96/61/EC) (see Section 7 in the Handbook). See also Article 10 of the Directive and the section on Additional Legal Instruments below.

2 Principal Obligations of Member States

2.1 Planning

- Consider what water-related legislation might usefully and sensibly be coordinated under or with the implementing legislation required for this Directive. Provide for any relevant repeals of national law (see the Timetable below as to possible phasing of such legislation, and see Art. 22);
- Conduct a review of the state of implementation and in particular enforcement of existing environmental legislation for the protection of waters, and take all necessary measures to ensure that such legislation is implemented and applied in full (cf. Art.4(8) and (9));
- Provide for the adoption of all relevant measures necessary to implement the Directive, taking into account the matters suggested in the introduction above (Art. 24);
- Establish competent authorities, using either existing structures or creating new ones, and establish administrative arrangements to ensure that the directive is implemented effectively within River Basin Districts (Art..3(2)-(4));
- Identify, in accordance with the definitions in the Directive, and establish in respect of all relevant waters within the territory of the Member State all required categories of waters, and further identify which are part of an international river basin district (Arts. 2 and 3, and Annex II);
- Identify river basins (and as relevant sub-basins) and assign them to individual river basin districts. Two or more river basins may be combined into one river basin district, where appropriate (Art..3(1));
- Assign all groundwaters to the nearest or otherwise most appropriate river basin district. Likewise with coastal waters, which should be assigned to the nearest or most appropriate river basin district or districts (Art. 3(1));
- Where Member States share a river basin, provide for coordination across the whole river basin (establishing any required International River Basin Districts). Where part of a river basin lies on the territory of a Third Country, this coordination is mandatory for the part lying within Member States, but Member states are still under an obligation to endeavour coordination with relevant non-Member States (Art. 3(4)-(5));
- Ensure that for each river basin district or relevant part of any international river basin district there are undertaken an analysis of its characteristics, a review of the impact of human activity on the status of the surface waters and on groundwater, and an economic analysis of water use, according to the technical specifications in Annexes II and III (Art. 5(1)), and provide for their necessary review and update (Art. 5(2));
- Identify, within each river basin district, all waters used for the abstraction of drinking water and bodies of water intended for such future use (Art. 7(1)), and establish, in the absence of relevant measures adopted at Community level within six years after the Directive came into force, environmental quality standards for substances on the priority list of substances (see Decision 2455/2001/EC) for all such surface waters and controls on the principal sources of these substances, and for all subsequent substances included on such list, in the absence of action at Community level, five years after their inclusion on such list (Art. 16(8));

- Ensure necessary protection measures are in place for these bodies of surface water with an aim of preventing deterioration in their quality to reduce the level of purification treatment required in the production of drinking water (Art. 7(3));
- Consider establishing safeguard zones for the bodies of water referred to in the previous bullet point (Art. 7(3));
- Establish, for all groundwaters, in the absence of agreement at Community level on specific measures to prevent and control groundwater pollution aimed at achieving the objective of good groundwater chemical status under Article 4(1)(b), appropriate criteria at the latest five years after the Directive comes into force, and at least apply as a starting point for trend reversal 75% of the level of quality standard set out in existing Community legislation applicable to groundwater (Art. 17(4) and (5));
- Establish a register or registers of all areas lying within each applicable river basin district which have been designated as requiring special protection under specific Community legislation for the protection of their surface water or groundwaters or for the conservation of habitats and species directly depending on water (Art. 6(1)), which must include all bodies of water identified under Article 7(1) and all protected areas covered by Annex IV (Art. 6(2)), and provide for them to be kept under review and up to date (Art. 6(3));
- Establish programmes for monitoring water status in order to establish a coherent and comprehensive overview of water status in each river basin district (Art. 8(1) and Annex V, and see below under Monitoring), and make these programmes operational at the latest six years after the Directive came into force (Art. 8(2));
- Identify, based on the results from these monitoring programmes, applicable as relevant to each water body, its ecological status, its chemical status and applicable determinations of “surface water status” and “groundwater status” (Art. 8 and Annex V);
- Provide for the conduct of the economic analysis in sufficient detail in order to make relevant calculations necessary under Article 9 taking account of long term forecasts of water supply and demand for water in the river basin district, and any necessary estimates of volume, prices and costs associated with water services, and estimates of relevant investment including forecasts of such investments, and then make judgments of the most cost-effective combination of measures in respect of water use for Article 11 based on estimates of potential costs (Art. 9 and Annex III);
- Establish steps planned towards implementing such economic measures which will continue to achieving the environmental objectives in Article 1 and on the contribution to be made by various water users towards recovery of the costs of water services (Art. 9(2));
- Provide for the application by 2010 of water pricing policies providing adequate incentives for efficient water use, with adequate contributions from the different water users, disaggregating the same into at least industry, households and agriculture, based on the economic analysis identified above, and in so doing consider having regard *inter alia* to social, environmental and economic effects of the recovery (Art. 9(1));
- Ensure that relevant regulatory measures are in place to ensure the establishment or implementation, in accordance with existing Community legislation, of the emission controls and the relevant emission values set out in the Directives referred to in Article 12(2) and by the end of twelve years after the Directive comes into force at the latest, and for the application of any

necessary more stringent measures (Art. 12(1));

