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Policy Brief for the EP Environment Committee
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The Proposed Directive on the Protection of Groundwater Against Pollution

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SUMMARY

1 This Policy Brief was written at the request of the European Parliament's Committee on Environment, Public Health and Consumer Policy. It addresses some aspects of the European Commission's proposal for a Directive on the protection of groundwater against pollution (COM(2003) 550). It analyses in particular:

- why the Commission is bringing forward this proposal at this particular time;
- whether the impact assessment published with the proposal deals adequately with the likely costs and benefits of implementing the proposal in each Member State;
- alternative means of dealing with groundwater pollution where such exist; and
- whether the Member States and Accession countries have adequate administrative and inspection systems to ensure even implementation by the due dates.

2 The proposal aims at providing criteria for assessing 'good groundwater chemical status', for the identification of 'significant and sustained upward trends' and the definition of 'starting points for trend reversals', in accordance with Article 17 of the water framework Directive (WFD). In addition, the proposal seeks to ensure the continuation of groundwater protection against indirect discharges beyond 2013, when the existing groundwater Directive (80/68) will be repealed.

3 The proposal was accompanied by an 'Extended Impact Assessment' (EIA); in addition, a study entitled 'Economic Assessment of groundwater protection' was carried out in the drafting phase of the proposal. However, the economic basis of the EIA is rather weak. Most of the cost-benefit arguments used to choose the preferred policy option (no EU wide groundwater quality standards but instead threshold values determined by the Member States) are ill-founded. Moreover, it is inconsistent that the proposed Directive still contains the prospect of future EU wide standards, whereas the EIA argues that this option is inferior from a cost-benefit point of view.

4 An alternative option, which provides a harmonised approach while still allowing for natural variety, is to determine natural background concentrations for pollutants by groundwater body (or group of groundwater bodies). Groundwater having this quality should be protected against further deterioration. For other groundwater, EU standards can be established for margins by which the natural background concentrations may be exceeded before it fails to meet the criteria for 'good groundwater chemical status'. An analysis of this option should reveal the real magnitude of the problems and the costs involved in achieving such standards. The approach chosen in the Directive proposal brings about the chance that Member States will make the height of their threshold values dependent on the available budgets for soil and groundwater sanitation or on their wish to avoid cumbersome derogation procedures.

5 Concerning indirect discharges, the proposal makes a distinction between substances for which these discharges have to be *prevented* and substances for which they have to be *limited* to the extent that they do not put at risk the achievement of good groundwater chemical status. This implies that the second category of substances could still be legally discharged and contribute to further deterioration of groundwater quality, as long as average

concentrations remain below the threshold values. A strict 'standstill' clause would be needed to prevent this from happening, at least in areas with excellent groundwater quality.

6 The proposed Directive does not contain any substantial requirements regarding administrative and inspection systems beyond those, which are already required by the existing groundwater Directive and the WFD. Legislation implementing Directive 80/68 seems to be in place in almost all 25 countries, whereas the legislation needed to comply with the WFD should be in place shortly. Administrative capacity is also generally in place and functioning, although in several acceding countries the need for strengthening, better co-ordination and continuous attention is noted. Monitoring systems are reasonably well developed for nitrates, but much less for other pollutants. Re-introducing the concept of 'risk management zones' in the Directive proposal could be considered, so as to facilitate a targeted approach to monitoring and management, and prevent the averaging out of pollutant concentrations.

POLICY BRIEF FOR THE EP ENVIRONMENT COMMITTEE
EP/IV/A/2003/09/01

THE PROPOSED DIRECTIVE ON THE PROTECTION OF GROUNDWATER
AGAINST POLLUTION

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1. Introduction

On 19 September 2003, the European Commission presented a proposal for a Directive of the European Parliament and of the Council on the protection of groundwater against pollution¹. The proposed Directive can be seen as a ‘daughter’ of the water framework Directive². It contains criteria for the assessment of ‘good groundwater chemical status’ and for identifying and reversing significant and sustained upward trends in groundwater pollution from human activity. It also provides for measures to prevent or limit indirect discharges into groundwater. The drafting process of the future directive was supported by several discussions with various stakeholders in the Expert Advisory Forum on Groundwater (EAF). The proposal that was eventually produced was accompanied by an Extended Impact Assessment, which reflects some of the discussions that took place in the EAF.

