



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 10.07.1996
COM(96) 315 final

96/0181 (COD)

Proposal for a
EUROPEAN PARLIAMENT AND COUNCIL DECISION

on an action programme for integrated groundwater
protection and management

(presented by the Commission)

EXPLANATORY MEMORANDUM

BACKGROUND FOR THE PROPOSAL

Groundwater is a vulnerable resource under environmental pressure

The environmental pressure on groundwaters and surface waters is growing across the Community both qualitatively and quantitatively. Results of national monitoring show a serious decline in groundwater levels and quality locally as well as more broadly in the Community, threatening drinking water quality and supply of fresh water for other human uses, as well as for sustaining aquatic and other ecosystems and vegetation cover in general.

Although patchy and incomplete, the results of the monitoring indicate an increasingly worsened situation calling for a much improved general overview of the situation and for an early and determined response in order to redirect trends. Once overexploited or polluted, groundwater may require long time to regain high quality. Depending on the geological and geographical circumstances replenishment of groundwater reservoirs may take decades.

An estimated average of 65% of public water supply comes from groundwater sources but dependence on groundwater varies across the Community. Some regions rely almost exclusively on groundwater for their fresh water supply while other regions draw their fresh water mainly from surface water. In certain regions increased demand for fresh water resources has led to serious overexploitation of groundwater, sometimes aggravated further by periods of drought making it difficult to satisfy the growing need for fresh water and threatening the social-economic development as well as ecosystems depending on supply of clean and plentiful fresh water. In other regions early planning and efforts to economize water use show that it is possible to curb demands with both environmental and economic advantages.

The 1995 report on the state of the environment in the Community from the European Environment Agency⁽¹⁾ states on fresh water quantity: "In the late 1980s (the latest period for which reliable data are available), total abstraction for all uses was estimated at 587 m³/per capita/per year ranging from 156 m³/per capita/per year in Luxembourg to about 1000 m³ in Italy, the Netherlands and Spain. Water abstraction rates increased by 35% between 1970 and 1985." On groundwater quality the Agency Report states that the maximum concentration limit for nitrate (50 mg of Nitrate/litre) is exceeded beneath approximately 20% of agricultural land. Finds in Member States show that this trend is continuing upwards. For plant protection products the Agency estimates that the limit value is exceeded in more than 25% of agricultural land in the EU/EFTA area. The types of plant protection products are not specified.

Calls for Community action

The need for action in order to avoid long term deterioration of fresh water quantity and quality was recognized by the Ministerial Seminar on groundwater held at the Hague on 26/27 November 1991. In the words of the Hague declaration: "establish a programme of actions to be implemented by the year 2000 at national and Community level aiming at sustainable management and protection of fresh water resources".

⁽¹⁾ Report on "Environment in the European Union - 1995".
European Environment Agency, Copenhagen, 1995.

The Hague Declaration⁽²⁾ stressed that "the objective of sustainability should be implemented through an integrated approach, which means that groundwater and surface water should be managed as a whole paying equal attention to both quantity and quality aspects; that all interactions with soil and atmosphere should be duly taken into account; and that water management policies should be integrated within the wider environmental framework as well as with other policies dealing with human activities such as agriculture, industry, energy, transport and tourism."

The Council in its resolutions of 25 February 1992⁽³⁾ and 20 February 1995⁽⁴⁾ called for Community action and requested that a detailed action programme be drawn up for comprehensive protection and management of groundwater as part of an overall policy on water protection.

Updating Community water policy

Community groundwater policy has suffered from a lack of overall planning and a lack of specific instruments which could ensure concerted action across the Community. The directive on groundwater protection⁽⁵⁾ from 1980 rather narrowly has its focus on control of emissions of substances from industrial and urban sources while provisions for control of diffuse sources from agriculture, forestry and other sources only recently have been added to Community environment legislation. Notable also has been the absence of provisions on groundwater quantity and abstraction of fresh water in the water policy.

The Commission on the 21 February adopted a Communication on European Water Policy⁽⁶⁾ as part of the further development of a Community policy for protection and management of fresh water resources. Having analyzed existing Community legislation the Communication outlines the structure of a future Framework Directive on Water Resources which should ensure overall consistence and greater transparency of Community Water Policy. A main feature of this future Framework Directive will be a requirement for planning and management with a focus on the river basin, thus ensuring that water belonging to the same ecological and hydrological system is managed as a whole, whether such water is present as groundwater or surface water.