- Initiate programmes to identify point and diffuse sources of pollution of all waters subject to the Directive and requiring control measures under the Directive, and consider whether to adopt generally binding rules for their prior authorisation or registration where permitted under Community legislation (Art. 11(3));
- Establish, for each river basin district or relevant part of any applicable international river basin district, a programme of measures, taking account of the results of the analysis required under Article 5, in order to achieve the objectives of Article 4 (Art. 11(1)). This may be achieved by reference to measures following from implementation legislation for this Directive and covering the whole of the Member State territory, and where appropriate may be applicable to all river basin districts or parts of international river basin districts within the territory of the Member State (Art. 11(1)):
 - Each programme is to include “basic measures” and where necessary “supplementary measures” (Art. 11(2));
 - Member States should also consider whether any extensions of time are required to be provided for achieving the objectives of Article 4 and/or whether any derogations should apply (Art. 4), and/or whether there are grounds for providing that breach of the Directive will not take place in accordance with the provisions of Article 4(7);
 - Any such alleviating measures: –
 - must be provided only where the relevant conditions set out in the Directive for their application are required to be satisfied as a matter of national law;
 - should not be applied in such a manner that the achievement of the objectives of the Directive in other water bodies within the same river basin district is permanently excluded, and in any event;
 - must provide for consistency with other Community environmental legislation (Art. 4(8));
 - ensure that the same level of protection as in existing Community legislation is guaranteed (Art. 4(9));
 - and any measures adopted pursuant to Article 11(3) must not increase marine pollution, and on no account may lead either directly or indirectly to increased pollution of surface waters, save where to do so would lead to increased pollution of the environment as a whole.
 - Basic measures are minimum requirements and include (Art. 11(3)):
 - Measures required to implement Community legislation on the protection of water and set out in Article 10 and in Part A of Annex VI;
 - Measures deemed appropriate for the purpose of Article 9 and recovery of costs of water services;
 - Measures to promote efficient and sustainable water use to avoid compromising achievement of the objectives in Article 4;
 - Measures necessary for Article 7;
 - Controls on and requirements for any necessary prior authorisations for abstraction of surface waters and groundwaters, and impoundment of fresh surface waters; for artificial recharge or augmentation of groundwater bodies; for point source discharges and for diffuse sources as for any other significant adverse effects on the status of waters identified under Article 5 and Annex II liable to cause pollution (also consider prior registration based on generally binding rules in accordance with and as permitted by Community legislation). Such measures should be periodically reviewed and, where necessary, updated;

- Prohibitions (subject to the stated possible derogations and authorisations) of direct discharges to groundwaters;
 - Measures, further to action required under Article 16, to eliminate pollution of surface waters by priority list substances, and to progressively reduce pollution by other substances which would otherwise prevent Member States achieving the objectives for bodies of surface waters set out in Article 4;
 - Measures required to prevent significant losses of pollutants from technical installations, and to prevent/reduce the impact of accidental pollution, including as a result of floods;
 - Measures to detect or give warnings of events such as flooding or significant losses of pollutants from technical installations, and emergency plans to address the same should they materialise.
- Supplementary measures to be considered have been set out in a non-exhaustive list in Annex VI, Part B. Part B includes measures such as economic or fiscal instruments; negotiated environmental agreements, codes of practice, demand management measures, efficiency and re-use measures, rehabilitation projects and research, development and demonstration projects;
 - Member States should consider what further supplementary measures should be adopted to provide additional protection.
- Provide for investigations to be conducted in the event that monitoring or other data indicates that the objectives set out in Article 4 for a body of water are unlikely to be achieved (Art. 11(5)); and similarly for review and modification as appropriate of relevant permits and authorisations and monitoring programmes, and any tightening of environmental quality standards or adoption of additional measures (Art. 11(5));
 - Provide for the production, in accordance with the timetable for consultation in Article 14, of work programmes for the production of river basin management plans, of an interim overview of the significant water management issues identified and of draft copies and thereafter following receipt of and the taking into account of comments from the public, publication of river basin management plans (Art. 13) (see further below also under Consultation and Reporting). In so doing, Member States should provide for consideration of any more detailed plans, for example, for sub-basins. Such plans must cover as a minimum the matters set out in Annex VII;
 - They should, for international river basin districts wholly within the Community, ensure production of a single international river basin management plan, failing which they must produce such a plan for that part within their territory to achieve the objectives of the Directive. In the case of international river basin districts only partly within the Community, the relevant Member States should endeavour to produce a single plan, but in any event must produce one for that part within their own territory.

2.2 Monitoring

Monitoring requirements should be considered and made operational in the light of the obligation to coordinate or endeavour to coordinate activities with regard to international river basin districts so as to achieve the objectives of the Directive.

Monitoring obligations may be met by allocating responsibility between central and local government bodies, environmental protection agencies, utilities operators, private sector operators whose operations may impact on water bodies. In the case of private operators, such obligations may be made conditions of their permits or authorisations. However, it is important that taken together, the monitoring and analysis undertaken meets the requirements of the Directive as a whole. The Member

State remains responsible for any such failure regardless of any such allocation of responsibilities to monitor in practice.

- For each river basin district, or portion of any international river basin district falling within its territory (Art. 5(1)) undertake, or provide for the undertaking, in accordance with the technical specifications set out in Annexes II and III, by at least four years after the Directive comes into force, with a review, with any necessary updates, by, at the latest, the end of thirteen years after the Directive comes into force, and every six years thereafter:
 - an analysis of its characteristics;
 - a review of the impact of human activity on the status of waters; and
 - an economic analysis of water use.
- For waters within each river basin district, establish or provide for the establishment (in accordance with Article 8 and Annex V, and any further technical specifications to be laid down pursuant to Article 21, and make operational by at the latest six years after the Directive comes into force) programmes for monitoring the water status in order to establish a coherent and comprehensive overview of water status therein:
 - for surface waters, such programmes to cover:
 - the volume and level or rate of flow to the extent relevant for ecological and chemical status and ecological potential (note, too, the requirements relevant here under Article 7);
 - the ecological and chemical status and ecological potential.
 - for groundwaters; such programmes to cover monitoring of the chemical and quantitative status; and
 - for protected areas, the above programmes as supplemented by those specifications contained in Community legislation under which the individual protected areas have been established.

The Member States should aim to have a monitoring system in place to allow it to demonstrate that it is capable of and is achieving the objectives of the Directive, including in particular those set out under Articles 4, 7, 16 and 17.