The European Parliament’s Committee on the Environment, Public Health and Consumer Policy has requested a written briefing on some aspects of the Commission’s proposal. The briefing should analyse:

- why the Commission is bringing forward this proposal at this particular time;
- whether the impact assessment published with the proposal deals adequately with the likely costs and benefits of implementing the proposal in each Member State;
- alternative means of dealing with groundwater pollution where such exist;
- whether the Member States and Accession countries have adequate administrative and inspection systems to ensure even implementation by the due dates.

The present policy brief, which was prepared by IVM and IEEP, deals with these four questions in Sections 2 through 5. Conclusions are presented in Section 6.

2. Why This Proposal at This Particular Time?

The proposed Directive can be viewed as a piece of unfinished business from the process of the adoption of the water framework Directive (WFD). The requirement for a daughter Directive did not appear in the original proposal for the WFD (COM(97)49), as it was envisaged that the needs of groundwater protection would be taken account of in the final adopted Directive. However, along with many other issues, measures for the protection of groundwater proved controversial and, therefore, the Conciliation text added the requirement for a daughter Directive to take up some of the issues at a later date. It will be important, therefore, for Parliament to revisit its concerns and position on groundwater protection taken during the WFD adoption process and consider how these are being addressed in the new groundwater proposal.

Article 17 of the WFD requires the Commission to present, within two years after the WFD’s entry into force, a proposal on the basis of which Member States should take specific measures to prevent and control groundwater pollution. The proposal was therefore due by 22 December 2002. A delay of six months was agreed to allow the development of an Extended Impact Assessment on the proposal, which was requested in November 2002 as an additional requirement (not originally foreseen in the timetable for the development of the groundwater

¹ COM(2003)550

² Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJ L 327, 22.12.2000.

Directive). The proposal went (with the Impact Assessment document) to Interservice Consultation in May 2003 and was finalised in July 2003.³ It was presented by the Commission on 19 September 2003.

The main function of the proposed Directive is (in accordance with Article 17(2) of the WFD) to present criteria for:

- assessing good groundwater chemical status; and
- the identification and reversal of significant and sustained upward trends and for the definition of starting points for trend reversals.

The proposal does not contain any new EU wide groundwater quality standards⁴ (that option was considered but rejected in the Extended Impact Assessment), but instead requires the Member States establish threshold values for each of the pollutants, which within their territory have been identified as contributing to the characterisation of bodies of groundwater as being ‘at risk’. Annex III mentions seven pollutants for which threshold values should be established as a minimum. The lists of pollutants for which threshold values have been established should be communicated to the Commission by 22 June 2006, following which the Commission could propose new common groundwater quality standards.

In addition, the proposal also contains an Article providing for measures to prevent or limit indirect discharges of pollutants into groundwater. This provision aims at ensuring that the protection of groundwater against indirect discharges will be continued after the expiry date of the existing groundwater Directive⁵ (22 December 2013).

3. The Impact Assessment’s Approach to Costs and Benefits

3.1 Introduction

Within the framework of the preparations of the Directive proposal, a study entitled ‘Economic assessment of groundwater protection’ was carried out. The results of this project, which consisted of a literature survey and three case studies, were originally supposed to support the discussion and drafting process in the EAF groundwater. As the project was only commissioned in autumn 2002, the results were published alongside the proposal for a Daughter Directive.⁶

The study is not a systematic cost-benefit analysis of the measures proposed by the Directive, but rather a review and analysis of approaches to estimate costs and benefits of groundwater protection and remediation, both in general and applied to a number of specific cases.

In this section, we will first discuss the way in which the study results were taken up in the Extended Impact Assessment. Next, we will try to answer the question of whether the Extended Impact Assessment deals adequately with the likely costs and benefits of implementing the proposal in each Member State.

³ Source: Mr Philippe Quevauviller, DG Environment (personal communication).

⁴ The two already existing standards (for nitrates and pesticides) are to remain in place.

⁵ Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances. OJ L20, 26.1.1980.

⁶ Rinaudo, Loubier, Görlach and Interwies (2003); Görlach and Interwies (2003); Rinaudo (2003a); Rinaudo (2003b); Loubier (2003).