Environmental objectives to be pursued

The groundwater action programme has been drafted within the context of this overall Community policy on water and in particular with a view to compatibility with the river basin management approach. The groundwater action programme has its focus on the quantity and quality of groundwaters but quantitative and qualitative aspects of surface water have been included where relevant in order to ensure coherence in the management approach.

The action programme follows the objectives set out by the Council in its resolutions emphasizing the need for: "(1) Licensing systems and other instruments providing an appropriate national management of groundwater, (2) Measures to provide for preventive, comprehensive groundwater protection, inter alia, in view of diffuse sources, (3) General provisions for the safety of installations handling substances harmful to water, and (4) General provisions to promote agricultural practices consistent with groundwater protection."

(2) Declaration at the Ministerial Seminar on groundwater held at The Hague on 26/27 November 1991.

(3) OJ No C 59, 6.3.1992, p. 2.

(4) OJ No C 49, 28.2.1995, p. 1.

(5) OJ No L 20, 26.1.1980.

(6) COM(96) 59 final, 21.2.1996.

Community competence

The action programme aims to meet the requirements of Article 130r of the Treaty on European Union, aiming at a high level of protection based on the precautionary principle and the principles of prevention, rectification at source and that the polluter should pay. Integration of environmental protection requirements into other Community policies also is essential for the success of the action programme.

Building on the principles for environment policy set out in Article 130r, on the principle of subsidiarity set out in Article 3b, and combined with a wider concept of shared responsibility as presented in the Fifth Environment Programme "Towards Sustainability"⁽⁷⁾, the success of the action programme relies on action at Community level, at Member States and local levels as well as on action by other appropriate actors of a private and public character.

Subsidiarity and Member States responsibility

The action programme is intended as a framework within which Member States and the Community in close cooperation should develop the basis for a sustainable groundwater protection and management. The framework offers a frame of reference for focusing and targeting of actions, and provides a forum and mechanisms for exchange of information and experience which should facilitate concerted action by Member States and the Community.

As a response to the call for greater emphasis on the principle of subsidiarity the action programme has been drafted with a view to securing that action should be taken as close as possible to and taking full account of the actual conditions under which water is being used or affected. In line with this, priority has been given to action within the responsibility of Member States, with the Community providing common principles and an overall framework for action. A main feature of the action programme is the drawing up of specific national programmes which will be the responsibility of Member States acting according to their particular national, regional, and local conditions and needs.

For the sake of coherence and increased transparency the action programme contains measures and initiatives following from existing and future Community legislation, as well as recommendations for further-going action. Actions in this programme going beyond legal obligations should be seen as options for Member States to be pursued as appropriate by way of legislation or other measures such as administrative rules, voluntary agreements, etc. at national level.

Community water policy and groundwater management

The action programme has been drafted with a view to ensure compatibility with the river basin management approach and the overall Community policy on water management presented in the recently adopted Communication on European Water Policy. The programme has its focus on the quality and quantity of groundwaters, but quantitative and qualitative aspects of surface water protection and management have been included where relevant for ensuring coherence in management approach. Some actions in the programme will in the future be supported by provisions in the future Framework Directive on Water Resources whose main feature will be a requirement that water management and planning be done on a river basin basis. Potential links to the future Framework Directive have been indicated where relevant.

⁽⁷⁾ OJ No C 138, 17.5.1993.

The rôle of the Commission

In order to ensure common water management principles the Commission intends to present the above mentioned proposal for a Framework Directive on Water Resources in which basic provisions for management of groundwater will be included. The Framework Directive will include provisions on protection of groundwater and thus take over the provisions of the present Groundwater Directive as explained in the Communication on European Water Policy. The Framework Directive will also introduce a requirement for control of abstraction of fresh water. The proposal for the Framework Directive on Water Resources will be presented at the end of 1996.

The Commission will review and where appropriate consider adaptation of existing Community legislation in line with the objectives of this action programme.