2.3 Regulation

- In making operational the programme of measures specified in River Basin Management Plans implement the necessary measures to ensure achievement of the various objectives of Article 4 in respect of the various categories of water bodies, and in accordance with any extensions of time, derogations, “exemptions” from compliance under Article 4.
- Providing for any sort of “alleviating measures” is likely to be quite a complex exercise. Member States should ensure that they have in place an effective system for coordinating all required actions concerning all necessary parties and for ensuring that regulatory measures are not applied in cases where they have established in accordance with legally binding rules and intend to operate bases for not requiring operators to comply in full otherwise with the objectives of Article 4. They must ensure that the constraints on the provision and application of any such “alleviating measures” are respected and at all times enforced.
- Take action to prevent or reduce the impact of accidental pollution incidents including by flooding events (Art. 11(3)(1)).

- Establish controls including systems for the prior authorisation or regulation, including where permissible, by way of general binding rules for:
 - over abstraction of fresh surface water and groundwater, as well as discharges and other activities with significant adverse impacts on status of waters;
 - over impoundment of fresh surface water;
 - providing, as considered desirable, for exemptions where abstractions or impoundments have no significant impact on water status;
 - over artificial recharge or augmentation of groundwater bodies, ensuring that any such schemes are compatible with the specifics of Article 11(3)(f);
 - for point source discharges liable to cause pollution, in particular:
 - ensuring that there are established and implemented at the latest twelve years after the Directive came into force the emission controls, or relevant emission values or, in the case of diffuse impacts the controls set out in Directives 96/61/EC, 91/271/EEC, 91/676/EEC, those adopted pursuant to Article 16, those in Annex IX and those set in any other Community legislation. In any event, adopt and apply more stringent emission controls where a quality objective or quality standard laid down in this Directive or those in Annex IX or otherwise in Community legislation so require;
 - for diffuse sources liable to cause pollution;
 - for any other significant adverse impacts on the status of waters identified under Article 5 and Annex II, and in particular, measures to ensure that the hydromorphological conditions of the bodies of water are consistent with the achievement of the required ecological status or good ecological potential for bodies of water designated as artificial or heavily modified (Art.11(3)).
- Provide for ability to review and amend such permits and authorisations in the event of breach of their conditions, and generally on a regular periodic basis, but also in the event that monitoring or other data indicate that the objectives of Article 4 are unlikely to be achieved and need adjusting as appropriate (Art. 11(3) and (5)).
- Provide that the application or implementation of any measures under Article 11(3) does not lead to an increase in marine pollution and on no account leads either directly or indirectly to increased pollution of surface waters, save where to do so would lead to increased pollution of the environment as a whole (Art.11(6)).
- Prohibit the direct discharge of a list of dangerous substances into groundwater, and consider whether to provide, and if so, provide for exemptions in accordance with Article 11(3)(j).
- Adopt and apply measures to eliminate pollution of surface waters by agreed priority list substances, and to progressively reduce pollution by other substances that would prevent the Member State from achieving the objectives for the bodies of surface as set out in Article 4 (Art. 11(3)(k)).
- Apply measures to give effect and ensure the effectiveness of any “supplementary measures” adopted (Art.11(4)).
- Establish an effective system of penalties for non-compliance with national provisions adopted pursuant to the Directive.
- Ensure that the price charged for services related to water (e.g. drinking water supply, waste water disposal and treatment) is compatible with the requirements of Article 9 and Annex III requiring account to be taken of the need to set pricing policies which provide adequate incentives for efficient water use and also for an adequate contribution from the various

categories of water users (Art. 9(1)).

2.4 Consultation and Reporting

Regarding the public:

- Encourage the active involvement of all interested parties in the implementation of the Directive, in particular in the production, review and updating of river basin management plans (Art. 14(1));
- for each applicable river basin district, publish and make available for comments to the public, at least three years before the beginning of the period to which the initial and all subsequent plans refer, a timetable and work programme for production of the river basin management plan (Art. 14(1)(a)); at least two years before the period to which the plan refers, an interim overview of the significant water management issues identified in the river basin by (Art. 14(1)(b)); and at least one year before the period to which the plan refers, a draft copy of the river basin management plan (Art. 14(1)(c)); and allow at least six months for any comments (Art. 14(2));
- make available, on request, background documents and information used for the development of the draft river basin management plan (Art. 14(1)(c).2);
- establish a register or registers of all areas within each river basin district which have been designated as requiring special protection under specific Community legislation for the protection of their surface or ground waters or for the conservation of habitats and species directly depending on the water, and keep the same under review and up to date. The same shall include all bodies of water identified under Article 7(1) and all protected areas covered by Annex IV (Art.6);
- publish river basin management plans and their updates (Art.13(6) and (7)).

Regarding the Commission, other Member States and other countries:

- communicate to the Commission the text of the main provisions of national law adopted in the field of the Directive (Art.24(3));
- consult with other Member States as to the appropriate administrative arrangements for the creation of any international river basin districts lying wholly within the Community so as to ensure the application of the rules in the Directive for the whole of that river basin district, using the facilitating powers of the Commission as appropriate (Art.3(3));
- where an international river basin district extends beyond the territory of the Community, endeavour to establish appropriate coordination with the relevant non-Member States with the aim of achieving the objectives of the Directive throughout such international river basin (Art.3(5));
- submit to the Commission the list of the relevant competent authority or authorities including, as applicable, the competent authorities of all the international bodies in which the Member State participates, responsible for applying the rules of the Directive within each river basin management district within their territory or portion of any international river basin management district, together with the information in Annex I (Art. 3(8)); and any changes to the information within three months (Art. 3(9)). For this purpose existing national or international bodies may be so identified (Art.3(6));
- submit to the Commission a map or maps (in a GIS format) of the geographical location of the types of surface water bodies consistent with the degree of differentiation required under system A (Annex II, 1.1(vi));
- engage in exchange of relevant information involving the Commission leading to the identification of a range of sites in each eco-region of the Community as regards the classification and presentation of ecological status, such sites then to form the intercalibration network (Annex V, 1.4.1(v));
- send copies to the Commission of all river basin management plans and all subsequent

updates within three months of their publication for all river basin districts wholly within their territory and for at least the part of any international river basin district within their territory, and to any other Member States concerned, ensuring that each such plan complies with Annex VII, and contains such further specific information expressly provided for in the Directive, for example, the reasons for not fully applying Article 9(1), second sentence (Art.15(1)(a) and (b));