3.2 The relationship between the Economic Assessment study and the Extended Impact Assessment

Section 4.1 of the Extended Impact Assessment (EIA) states that it is ‘underpinned’ by the Economic Assessment study (EA study). This statement seems to be disputable. It is true that the EIA refers to the EA study at a number of places. However, these references mainly consist of summarizing the outline of the EA study (in Box 1), and refer to a number of examples of studies on the cost of groundwater protection and restoration (in Table 1, and Box 2 and 3). Most of the economic arguments put forward in the EIA, leading to the choice of the first option (requiring Member States to establish thresholds for pollutants) are not based on the EA study. Examples of these unsubstantiated economic arguments include:

- the assumption that the positive economic impact of enhanced comparability of data will be largely superior to the additional monitoring requirements (third bullet in 4.2.1.1);
- the cost savings that can be achieved through better decision making with better measures, enhanced confidence in monitoring data and interpretation, avoiding repetitions of analyses and possible wrong decisions (fourth bullet in 4.2.1.1);
- the ‘disproportionate costs’ involved in cleaning up groundwater in the case of fixed groundwater quality standards (third bullet in 4.3.1.1);
- the costs related to derogation requests (fourth bullet in 4.3.1.1); and
- the absence of long-term benefits in monitoring all bodies of groundwater (sixth bullet in 4.3.1.1).

These and other arguments used in the EIA may well be valid, but they are not supported by the EA study.

Nevertheless, some backing for the arguments against uniform EU wide standards can still be found in the EA study. In particular, the EA study states (in Section 4.2) that the costs and benefits of groundwater protection are very dependent on the socio-economic and hydrogeological characteristics of a specific area, and by the current and future uses of an aquifer. Therefore, specific statements on the economically efficient level of groundwater protection should be assessed preferably on a site-by-site basis. Thus, there may be a case for a geographical differentiation in groundwater quality standards. On the other hand, the EA also argues that the high costs of estimating costs and benefits, the importance of non-use values and ecosystem benefits (which are difficult to quantify), and the fact that much groundwater contamination is technically or economically irreversible, imply that errors in setting the standards could be costly. This is an argument, if not for uniform standards, then at least for having a wide precautionary margin.

3.3 The adequacy of the Impact Assessment’s way of dealing with costs and benefits

As indicated above, the EIA contains a number of unsubstantiated statements about the costs and benefits of the two policy options considered. No attempt has been made to make a systematic analysis of all (private and social) costs and benefits in general, let alone at the level of Member States. Admittedly, such an attempt would have been doomed to fail, as many parameters for a cost-benefit analysis are unknown or uncertain (which was also clearly stated in the EA study). Decision making under uncertainty is not uncommon. In such cases, one might expect a clear survey of the relevant factors and criteria involved and an

assessment of the consequences of each alternative, indicating the information gaps and degree of uncertainty.

At the very least, an attempt should have been made to sketch a picture of the efforts needed to achieve the desired situation (good groundwater chemical status) and the expected benefits (not necessarily monetary) under the policy options considered. That picture could have been made more concrete by identifying typical regions and situations with high costs (eg former mining areas, areas with intensive farming, water bodies affected by saline intrusion) and with high benefits (eg drinking water sources; karstic aquifers, aquifers providing seepage water feeding vulnerable ecosystems). The presence of such regions and situations in the various countries could have been indicated roughly, with an estimation of relative size and importance. The EIA, however, reads more like an apologia of the 'thresholds' option, emphasising the benefits of this alternative and downplaying its costs, while doing the opposite with the 'fixed standards' option.

In any case, it is somewhat surprising and inconsistent that the threshold values established by the Member States might become the basis for future Commission proposals for additional harmonized EU wide groundwater quality standards. If such standards are (as the EIA argues) inferior from a cost-benefit point of view, why should this option be left open at all? The proposal seems to be in two minds about the desirability of uniform standards, probably as a result of the different opinions in the EAF.

4. Alternative Means of Dealing with Groundwater Pollution Problems

4.1 Introduction

The factors affecting groundwater quality have some particular features, which should be taken into account when designing groundwater policies. These include:

- the fact that the natural background concentrations of specific substances depend to a large extent on the prevailing hydrogeological and geochemical conditions;
- the intricate relationship that may exist between groundwater and the associated surface waters and ecosystems;
- the long time lag that may occur between the entrance of a pollutant in to the soil and its arrival in a body of groundwater; and
- the (practically speaking) irreversibility of groundwater contamination by pollutants.

These factors imply that a policy aiming at the protection of groundwater should meet the following criteria:

- it should allow for the prevailing natural conditions influencing the groundwater quality in a specific groundwater body; and
- it should take a precautionary/preventative approach, so as to avoid long term and irreversible damage to groundwater bodies.