The Commission will ensure a further integration of water policy into other Community policies where this is necessary for fresh water protection and management. Areas such as agriculture and regional development have a profound impact as well as dependence on availability and quality of groundwater resources and the further integration into the Common Agriculture Policy and the Regional Policy are particularly important for achieving the objective of sustainable fresh water protection and management. Following from the general outline set out by the Fifth Environment Programme, "Towards Sustainability", and further specified in the recent Commission proposal for a Review of the Fifth Action Programme⁽⁸⁾, the Commission will pursue the further integration of water policy into other Community policies where this is necessary for fresh water protection and management. A number of options for such integration in particular into agriculture policy to be considered by the Commission are presented in this action programme. The importance of research and development to water management and protection has been recognized by the Community research programme "Environment and Climate 1994-1998", which devotes one of its research areas to improvement and rationalisation of the future management of water resources. In the proposed guidelines for the fifth framework programme the Commission stresses the necessity of having a better understanding of environmental mechanisms and of acquiring advanced technologies in order to ensure the protection and management of water resources. The task force "Environment-Water" set up recently will identify priorities on this matter.

Progress with implementation of Community water legislation will be followed closely, notably with the Directive on Nitrates⁽⁹⁾ from diffuse sources and the Urban Waste Water Treatment Directive⁽¹⁰⁾, in order to secure their full implementation and functioning. Where relevant the Commission may present proposals for any necessary adjustment or development of the relevant instruments of a legislative or other nature.

The Commission in close cooperation with Member States will undertake the development and use of economic instruments, voluntary agreements and other non-legal instruments as well as research and development of less water consuming technologies and practices and various research inter alia for mapping, monitoring, and definition of groundwater vulnerability.

The Commission will serve as a focal point for the development of guidelines and recommendations e.g. for drawing up codes of good practices and assisting in the exchange of information and experience as appropriate.

⁽⁸⁾ COM(95) 647 final, 3.4.1996, p. 2.

⁽⁹⁾ OJ No L 375, 31.12.1991.

⁽¹⁰⁾ OJ No L 135, 21.5.1991.

Tasks for the European Environment Agency and EUROSTAT

The environmental state of groundwater should be followed closely by the European Environment Agency as part of the major responsibility which has already been given to the Agency for coordination of monitoring programmes, of assessing data and information derived from these programmes and drawing up reports on the status and development in the groundwater situation in the Community as well as on the progress of the national groundwater action programmes. This task should be performed in close cooperation with Member States and the Commission, including Eurostat.

Public participation

Public involvement and awareness of the action programme as well as education and training schemes should be ensured, in particular when Member States draw up national action programmes. Consumption of water and maintenance and improvement of water quality depends on the behaviour of the individual as well as on traditions and practices of water use in the industrial and agricultural sectors, in leisure and tourism etc. Consequently, active involvement of the public and of social partners such as sectoral organizations from industry and agriculture is essential for the success of the programme.

Building on action already taken

Member States to a varying degree have taken initiatives to protect groundwater resources in line with the declaration of the Hague Ministerial Seminar in 1991. A few Member States have drawn up plans for long term protection of groundwater for parts or the whole of their territory. The task of mapping and characterizing groundwaters has been started or continued. Development of methods for mapping and characterization of vulnerable groundwater in Spain and Portugal has been funded by the Community and experience may be exploited by other Member States through this action programme. Capacity for monitoring for a number of parameters, including nitrates and plant protection products have been scaled up or initiated although a recent study⁽¹¹⁾ shows that most Member States still have insufficient monitoring capacity making planning for water protection difficult.

Notwithstanding the efforts made by Member States, groundwater protection based on an integrated strategy is still a future target for most Member States, and control of eutrophication is still strongly needed with implementation of the Directive concerning protection of waters against pollution caused by nitrates from agricultural sources lagging behind in most Member States being an unfortunately outstanding example.

Benefits of the programme

Benefits will be partly of a qualitative, partly of a quantitative nature. First of all, a stable and sufficient supply of high quality fresh water from groundwater for domestic as well as for industrial and other uses is an asset in its own right. Further, use of sound instruments for management of water resources should lead to fewer conflicts of interest between users in situations where water resources are not sufficient. Also, expensive investment in heavy infrastructure to secure supply of water may be reduced or avoided. Securing high quality groundwater should reduce costs for treatment and purification where particularly high quality is required e.g. for domestic and certain industrial uses. Thus, substantial costs for achieving drinking water standards or other requirements for high quality fresh water e.g. by removing nitrates, plant protection products, and other chemical substances may be avoided.

⁽¹¹⁾ LNEC report on the Costs of Groundwater Inspection in the Member States
Contract B4-3040/95/000345/MAR/D1, Lisbon, March 1996.