- submit summary reports to the Commission of the analyses required under Article 5 and the monitoring programmes designed under Article 8 undertaken for the first river basin management plan within three months of their completion (Art.15(2));
- coordinate with such other Member States the application of all required programmes of measures for international river basin districts applicable to themselves, employing existing structures stemming from international agreements, and using the facilitating powers of the Commission as appropriate (Art.3(4));
- consider reporting to the Commission and any other Member State concerned, issues which have an impact on the management of its water by which that Member State cannot resolve on its own, and as applicable make recommendations for their resolution (Art.12(1));
- submit an interim report describing progress in the implementation of the planned programme of measures identified for each river basin management plan or update required under Article 13 (Art.15(3));
- consider what recommendations to make to the Commission concerning the identification of priority list substances (Art.16(5)).

2.5 Additional Legal Instruments

The Water Framework Directive establishes a framework for the management of water quality. As indicated above, a large number of other legal instruments are linked to it, and should be borne in mind during the implementation of this directive. These include all water sector directives (including the various daughter directives establishing “limit values” and “quality objectives” further to Directive 76/464/EEC – see Annex IX to the Directive), as well as the following legislation:

- The Birds Directive (79/409/EEC) (see Section 6 of the Handbook).
- Environmental Impact Assessment Directive (85/337/EEC) (see Section 2 of the Handbook).
- Sewage Sludge Directive (86/278/EEC) (see Section 4 of the Handbook).
- Directive on Access to Environmental Information (90/313/EEC) as repealed by Directive 2003/4/EC (see Section 2 of the Handbook).
- Plant Protection Products Directive (91/414/EEC).
- Reporting Directive (91/692/EEC) and Decision (94/741/EEC) (see the Handbook generally).
- Habitats Directive (92/43/EEC) (see Section 6 of the Handbook).
- Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC) (see Section 7 of the Handbook).
- Seveso II Directive (96/82/EEC) (See Section 7 of the Handbook).
- Biocides Directive (98/8/EC).
- Landfill Directive (99/31/EC) (see Section 4 of the Handbook).
- Waste Incineration Directive (2000/76/EC) (see Section 4 of the Handbook).
- The SEA Directive (2001/42/EC) (see Section 2 of the Handbook).

Particularly relevant issues in these directives concern their impact upon the development of programmes of measures within the river basin plans of the Water Framework Directive.

The Directive aims to complement a number of international conventions to which the Community

and/or the Member States are parties, and attention should be paid to these when considering implementation plans. These Conventions include:

- The Convention on the protection of the Mediterranean Sea against Pollution (1976).
- The Protocol to the 1976 Convention for the protection of the Mediterranean Sea against pollution from land-based sources (1980).
- The Convention on the protection of the marine environment of the North-East Atlantic (1992).
- The Convention on the protection of the marine environment of the Baltic Sea Area (1992).
- The United Nations Convention on the protection and use of transboundary water courses and international lakes (approved by the Council in 1995).

3 Implementation

3.1 Key Tasks

This directive aims to protect all waters, i.e. groundwaters and inland surface waters, transitional waters, coastal waters and artificial and heavily (Art. 1). Whilst vastly expanding the scope of water protection, it encompasses and extends the effectiveness of a number of existing directives.

Member States' steps to implement the Directive may follow the path indicated above under the Sections on Planning, Monitoring, Regulation and Reporting.

It would be advisable for Member States to carry out a review of their existing legislation, monitoring, regulatory and reporting structures and practices. Having established the same, a comparison with the specific requirements of the Directive should be made, which should aim to allow for three main exercises to take place:

- Identification of gaps in legislation and practice between the current situation and the requirements of the Directive;
 - Taking steps needed to eliminate those gaps and streamline the same; and
 - Produce plans for re-organising existing legislation and practice to correlate with the requirements of the Directive.
-
- Establish competent authorities, using either existing structures or creating new ones, and establish administrative arrangements to ensure that the directive is implemented effectively within River Basin Districts (Art.3(2)-(4)).
 - Member States should analyse the characteristics of the relevant water body types within each applicable river basin district:
 - For surface water body types (Annex II, 1):
 - Identify location and boundaries, and make initial characterisation of categories eg river, lake, coastal waters;
 - Differentiate the same according to type using either system A or B:
 - If using “A”, differentiate by relevant eco-region in accordance with geographical areas in section 1.2, and as shown on the relevant map in Annex IX, and then by surface water body types according to descriptors in the applicable tables;
 - If using “B”, assuring at least the same degree of differentiation, differentiate into types using values of the obligatory (such as altitude) and optional descriptors (such as, as applicable to the relevant type) distance from river source, energy flow, precipitation, turbidity);
 - In either event, for artificial and heavily modified surface water bodies, differentiating by applying whichever surface water body type most closely resembles such water body concerned;
 - Establish type-specific reference conditions for those surface water body types (Annex II, 1.3) if possible;
 - Identify, having collected and maintained relevant data, the type and magnitude of the significant anthropogenic pressures to which those surface water body types are liable to be subject (for example, by significant point source pollution from urban, industrial and agricultural installations and activities);
 - Assess the susceptibility of those surface water status of bodies to those identified pressures;
 - Assess the likelihood of those surface water bodies within each river basin district failing the environmental quality objectives under Article 4;