Given these requirements, it seems obvious that groundwater quality policy should be primarily source-oriented and make sure that no new (potential) sources of groundwater pollution can be established. In addition, it should prevent the further spreading of pollutants to groundwater from existing sources (eg contaminated soil) and prevent deterioration in the quality of 'clean' groundwater. And finally, it should provide for adequate monitoring of

groundwater quality in order to detect (both positive and negative) trends. To a large extent, existing EU legislation (including the WFD and other environmental laws) already obliges or enables Member States to follow this approach. However, some elements in the proposed groundwater Directive could be amended in order to meet the criteria more effectively.

4.2 Groundwater quality standards

As indicated above, the proposed Directive is double-minded concerning the desirability of uniform EU-wide standards for groundwater quality. The current proposal contains a hybrid mixture of common EU standards (for nitrates and pesticides, with the prospect of other substances to be added in future) and threshold values to be established by the Member States.

A possible alternative approach might encompass the following:

- determining natural background concentrations of all relevant substances for each groundwater body or group of groundwater bodies (the aggregation level depending on the degree of heterogeneity in natural circumstances);
- introducing a ‘standstill’ clause for all groundwater with concentrations close to the natural background concentrations (so as to preserve pristine, unpolluted groundwater); and
- fixing at the EU level, for each pollutant, absolute or relative margins by which the natural background concentration may be exceeded while the groundwater still qualifies as having ‘good groundwater chemical status’.

A thorough analysis of this approach should reveal the real magnitude of the efforts involved in achieving good groundwater quality under these criteria, and the extent to which that is impeded by disproportionate costs (which would call for derogations). The advantage of this option is that it takes into account existing natural variability, while still aiming at the highest attainable groundwater quality at reasonable cost. The approach chosen in the Directive proposal would bring about the chance that Member States will make the height of their threshold values dependent on the available budgets for soil and groundwater sanitation or on their wish to avoid cumbersome derogation procedures.

4.3 Indirect discharges

Article 6 of the proposal relates to indirect discharges of pollutants into groundwater. It makes a distinction between two categories of pollutants:

- those for which indirect discharges have to be *prevented* (organohalogen compounds and substances from which these may be formed; organophosphorous compounds; organotin compounds; substances and preparations with carcinogenic, mutagenic or endocrine disrupting properties; persistent hydrocarbons; persistent and bioaccumulable organic toxic substances; and cyanides);
- those for which indirect discharges have to be *limited*, ie they may be permitted on condition that the discharges do not put at risk the achievement of good groundwater chemical status (metals and their compounds; arsenic and its compounds; biocides and plant protection products; materials in suspension; substances which contribute to eutrophication; and substances which have an unfavourable influence on the oxygen balance).

The problem with the second category is that groundwater with a better quality than prescribed by the criteria of ‘good groundwater chemical status’ can be further polluted by the mentioned substances until the standard is reached.⁷ Moreover, it is hard to see how Member States would be able to decide whether particular indirect discharges would put the achievement of good groundwater chemical status at risk, given the large uncertainties and time lags involved.

The preventative approach would call for a general ban on indirect discharges of these substances, at least for those which are not degradable in the soil and which can migrate to groundwater. Obviously, there may be economic and political reasons not to introduce such an absolute ban for all substances, as this would make agriculture and other economic activities almost impossible. Sound decision-making would require the explicit balancing of these considerations against the groundwater quality objectives. However, such explicit balancing is lacking in the EIA or in the Explanatory Memorandum to the proposed Directive.

5. Administrative and inspection systems

5.1 Requirements under the water framework Directive

The WFD already requires the Member States to carry out a number of tasks regarding groundwater quality.

Article 4(1)(b) of the WFD states that Member States should implement the measures necessary to prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater. They should aim at achieving ‘good groundwater (quantitative and chemical) status’ by 22 December 2015 (with a limited number of extension and exemption possibilities). The term ‘good groundwater chemical status’ is defined in Annex V, Section 2.3.2 of the WFD (and is to be operationalised by the proposed groundwater Directive). Member States should also implement the measures necessary to reverse any significant and sustained upward trend in the concentration of pollutants.