Costs of the programme

The costs of the programme may be broken down into several categories, as, for the sake of coherence, the programme includes measures that follow or should have followed already from existing Community legislation. Examples are treatment of waste water, control of nitrates, and environmental impact assessment. Costs for such measures technically speaking are not incurred by this programme. Other costs follow from legislation currently being negotiated, in particular the directives on integrated pollution prevention and control⁽¹²⁾, drinking water quality⁽¹³⁾, landfills⁽¹⁴⁾ and the future Framework Directive on Water Resources. Finally, costs will follow from additional actions recommended by this action programme.

Costs will vary from Member State to Member State depending on national conditions and on the degree to which Member States pursue options going beyond legal obligations. Of importance also is the degree to which Member States have already implemented the measures prescribed in existing legislation.

Preventive action and integrated planning are strongly emphasized, which may require strengthening of administrative procedures. Costs of such strengthening are difficult to specify as they depend on the actual need for adjustment of structure and performance of existing administrative systems, incentive measures and educational programmes e.g. in the agricultural sector, as well as on benefits gained from the development of more rational systems avoiding overlapping and duplication.

Mapping, monitoring, and establishing inventories of present and potential pollution are indispensable tools for sustainable management and they are a fundamental part of the programme. A substantial part of the costs, including basic costs for infrastructure for monitoring already follows from obligations in existing legislation for diffuse sources such as nitrates and from drinking water legislation. Preliminary results from a study on cost for establishing and running a groundwater monitoring network indicate that a number of Member States are far from having established an appropriate monitoring capacity required to comply with existing legislation. Costs will depend on choice of parameters, the number and frequency of sampling and analysis, and on possible extension of the monitored area. Experience in some Member States shows that running costs per unit of sampling and analysis will decrease considerably with scale.

The study shows that costs for existing monitoring of groundwater quantity amount to some ECU 2 533 000 while costs of monitoring groundwater quality amount to ECU 14 454 000. These figures have to be taken with a considerable amount of caution as they cover only some Member States. It should be noted in particular that large Member States such as Germany, France, UK and Italy have not provided information. It should be noted also that most of the Member States presently monitor for a rather limited number of parameters.

Follow up on costs and benefits

More precise assessment of costs will be possible as Member States choose and prepare concrete actions and begin implementing the programme. Member States and the Community should follow closely the development of costs, savings and benefits. Appropriate assessment, including risks involved, costs of implementation, and benefits gained, providing the necessary background for decision making therefore must be an element of the implementation process. Relevant user groups should be involved in order to ensure a thorough analysis.

It is clear though, that the costs of not acting will be substantial, and that the importance and basic necessity of having access to sufficient quantities of high quality fresh water both in the near future and in a longer term perspective in itself calls for a determined and early action based on the lines of this groundwater action programme.

(12) OJ No C 311, 17.11.1993.

(13) OJ No L 299, 30.8.1980.

(14) COM(91) 102, 22.5.1991, amended by COM(93) 275, 10.6.1993.

Proposal for a
EUROPEAN PARLIAMENT AND COUNCIL DECISION

on an action programme for integrated groundwater
protection and management

The European Parliament and the Council of the European Union,

Having regard to the Treaty establishing the European Community, and in particular Article 130s(3) thereof;

Having regard to the proposal from the Commission;

Having regard to the opinion of the Economic and Social Committee;

Acting in accordance with the procedure referred to in Article 189b of the Treaty;

Whereas the declaration of the Ministerial Seminar on groundwater held at the Hague on 26-27 November 1991 recognized the need for action in order to avoid long-term deterioration of fresh water quantity and quality and called for the establishment of a programme of actions to be implemented by the year 2000 at national and Community level aiming at sustainable management and protection of fresh water resources;

Whereas the Council in its resolutions of 25 February 1992⁽¹⁾ and 20 February 1995⁽²⁾ requested that a detailed action programme be drawn up for comprehensive protection and management of groundwater as part of an overall policy on water protection;

Whereas the Council emphasized the need for licensing systems and other instruments providing an appropriate national management of groundwater, measures to provide for preventive, comprehensive groundwater protection, *inter alia*, in view of diffuse sources, general provisions for the safety of installations handling substances harmful to water, and general provisions to promote agricultural practices consistent with groundwater protection;

Whereas on 10 November 1995 the European Environment Agency presented an updated State of the Environment Report⁽³⁾ confirming the need for action to protect groundwater resources;

Whereas on 21 February 1996 the Commission adopted a Communication to the European Parliament and the Council on "European Community Water Policy"⁽⁴⁾; whereas the Commission will further develop its policy in relation to water management in a proposal for a framework directive on water resources to ensure coherence and transparency for management of water in the Community;

Whereas further integration of sustainable water management into other Community policies and in particular into agriculture policy and regional policy is necessary; whereas this action programme identifies a number of options which should be explored; whereas such integration should follow the objectives set out in the Commission proposal for a Decision of the European Parliament and the Council on the review of the European Community Programme

(1) OJ No C 59, 6.3.1992, p. 2.