- For those so identified as at risk, further characterise to optimise the monitoring programmes under Article 8 and the programme of measures under Article 11.
- For groundwaters (Annex II, 2):
 - Carry out an initial characterisation to assess uses and likelihood of failing the objectives for each groundwater body under Article 4 by identifying matters such as location and boundaries, pressures on the groundwater body from point and diffuse sources of pollution, the general character of the overlying strata in the groundwater body's catchment area, and direct dependence on surface water or terrestrial ecosystems;
 - Further characterise those bodies identified as at risk to establish a more precise assessment of the significance of the risk and to identify any measures required under Article 11, by recourse to matters such hydrogeological characteristics, characteristics of superficial deposits and soils in the catchment;
 - Review the impact of human activities on those groundwater bodies for transboundary between two/more Member States or which are identified as at risk, and collect and maintain further information such average rates of abstraction and land use in the catchments;
 - Review the impact of changes in groundwater levels for those bodies for which lower objectives are to be specified under Article 4 as a result of matters such as flood protection and human development;
 - Identify those groundwater bodies for which lower objectives are to be specified under Article 4(5).
- Set up programmes for monitoring of all waters within each applicable river basin district in accordance with the detailed provisions in Annex V, and based on the same classify each relevant water body with its required status classifications, for example, ecological status, chemical status, ecological potential, or groundwater quantitative status and chemical status, a well as setting applicable environmental quality standards (Annex V).
- Identify protected areas in accordance with Article 6 and Annex IV.
- Establish the programme of measures for each applicable river basin district required under Article 11. See above, under Planning, for steps that are to be taken for the purpose here of implementation. Note, in particular, the provisions for and safeguards applying with regard to extensions of time for compliance with relevant provisions, derogations, or determinations of non-breach of the Directive, and consider the extent that the same are required to be provided for in any river basin management plan, and provide for the operation of the same. See also, under Regulation, as to identification of and provisions for implementation of such safeguards.
- Carry out the economic analysis required under Article 9 and in accordance with Annex III, make judgments as to the most cost-effective combination of measures in respect of water uses to be included in Article 11 programme of measures, based on estimates of potential costs of such measures. In so doing, draw up water pricing policies in accordance with Article 9(1), and provide for the required contributions from the different categories of water users. As part of this process identify, analyse and have regard to the social, economic and environmental effects of recovery, as well as the geographical and climatic conditions of the region(s) affected (Art. 9(1)).
- Provide for compliance with the public information and consultation provisions in Article 14 in relation to the production and review of river basin management plans.
- Produce and publish river basin management plans for each applicable river basin district, ensuring that they include the information in Annex VII as a minimum (Art. 13), taking into

account the desirability of creating more detailed plans for e.g. sub-basins, sector, issue or water type to address particular aspects of water management.

- Make operational the programme of measures required under Article 11 in accordance with the requirements and provisions of Article 4, ensuring at all times compliance with the safeguards for extensions, derogations and provision for non-breach of the requirements of the Directive, but also ensuring the fall-back safeguards in Article 4(8) and (9). See also under Regulation as to the same.
- Ensure all relevant reporting requirements are complied with. See further under Consultation and Reporting for further details.
- Provide for all necessary reviews and updates of all relevant registers, analyses, assessments and plans and compliance with all necessary public consultation provisions regarding the same.
- Ensure ongoing monitoring of all relevant water bodies and adjust programmes of measures as appropriate to ensure achievement of the objectives of the Directive.
- Ensure continuous regulation controls, and the taking of any necessary enforcement action.

3.1.1 Legal Obligations within International River Basin Districts

As key obligations under the Directive may be regarded as of particular importance where river basins are shared between Member States or between Member States and Third Countries, the following points may be noted. They have been developed in the coordination along the river Rhine and aim to highlight the tasks involved in such international river basins.

Legal obligations within international river basin districts are:

- Coordination of water protection management based on river basin districts. Two or more river basins may be combined into one river basin district. Where Member States share a river basin, coordination across the whole river basin has to be ensured (establishment of an International River Basin District). Where part of a river basin lies in the territory of a Third Country, this coordination is mandatory only for the part lying within Member States. For the part lying in the Third Country coordination is a recommendation. Whilst the coordination across the whole river basin is a binding obligation, Member States are free to choose the political and administrative tools for achieving this coordination. They are also free to use existing international bodies for this purpose.
- Assigning all groundwaters to river basin districts. This is particularly important where groundwaters are not completely situated in one river basin district; in such cases they should be assigned to the nearest or best suited district. In the case of transboundary groundwaters, appropriate coordination will be necessary.
- Establishment of a river basin management plan for the whole river basin district. For river basins within one country's territory there is an obligation for one plan; for river basins shared between countries this objective should be pursued. National and/or international river basin management plans may be complemented by more detailed programmes or management plans for sub-basins, sectors or individual management aspects.
- Information and consultation of the public and interested parties is an obligation of all involved

Member States. Such information and consultation has to ensure involvement of the public on issues of major importance which are the subject of international coordination. The international river basin management plan has to address information and consultation as well.

- Reporting to the Commission following the provisions of the Directive is the obligation of Member States. However, Member States are free to make use of international bodies in complying with their reporting obligations.

3.1.2 Tasks Entailing Coordination Requirements between Member States

Tasks under the Directive entailing coordination requirements between two or more Member States within an international river basin district are:

- Assignment of transboundary catchments to international river basin districts: groundwaters, coastal waters;
- Identification of protected areas of importance beyond the region ;
- Identification of transboundary water quality objectives ;
- Identification of, and mapping the ecological quality of surface waters;
- Coordination of those parts of the programmes of measures of importance beyond the region;
- Establishment of international monitoring programmes;
- Coordination in designating reference monitoring sites;
- Coordination of analysis of characteristics, review of impact of human activities and economic analysis of water use ;
- Coordination of programmes of measures;
- Coordination in identification of pollutants beyond the 'priority substances', as well as developing water quality standards;
- Basis for the structure for an international river basin management plan, in particular addressing issues of degree of detail and structure as regards necessary sub-basin plans and sectoral plans;
- Establishment of an international river basin management plan;
- Taking account of the results of consultation of the public as regards the entire river basin;
- Development of a basic structure for reports to the Commission (Art.15), and developing where possible a joint report.