According to Article 5(1) of the WFD, Member States have to analyse the characteristics of each river basin district (or portion of an international river basin district) falling within their territory, and to review the impact of human activity on the status of surface waters and on groundwater. In Annex II (2) of the WFD these obligations are specified with respect to groundwater. Member States shall carry out an initial characterisation of each groundwater body (or group of groundwater bodies) to assess their uses and the degree to which they are at risk of failing to meet the objectives mentioned under Article 4. The analysis should include, among others, the diffuse and point sources of pollution that could affect these groundwater bodies. Groundwater bodies that have been identified as being at risk should be made subject to further characterisation, providing more detailed information on their condition and linkages with other water bodies and ecosystems. A review of the impact of human activity

⁷ It is unclear whether this would be in contradiction with the WFD, Article 4(1)(b)(i), which obliges Member States to ‘prevent the deterioration of the status of all bodies of groundwater’. Strictly speaking, this provision could allow for increases in pollution of groundwater within the limits determined by the criteria for ‘good’ status. But in a broader sense one could also read this provision as an application of the ‘standstill principle’, implying that no pollution of clean and pristine groundwater should be allowed at all.

has to be made for these groundwater bodies ‘at risk’ as well as for groundwater bodies crossing the boundary between two or more Member States. Information should be collected, among others, on direct discharges into the groundwater body, its chemical composition, and land use in the catchment(s) from which the groundwater body receives its recharge (including pollutant inputs to that recharge).

Article 8 of the WFD requires the establishment (by 22 December 2006) of programmes for the monitoring of (among others) the chemical status of groundwaters. Detailed requirements for these programmes are given in Annex V of the WFD. Technical specifications and standardised methods for analysis and monitoring of the water status have to be laid down through a committee procedure.

Direct discharges of pollutants into groundwater should be prohibited, with some exceptions (Article 11(3)(j) of the WFD). This prohibition has to be included in the programmes of measures, which have to be established by 22 December 2009 and made operational by 22 December 2012.

Obviously, these obligations imply a considerable amount of planning, licensing, monitoring and enforcement work to be done by the Member States, with the ensuing institutional and administrative capacity needs.

5.2 Additional requirements posed by the proposed groundwater Directive

As stated before, the groundwater Directive proposal contains three core elements, with the following implications.

- (1) Criteria for ‘good groundwater chemical status’ - the classification of bodies of groundwater is already required by the WFD. In principle, therefore, the specification of the criteria to be used in this classification does not bring along the need for any additional administrative or inspection capacity over and above the WFD requirements.
- (2) Criteria for the identification of upward trends and trend reversals in concentrations of pollutants - Annex IV of the proposed Directive specifies the monitoring requirements to identify trends and analyse trend reversals. Compared to the WFD, they imply a higher frequency of monitoring and reporting for bodies of groundwater considered to be at risk. However, they do not seem to require any new types of monitoring activity or institutions.
- (3) Measures to prevent or limit indirect discharges - indirect discharges that may lead to groundwater pollution are currently covered by the ‘old’ groundwater Directive (80/68). The provisions in the proposed Directive that relate to indirect discharges are intended to ensure continuation of protection after Directive 80/68 will be repealed in 2013. Therefore, they do not imply any new administrative or inspection needs compared to the present situation.

5.3 Existing situation in the Member States and Acceding Countries

5.3.1 Monitoring groundwater quality

Groundwater quality monitoring practices in the EU and the Acceding Member States show large differences, eg in terms of network density (see Table 1 for an illustration), location of monitoring sites, parameters measured, frequency of sampling, etc. These differences reflect, among others, differences in hydrogeological circumstances, in area and population density, in the relative importance of groundwater as a resource, in the presence of potential sources of groundwater contamination, and in the political priority (including funding) given to groundwater issues.

Table 1 Density of Groundwater Quality Networks in Some European Countries

Country	Network density (number per km ²)
Sweden	0.04
Finland	0.02
Denmark	0.26
United Kingdom (England/Wales)	0.40
Netherlands	1.07
Belgium (Flanders)	1.61
Germany (Bavaria)	0.47
Germany (new states)	0.33
Hungary	0.55
Spain	0.22

Source: Jousma and Willems (1996), cited in UN-ECE (2000)

Attempts to harmonise water quality monitoring approaches in Europe are taking place both at the UN-ECE level (within the framework of the Helsinki Convention; see UN-ECE, 2000) and at the EU level. Over the past years, the European Environment Agency (EEA) has been developing an information network on water, 'Eurowaternet'. By the end of 2001, Eurowaternet included quality data from around 300 groundwater bodies in 20 countries (EEA, 2002). The information in Eurowaternet is based upon the existing monitoring activities in the EEA's member countries.