(2) OJ No C 49, 28.2.1995, p. 1.

(3) Report on "Environment in the European Union - 1995", European Environment Agency, Copenhagen, 1995.

(4) COM(96) 59 final.

of policy and action in relation to the environment and sustainable development "Towards Sustainability"⁽⁵⁾;

Whereas this action programme recognizes the importance of protection of all groundwaters; whereas a particular priority should be given to protection of groundwaters in the countryside where the largest quantities of high quality groundwater are formed and found;

Whereas the Community should provide common principles and the overall framework for action; whereas the Community should facilitate exchange of information and experience with groundwater management and protection measures undertaken at national, regional and local level;

Whereas there are diverse conditions and needs existing in the Community which require different specific solutions; whereas this diversity must be taken into account in the action envisaged; whereas decisions should be taken as close as possible to situations where water is being used or affected; whereas priority has been given to action within the responsibility of Member States through specific national action programmes drawn up by Member States;

Whereas the success of this action programme relies on close cooperation and coherent action at Community level, Member States and local level as well as on consultation, information, and active involvement of social partners and individual citizens;

Whereas in order to ensure the development of technologies, procedures and practices which consume less water, the use of economic instruments, of voluntary agreements and other non-legal instruments, of codes of good practice as well as of research should be encouraged;

Whereas by the year 2000 national action programmes should be fully drawn up and functioning as part of the implementation of this action programme; whereas progress with implementation of Community and Member States action should be followed through regular appraisal and review;

Whereas the European Environment Agency and the Community Authority in charge of statistics (EUROSTAT), in close cooperation, will report on developments in the state of the aquatic environment;

Whereas it is necessary to ensure a better implementation and enforcement of existing environmental legislation for the protection of fresh water and in particular of groundwater;

Whereas it is necessary to improve the basis for water management policies in the form of reliable and comparable data, statistics and indicators, and methods for assessment of costs and benefits of action or lack of action;

Whereas this Decision does not prejudice the legal basis of the measures which, while complying with the objectives pursued by the actions provided for in this Decision, are adopted for the implementation of the present programme or in the framework of other Community policies,

⁽⁵⁾ COM(95) 647 final/2.

HAVE DECIDED AS FOLLOWS:

Sole Article

The European Parliament and the Council agree to the objectives of an action programme for integrated groundwater protection and management.

The objective of the action programme is to ensure protection and use of groundwater through integrated planning and sustainable management aiming at preventing further pollution, maintaining the quality of unpolluted groundwater, restoring, where appropriate, polluted groundwater, as well as preventing the over-exploitation of groundwater resources.

The details of the action programme are contained in the Annex.

This Decision applies without prejudice to the legal basis of measures which, while complying with the objectives pursued by the actions provided for in this Decision, are adopted for the implementation of the present programme or in the framework of other Community policies.

Done at Brussels,

For the European Parliament
The President

For the Council
The President

A GROUNDWATER ACTION PROGRAMME FOR THE COMMUNITY

A framework for the Community and Member States

The action programme should be seen as a framework within which Member States and the Community in close cooperation should develop the basis for a sustainable groundwater protection and management. The programme should function as a frame of reference for focusing of action, and as a forum for exchange of information which should facilitate concerted action by Member States and the Community as requested by the Council in its resolutions of 1992 and 1995.

The action programme recognises the importance of protection of all groundwaters through prevention of further deterioration and depletion of groundwater in order to ensure a reliable supply of high quality fresh water in all regions of the Community. The action programme further recognises the particular importance of protection of groundwaters in the countryside where the largest quantities of high quality groundwater are found and formed. The safeguarding of such groundwaters of particular importance for the securing of a future supply of high quality fresh water constitutes the greatest challenge for the Community water policy. In order to achieve this target the programme addresses both point sources predominantly of urban and industrial origin and diffuse sources originating mainly from agricultural practices or to a lesser degree from urban or industrial activities e.g. through atmospheric deposition.