3.1.3 Key implementation tasks

Already in 1999, well before final adoption of the Water Framework Directive, informal consultations had started between the Commission and Member States on specific issues of implementation including those where further technical or scientific studies are required. The following checklist presents a non-exhaustive list where key issues are grouped under key headings and arranged in chronological order where possible.

KEY IMPLEMENTATION TASKS	
1.	Planning
1.1	Identify river basins and assign them to individual river basin districts.
1.2	Assign groundwater bodies to river basin districts. Assign coastal waters to river basin districts.
1.3	Establish competent authorities, using either existing structures or creating new ones, and establish administrative arrangements to ensure that the directive is implemented effectively within River Basin Districts.
1.4	The competent authority should make institutional arrangements to enable it to fulfil its implementation tasks, such as planning, monitoring and enforcing the requirements of the directive.
1.5	The competent authority should undertake a review of the characteristics of the river basin using methods set out in the Water Framework Directive. Organise data and, in co-operation with national and EC statisticians, carry out data analysis to ensure that the results are comparable throughout the EU.
1.6	The competent authority should assess the impact of human activity in the river basin.
1.7	Assess all relevant and available information on industrial discharges, dangerous substances and wastewater discharges and plants (i.e. those sources covered by the IPPC Directive (96/61/EEC), the Dangerous Substances Directive (76/464/EEC) and the Urban Waste Water Treatment Directive (91/271/EEC).
1.8	Collect information on the extent and location of diffuse sources of pollution, in particular from agriculture.
1.9	Using data already available, identify waters that are affected by pollution.
1.10	Assemble data on water abstracted for drinking water, agricultural, industrial and other uses.
1.11	In collaboration with water suppliers, the competent authority should identify all existing and potential surface waters and groundwaters which are used or intended to be used as drinking water abstractions in each river basin.
1.12	The competent authority should undertake an economic analysis of water use including abstraction for drinking water, waste water discharges, forecasts of supply and demand and trends, and assessment of infrastructure needs. Collaboration with economists, regional, municipal, and other planners, water suppliers, industrial organisations may be necessary for this task.
1.13	Set up a register of protected areas in each river basin district., protected areas all being specified in the Directive, including those under EU nature protection legislation. Co-operation and co-ordination must be arranged between competent authorities, particularly those responsible for managing the protected areas.
1.14	Put in place arrangements to update the review of the river basin characteristics at 6 yearly intervals and other reviews.
1.15	Having gathered the relevant data, establish environmental objectives to apply in the river basin. These must be designed to achieve good water quality (as defined in the directive), and lead to compliance with any standards needed in protected areas.
1.16	Within the defined river basins, establish the four basic types of surface water systems as rivers, lakes, estuaries and coastal, and assess the ecological status of each according to the range of physico-chemical, biological and hydromorphological characteristics as defined in the directive.
1.17	Place each body of water into one of three classes high quality, good quality and poor quality by comparing the data with historical information for the site concerned or for a similar site.
1.18	As there are few sites in Europe which are unaffected by anthropogenic activity, the Directive sets out criteria for establishing similar eco-types based on a number of natural parameters.
1.19	For groundwater, the quantitative status must be assessed by comparing variations in groundwater levels with associated rates of recharge and abstraction (both natural and artificial) in order to ascertain that the rate of abstraction does not exceed the long-term available resource. In addition, the chemical status of groundwater which is susceptible to possible impacts from indirect discharges of contaminants from anthropogenic activities should be monitored.
1.20	Identify waters that, due to their natural condition will not achieve good water quality although all measures to improve them as identified in the river basin plan have been taken.
1.21	Identify specific bodies of water for which less stringent environmental objectives must be set. Include these objectives in the river basin plan.
1.22	Establish a programme of measures, as part of river basin plans containing information as set out in Annex VII, to achieve the environmental objectives of the directive, including the application of all mandatory measures in EC law specified within the Directive, particularly all of the compulsory requirements and the directives listed in Annex VI, and other measures decided as necessary by the competent authority. This should result from an examination of all the information gathered by the above process. Supplementary measures are outlined in Annex VI.B, and for waters below "good" status more intensive monitoring, establishment of environmental quality standards for the pollutants concerned, investigations of polluting sources and immediate review of all relevant authorisations is required followed by action on the basis of the level or risk involved. Competent authorities must determine this.
1.23	River basin plans may be supplemented by more detailed local action plans for particular aspects or for parts of the river network.
1.24	Establish a system of public consultation on river basin management plans which allows public access to draft copies of the plan at least one year prior to the start date, allowing 6 months for public comments to be received in writing.
1.25	Once public comments have been taken into account, a final plan must be published.
2	Monitoring and Enforcement
2.1	The competent authority must establish a monitoring programme to determine water status. Monitoring will include chemical and biological sampling, and will be capable of placing surface water into one of five classes of ecological quality and chemical quality. Annex V specifies the detailed monitoring and assessment criteria. Groundwater must be assessed on quantitative status and qualitative status. The technical specification establishes the methods of monitoring, and results must be comparable, in a common format. Use accredited methods and introduce quality assurance schemes. The level of confidence and precision of the results must be stated.
2.2	Designate monitoring sites according to Annex V, and monitor identified sites for parameters listed in Annex V.
2.3	The results of monitoring must be presented as: <ul style="list-style-type: none"> • biological: a numerical value representing departure from the reference conditions of the site;