Although a detailed analysis of the adequacy of existing groundwater monitoring capacity is clearly beyond the scope of this briefing, the general impression is that a lot remains to be done in order to meet the requirements of the WFD and the proposed groundwater Directive. For nitrates, the situation seems to be relatively favourable (at least in the present EU-15), as Member States have established extensive monitoring networks within the framework of the Nitrates Directive (91/676/EEC) that give a good overview of water status and trends (EC, 2002). For pesticides, however, there is limited information available on groundwater contamination, and a lack of comparable data on European levels. In addition, the monitoring of pesticides is not yet undertaken in many countries (EEA, 2003). The situation for other pollutants is probably comparable. According to Meinardi (2003), the groundwater monitoring networks in The Netherlands and some German states are probably sufficient to be able to comply with the WFD, but in most other Member States they may need extension and/or improvement. Furthermore, the presence of a monitoring network in itself does not

ensure the quality of the data it generates. For example, average values of pollutant concentrations for a groundwater body may be misleading, as pollutants tend to enter in the upper layer and may travel for years before reaching the lower layers.

In this context, it is regrettable that the concept of ‘risk management zones’ for targeted monitoring and management, which were included in the second draft of the Directive proposal, are no longer included in the final proposal. These risk management zones were to be established around clusters of point sources, in order to designate areas where special monitoring and management is required, and to prevent ‘averaging out’ of pollutant concentrations.

5.3.2 Legal and administrative capacity

Under the existing regimes of Directive 80/68 and the WFD, EU Member States are already supposed to have the legal, administrative and institutional arrangements needed to prevent or limit discharges (both direct and indirect) of pollutants into groundwater.⁸ This is also true for the Accession Countries, as both Directives will apply to them by the date of accession. Table 2 gives an overview of the state of affairs regarding the ten Acceding Countries’ ability to deal with the EU *acquis* on groundwater.

Table 2 Acceding Countries’ Capacity to Deal with the EU *Acquis* Relating to Groundwater Protection

Country	Legislation in place and in line with the <i>acquis</i>	Administrative capacities in place and functioning
Cyprus	yes (except WFD)	yes
Czech Rep.	yes (except WFD)	yes (but particular attention needs to be paid to co-ordination between the various organisations involved)
Estonia	implementing regulations relating to (ia) groundwater and WFD still need to be adopted	yes (but requires continuous close attention)
Hungary	yes (except WFD)	yes (but co-ordination between ministries and regional authorities should be maintained)
Latvia	yes (except WFD)	yes (but require continuous attention)
Lithuania	yes (except WFD, for which the process is well advanced)	yes (but require continuous attention)
Malta	needs to be completed (ia with regard to WFD)	largely (except for WFD, where competent authority needs to be designated; furthermore, agreements need to be concluded to achieve better coordination between various competent authorities)
Poland	yes (except WFD)	yes
Slovakia	yes (except WFD)	largely (but require strengthening)
Slovenia	yes (except WFD)	yes

Source: CEC (2003)

5.4 Conclusions

⁸ The question whether they actually do so has not been investigated in the framework of this briefing. The latest infringement procedure relating to Directive 80/68 (Court Case C-183/97, against Portugal) was closed in June 1998. Laws, regulations and administrative provisions necessary to comply with the WFD were due by 22 December 2003.

The proposed groundwater Directive does not contain any substantial requirements regarding administrative and inspection systems beyond those which are already required by the existing groundwater Directive (80/68) and the WFD. Legislation implementing Directive 80/68 seems to be in place in almost all countries (except Estonia), whereas the legislation needed to comply with the WFD should be in place shortly (for the 15 current Member States the deadline is 22 December 2003; for the 10 Acceding Countries it is the date of their accession). Administrative capacity is also generally in place and functioning, although in several acceding countries the need for strengthening, better co-ordination and continuous attention is noted. Monitoring systems are reasonably well developed for nitrates, but much less for other pollutants. It is regrettable that the concept of 'risk management zones' is no longer included in the Directive proposal, as this concept would have facilitated a targeted approach to monitoring and management, and prevented the averaging out of pollutant concentrations.

6. Conclusions

The Commission's proposal for a Directive on the protection of groundwater against pollution aims at providing criteria for assessing 'good groundwater chemical status' and for the identification of 'significant and sustained upward trends' and the definition of 'starting points for trend reversals', in accordance with Article 17 of the water framework Directive (WFD). In addition, the proposal seeks to ensure the continuation of groundwater protection against indirect discharges beyond 2013, when the existing groundwater Directive (80/68) will be repealed.