In accordance with the principle of subsidiarity priority should be given to action taken at the level of Member States. In line with this Member States should draw up and implement nationally adapted action programmes for sustainable groundwater protection and management. The Community should provide common principles and an overall framework for action.

The national action programmes outlined in this Decision should be seen as instruments linking obligations and recommendations at the Community level with instruments and measures established at the level of Member States thus ensuring coherence and transparency in approaches.

PART 1. THE FOUR MAIN LINES OF THE ACTION PROGRAMME

Four main lines of action

- Development of Community principles for integrated planning and management of water protection and use for application on a national and subnational level with respect to a long term view of applying a river basin management approach to groundwater management in order to ensure the quality and quantity of groundwater.
- Ensuring rules for quantitative maintenance of fresh water resources, including a rational regulatory framework for fresh water abstraction.
- Development of instruments for control of groundwater pollution from diffuse sources, including codes of good practice, and consideration of longer term measures for further integration of sustainable water protection and management and agriculture policy.
- Development of Instruments for control of point source emissions and discharges, including a rational regulatory framework and incentives for development of environmentally friendly production processes and procedures.

These four lines of action should be supported by research and development programmes at the level of the Community as well as appropriate national initiatives where necessary e.g. relating to vulnerability, leaching of pollutants, acidification, and to further development of methodologies for assessing critical loads, management strategies etc. Monitoring of water quality and quantity and establishment of a thorough and reliable basis of information on the state of the aquatic environment should be seen as indispensable for the success of the national action programmes.

ACTION LINE 1. PLANNING AND MANAGEMENT PRINCIPLES

Objectives of integrated planning and management

The objective of integrated planning and management is to ensure that protection and use of groundwater takes place as part of an integrated management of fresh water resources. Groundwater should be seen as an integral part of the hydrological cycle dynamically interacting with surface water in terms of quantity as well as quality aspects. The objective further is that groundwaters on a long term basis will be managed together with surface waters within a river basin management approach.

- * A sustainable quantity management should secure the long term availability of non-polluted groundwater, to ensure that groundwater is not overexploited in order to avoid irretrievable damage to aquifers in terms of quantity and quality, and to prevent deterioration or impoverishment of ecosystems depending on presence of groundwater. As conditions for recharge and demands for abstraction may vary considerably over the year such limits could be based on average figures allowing for temporary depletion provided the achievement of the objective is not compromised. Suitable quantity management should also where appropriate include replenishment of groundwater to a sustainable level.
- * A sustainable quality management should protect and preserve all groundwaters, and where appropriate improve the present quality on a long term basis. Actions to achieve this should be based on the principles of prevention, action at source, and that the polluter should pay. Protection of the quality must aim at eliminating or minimizing direct and indirect sources of pollution and at securing the protective capacity of the soil cover above the groundwater table. Sustainable quality management should also include restoration of the quality of polluted groundwater where appropriate taking into account practicability and realistic timescales. A target for restoration should as far as possible be drinking water standards or other quality standards appropriate for the use of such recovered water.
- * Measures should be taken to ensure that fresh water resources, and in particular groundwaters are protected and managed according to a plan covering in principle all available resources and the interaction between them. Application inter alia for domestic, industrial and agricultural use, for energy production, for recreational use should be accounted for in this general planning. Planning and ensuing management plans should secure availability of sufficient supplies of fresh water for supporting streams, lakes and wetlands and for sustaining vegetation cover and other natural ecological functions.
- * Due account should be taken of the diversity of user interests and activities affecting or potentially affecting the quality and quantities of groundwater and surface water, and ecological functions depending on groundwater.
- * Substantial treatment to remove polluting substances such as nitrate and plant protection products should not be considered a general strategy for sustainable groundwater management. Substantial treatment to purify polluted groundwater in order to meet standards for water intended for human consumption or other requirements should be used only where urgent need or specific situations necessitate this, while treatment for the ordinary situation should be restricted to filtering, aeration, disinfection etc.