KEY IMPLEMENTATION TASKS	
	<ul style="list-style-type: none"> chemical: a quality classification as "good quality " or "ailing to achieve good quality"; ecological: high quality, good quality, fair quality, poor quality or bad quality. These results must be presented on a map.
2.4	The competent authority / national agency will have to ensure that there is an exchange of biological data between the Member States to build up a set of data representing a selection of ecotype sites to be known as the intercalibration network. The Commission will coordinate an intercalibration exercise to test the methodologies used by Member States.
2.5	Monitoring frequencies vary between one sample per three months and one sample per three years. More intensive monitoring will be required for waters of less than "good" status.
2.6	Include in national legislation to implement the Directive, penalties for non-compliance. This may comprise the regulatory system established for current water legislation and the legislation controlling industrial and other establishments which discharge to, or influence the quality of water. Penalties must be clearly identified in relation to issue of compliance.
2.7	Prepare emergency plans to respond to incidents and take restorative actions after pollution has occurred. Preventative measures should be identified. Risk assessment should be an integral part of the plans.
3	Selection and Implementation of Economic Instruments
3.1	The competent authority should prepare a financial plan to provide water pricing policies for cost recovery for services provided for water users. This should take into account the costs of providing infrastructure construction, environmental protection measures and use of the water for such matters as leisure.
3.2	The cost recovery system adopted must, however, allow for an affordable domestic water supply. Exemptions for payments may be granted within the river basin plan. Investigations should be undertaken to assess what is affordable for water consumers in the Candidate Country.
3.3	Exemptions from application of such water pricing policies may be granted provided this does not compromise the purpose and achievement of the objectives of the Directive, but the reasons for the same must be explained in the river basin plan
3.4	Note that nothing in Article 9 prevents the funding of particular preventive or remedial measures in order to achieve the objectives of the Directive.
4	Consultation and Reporting
4.1	The Government should establish contact with other countries whose river basins cross international boundaries. Use should be made of existing international bodies responsible for waters within international river basins districts. A jointly-run international River Basin Authority should be sought to be set up where necessary, if this is feasible.
4.2	The competent authority must organise suitable consultation mechanisms in order for the public to see and comment upon the river basin plans. It is important that other relevant government departments, local communities, water utilities, industry and commerce, consumers and environmental groups play a full part in the discussions on river basin plans as these are likely to affect all of these organisations, and rely upon actions by such organisations in the achievement of their objectives.
4.3	A reporting and recording system should be established on both a river basin and a national level with the associated data bases to enable reports to be made to the public and to the Commission.
4.4	The competent authority must send copies of plans and programmes to the Commission.
4.5	Report to the Commission on: <ul style="list-style-type: none"> river basin districts, including assigned groundwaters and coastal waters assignment details of the competent authorities; as desired, issues which fall outside the competence of the competent authorities but which affect water management; river basin plans for whole river basins; programmes and plans dealing with sub-basins, particular water issues or particular water classes or ecosystems; plans covering parts of international river basins.

3.2 Phasing Considerations

Intensive preparations for implementation have been going on in several countries, e.g. in the countries in the basins of the Rhine (Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Netherlands, Switzerland) and the Elbe/Labe (Czech Republic, Germany).

The key phasing issues are :

- Organising and implementing a complete survey of the river basins, establishing the current status of the water in terms of quality and quantity and setting operational quality objectives defining 'good status';
- Transposing the directive into national legislation and integrating legislation covering existing directives into the new scheme;

- Establishing the coordination within the river basins, in case of shared basins together with neighbouring countries, by using existing competent authorities or creating new ones; and
- Preparing the programme of measures, consultation and publication of the river basin plan.

4 Timetable for Action

The following sets out key deadlines for implementation of the various actions set out under the Directive required of Member States (the dates set out below are the latest dates available in principle under the Directive)

1. provide for any necessary repeal of national measures giving effect specifically to Article 6 of Directive 76/464/EEC by 22.12.00;
2. bring into force the laws, regulations and administrative provisions necessary to comply with the Directive by 22.12.03 (Art. 24);
3. implement the necessary measures to prevent deterioration of the status of all bodies of surface waters (subject to the possibilities of derogation) (Art.4(1)(a)(i));
4. identify the relevant competent authority or authorities for each applicable river basin district within their territory by 22.12.03 (Art. 3(7));
5. provide the Commission with the list of the relevant competent authority or authorities together with the information in Annex I by 22.06.03 (Art. 3(8); and any changes to the information within three months (Art. 3(9));
6. consider what recommendations to make to the Commission with regard to the review of the adopted list of priority hazardous substances by 22.12.04, and every four years thereafter (Art. 16(5));
7. establish a register or registers of all areas lying within each applicable river basin district which have been designated as requiring special protection under specific Community legislation for the protection of their surface water or groundwaters or for the conservation of habitats and species directly depending on water by 22.12.04 (Art. 6(1));
8. undertake the analysis required under Article 5 for each applicable river basin within their territory, and in accordance with Annexes II and III by 22.12.04 (Art. 5(1));
9. submit summary reports of the analysis required under Article 5 within three months of completion, by 22.03.05 (Art. 15(2));
10. establish, in the absence of criteria adopted at Community level, appropriate criteria for assessing good groundwater chemical status in accordance with Annex II.2.2 and Annex V 2.3.2 and 2.4.5; and for the identification of significant and sustained upward trends and for the definition of starting points for trend reversals to be used in accordance with Annex V 2.4.4 by 22.12.05 (Art. 17(5));
11. establish a monitoring programme of water status within each river basin district and have them operational by 22.12.06 (Art. 8(1) and (2));
12. establish, in the absence of agreement at Community level, for substances included on the first list of priority substances [see Decision 2455/2001/EC] environmental quality standards for all surface waters affected by discharges by those substances and controls on the principal sources of such discharges in accordance with Article 16(8), by 22.12.06 (Art. 16(8));
13. for each river basin district, publish and make available for comments to the public, at least three years before the beginning of the period to which the plan refers, a timetable and work programme for production of the river basin management plan, by 22.12.06 (Art. 14(1)(a));
14. submit summary reports to the Commission of the monitoring programmes established under Article 8 within three months of completion, by 22.03.07 (Art. 15(2));
15. provide for the necessary repeal of national measures to give effect to Directives 75/440/EEC and 79/686/EEC and Council Decision 77/795/EEC by 22.12.07 (Art. 22(1));