The proposal was accompanied by an 'Extended Impact Assessment' (EIA). In support of the drafting process leading up to the proposal, a study entitled 'Economic Assessment of groundwater protection' had been commissioned. However, the economic basis of the EIA is rather weak. Most of the cost-benefit arguments used to choose the preferred policy option (no EU wide groundwater quality standards but instead threshold values determined by the Member States) are ill-founded. Moreover, it is inconsistent that the proposed Directive still contains the prospect of future EU wide standards, whereas the EIA argues that this option is inferior from a cost-benefit point of view.

An alternative option, which provides a harmonised approach while still allowing for natural variety, is to determine natural background concentrations for pollutants by groundwater body (or group of groundwater bodies). Groundwater having this quality should be protected against further deterioration. For other groundwater, EU standards can be established for margins by which the natural background concentrations may be exceeded before it fails to meet the criteria for 'good groundwater chemical status'. An analysis of this option should reveal the real magnitude of the problems and the costs involved in achieving such standards. The approach chosen in the proposed Directive implies the risk that Member States will make the height of their threshold values dependent on the available budgets for soil and groundwater sanitation or on their wish to avoid cumbersome derogation procedures.

Concerning indirect discharges, the proposal makes a distinction between substances for which these discharges have to be *prevented* and substances for which they have to be *limited* to the extent that they do not put at risk the achievement of good groundwater chemical status. This implies that the second category of substances could still be legally discharged and contribute to further deterioration of groundwater quality, as long as average

concentrations remain below the threshold values. A strict ‘standstill’ clause would be needed to prevent this from happening, at least in areas with excellent groundwater quality.⁹

The proposed Directive does not contain any substantial requirements regarding administrative and inspection systems beyond those which are already required by the existing groundwater Directive and the WFD. Legislation implementing Directive 80/68 seems to be in place in almost all 25 countries, whereas the legislation needed to comply with the WFD should be in place shortly. Administrative capacity is also generally in place and functioning, although in several acceding countries the need for strengthening, better co-ordination and continuous attention is noted. Monitoring systems are reasonably well developed for nitrates, but much less for other pollutants. Re-introducing the concept of ‘risk management zones’ in the Directive proposal could be considered, so as to facilitate a targeted approach to monitoring and management, and prevent the averaging out of pollutant concentrations.

⁹ It is unclear whether such a clause is already present in Article 4(1)(b)(i) of the WFD.

References

CEC (2002), *Implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources - Synthesis from year 2000 Member States reports*. COM(2002)407. Brussels, 17.07.2002.

CEC (2003) *Comprehensive Country Monitoring Reports, November 2003*.

EEA (2002), *Annual Report 2001*. European Environment Agency, Copenhagen.

EEA (2003), *Europe's water: An indicator-based assessment*. Topic report 1/2003, European Environment Agency, Copenhagen.

Görlach, B, and E. Interwies (2003), *Economic Assessment of Groundwater Protection: A survey of the Literature*. Berlin: Ecologic.

Loubier, S (2003), *Economic assessment of Groundwater Protection: a sensitivity analysis of costs-benefits results illustrated by a small aquifer protection in North Jutland region, Denmark*. Case study report n° 3 - BRGM/RC: 52326-FR. Orléans: BRGM.

Meinardi, C (2003), personal communication. Rijksinstituut voor Volksgezondheid en Milieu (RIVM), Bilthoven, 4 December 2003.

Rinaudo, J-D (2003a), *Economic assessment of Groundwater Protection: groundwater restoration in the potash mining fields of Alsace, France*. Case study report n° 1 - BRGM/RC: 52324-FR. Orléans: BRGM.

Rinaudo, J-D (2003b), *Economic assessment of Groundwater Protection: impact of groundwater diffuse pollution of the upper Rhine valley aquifer*. Case study report n° 2 - BRGM/RC: 52325-FR. Orléans: BRGM.

Rinaudo, J-D, S. Loubier, B. Görlach, and E. Interwies (2003), *Economic assessment of groundwater protection. Executive summary*. BRGM/RC-52323-FR. BRGM, Orléans, and Ecologic, Berlin.

UN-ECE (2000), *Guidelines on Monitoring and Assessment of Transboundary Groundwaters*. Lelystad, March 2000.