16. for each for each river basin district, publish and make available for comments to the public, at least two years before the period to which the plan refers, an interim overview of the significant water management issues identified in the river basin by 22.12.07 (Art. 14(1)(b));
17. for each river basin district, publish and make available for comments to the public, at least one year before the period to which the plan refers, a draft copy of the river basin management plan, by 22.12.08 (Art. 14(1)(c));
18. provide at least six months for comments on each document under points 13, 16 and 17 (Art. 14(2));
19. establish the programme of measures required under Article 11 for each river basin district by 22.12.09 (Art. 11(7));
20. publish river basin management plans by 22.12.09 (Art. 13(6));
21. start to implement the measures necessary to reverse any significant and sustained upward trend in the concentration of any pollutant resulting from human activity in order progressively to reduce pollution of groundwater by 22.12.09 (Art. 4(1)(b)(iii));
22. start to implement the necessary measures in accordance with Article 16(1) and (8), with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances, by 22.12.009 (Art. 4(1)(a)(iv));
23. start to implement the measures necessary to prevent or limit the input of pollutants into groundwaters and to prevent the deterioration of the status of all groundwaters (subject to the possibilities of derogations) by 22.12.09 (Art.4(1)(b)(i));
24. ensure that there are water pricing policies in operation that provide adequate incentives for users to use water efficiently and for an adequate contribution of the different water users in accordance with Article 9(1)) by 01.01.10 (Art.9(1));
25. submit copies of river basin management plans to the Commission, within three months of their publication, by 22.03.10, and of any updates (Art. 15(1));
26. ensure that the programme of measures established for each river basin district in accordance with Article 11 are made fully operational by 22.12.12 (Art. 11(7));
27. ensure that all discharges into surface waters are controlled according to the combined approach in accordance with Article 10(2), unless otherwise specified in Community legislation by 22.12.12 (Art.12(2));
28. submit an interim report, describing progress in the implementation of planned measures, within three years of publication of the river basin management plan, to the Commission, by 22.12.12 (Art. 15(3));
29. provide for the necessary repeal of national measures to give effect to Directives 78/659/EEC, 79/923/EEC, 80/68/EEC and the remainder of Directive 76/464/EEC by 22.12.13 (Art. 22(2));
30. review and if necessary update the analysis required under Article 5 by 22.12.13, and every six years thereafter (Art.5(2));
31. review and update river basin management plans by 22.12.15, and every six years thereafter, and apply the relevant timetables set out in points 13,16, 17 and 18 (Arts 13(7) and 14(3));
32. review and as necessary update the programmes of measures required under Article 11 by 22.12.15, and every six years thereafter, making reviewed measures operational at least three years after their establishment (Art. 11(8));
33. protect enhance and restore all applicable water bodies with the aim of achieving good water status (subject to the possibility of extensions) by 22.12.15 (Art. 4(1)(a)(ii));
34. protect and enhance all artificial and heavily modified bodies of water with the aim of achieving good ecological potential and good surface water chemical status (subject to the options for extensions) by 22.12.15 (Art. 4(1)(a)(iii));
35. protect enhance and restore all bodies of groundwater, and ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status (subject to then possibilities of extensions) by 22.12.15 (Art. 4(1)(b)(ii));
36. achieve, for protected areas, compliance with any standards and objectives (unless otherwise

- provided in specific Community legislation) by 22.12.15 (Art 4(i)(c));
37. achieve the relevant objectives and results, in cases subject to extensions as described at points 33-35 above, by 22.12.21 (Art. 4(4)(c)).

5 Costs

The main types of costs incurred in implementing this directive are illustrated in the table below.

As the directive is largely an over-arching framework for a number of other directives, the costs of implementing the WFD itself might in many cases be marginal, the main cost factors apart from administrative costs being those:

- for an appropriate monitoring system covering groundwater and surface waters (unless already in place);
- for waste water treatment beyond the provisions of the Urban Waste Water Treatment Directive's objectives;
- compliance with the IPPC Directive;
- compliance with new standards and requirements concerning the priority list substances.

However, the real cost impact depends on the extent to which Candidate Countries have already embarked on the process of providing/allowing for the charging of costs more closely aligned to true cost in pure financial terms, let alone taking into account environmental and resource costs. It also depends in a major manner on the extent to which compliance with the other water-related Community instruments and other associated legislation has been or is projected to be met, for example, under the Urban Waste Water Treatment Directive (91/271/EEC), the Nitrates Directive (91/676/EEC) and the IPPC Directive (96/61/EC), and the directives addressing various industrial pollutants ('priority substances' under Art. 16).

It is also possible that further costs may be incurred by enhanced standards and/or more stringent conditions being applied for water resource use. Such extra costs are likely to be passed on ultimately to water resource users, spreading the impact across the countries.

Checklist of the Types of Cost Incurred To Implement the Directive

Initial set-up costs

- Establish new river basin management structure if none exists at present.
- Undertake survey and monitoring work associated with data gathering.
- Prepare the river basin management plans.
- Consultation.
- Setting up monitoring schemes if none exist at present, including establishment of laboratories.

Capital expenditure

- Laboratory capacity (if none exist).
- Construction of waste water treatment plants with more stringent objectives than required by the Urban Waste Water Treatment Directive (91/271/EEC).

On-going running costs

- Costs associated with operating the new facilities.
- Monitoring and reporting costs.
- Reviewing river basin plans.
- Regulatory investigations and taking enforcement action