Action at Member State level

- * Member States should review the performance of the water sector and of existing administrative structures and legislation and where necessary the appropriate adjustments should be undertaken in particular with a view to rationalization and avoiding of overlapping and duplication of procedures and rules. Where necessary and as appropriate new structures, legislation and rules should be established.
- * Fresh water quantity and quality should be appropriately monitored and assessed in order to provide information allowing Member States to follow changes in groundwater quantity and in particular to allow for early detection of signs of and causes for overexploitation and changes in quality. Establishment of national monitoring programmes, supplemented as necessary, should make it possible to follow closely and react to unacceptable changes in fresh water quantity and quality.
- * Establishment of a considerable monitoring capacity for fresh water as required under Council Directive 91/676/EEC concerning the protection of waters against pollution by nitrates from agricultural sources⁽⁶⁾ and under Council Directive 91/271/EEC concerning urban waste water treatment⁽⁷⁾ should be pursued. The future Framework Directive on Water Resources should rationalise monitoring requirements of existing Community legislation while at the same time requiring the establishment of appropriate monitoring for the purpose of drawing up an inventory of point and diffuse sources of pollution of fresh water.
- * Member States should identify areas with groundwater of importance for present and future drinking water supply and for particular ecological functions. Member States should further identify areas where groundwater is particularly sensitive to pollution due e.g. to particular geological or climatic conditions, the nature of the soil or to man-made influences. It is already a long standing practice in Member States to designate special protection zones around boreholes used for the abstraction of drinking water, within which, depending on the distance to the borehole, all or certain industrial and agricultural activities are banned or restricted. Identification and designation of zones for the purpose of protection of groundwaters and surface waters are also required under existing Community legislation, *inter alia*, Council Directive 91/676/EEC concerning the protection of waters against pollution by nitrates from agricultural sources and Council Directive 91/271/EEC concerning urban waste water treatment. Further, designation of zones under other Community legislation such as Council Directive 79/409 on the Conservation of Wild Birds⁽⁸⁾ and Council Directive 92/43 on conservation of habitats⁽⁹⁾ often relates to aquatic ecosystems depending on groundwater quality and quantity.

Designation of zones for protection of groundwater would benefit from a coordination with designation for such other purposes. Choice of zoning designs and features could also be developed or adjusted as appropriate to ensure coherence in designation and in choice of measures such as restriction or banning of polluting activities that should be taken in order to ensure the necessary level of protection required by the particular characteristics of these sensitive areas. Depending on the nature of the sensitivity of the zone such measures could entail restriction or banning as appropriate of urban and industrial discharges, use of manure and fertilizers, of certain plant protection products and biocidal products.

⁽⁶⁾ OJ No L 375, 31.12.1991.

⁽⁷⁾ OJ No L 135, 21.5.1991.

⁽⁸⁾ OJ No L 103, 25.4.1979.

⁽⁹⁾ OJ No L 206, 22.7.1992.

- * Member States should review and where appropriate adjust and strengthen protection measures around drinking water abstraction points.
- * Member States should cooperate closely on transboundary shared resources and on potential transboundary impacts. Strategic spatial planning including comprehensive hydrological plans and land use plans should be seen as essential tools supporting fresh water protection and management.
- * Management of transboundary aquifers should be done through the development of transnational cooperation wherever national plans may have a significant impact on neighbouring countries, where appropriate in the context of international conventions such as the existing international convention on transboundary lakes and water courses. Such transnational cooperation in the long term should be ensured through the river basin management principle to be laid down in the future Framework Directive on Water Resources.

Action at Community level

- * Further integration into important areas of Community policy, notably into agricultural and regional policies is called for by the clear signs of deterioration of groundwater quantity and quality shown by monitoring in order to meet the objectives of integrated groundwater protection and management. Such integration into Community policies on a long term perspective should be undertaken at the level of the Community, and e.g. the European Spatial Development Perspective, to be drawn up by mid 1997 should be explored in this context.
- * The Commission should undertake to promote such integrated planning and management for projects and actions affecting fresh water resources when initiated and/or funded by the Community.
- * The Commission should draw up recommendations for action to be taken with respect to developing instruments for planning and management, including common principles for comparability of mapping and monitoring methods, criteria for identifying ecologically sensitive areas needing additional protection, zoning designs, codes of good practice. Exchange of information and experience, and establishment of education, training schemes, and research programmes should be encouraged.

ACTION LINE 2. ABSTRACTION OF FRESH WATER

A rational regulatory framework for abstraction of fresh water

Water abstraction in large urban, industrial and agricultural areas, and tourist centres often exceeds the natural recharge of fresh water. Problems with quantity maintenance, which may be seasonal or permanent, are particularly severe in the southern Member States.

Overexploitation may result in lowered water tables causing supply problems for users and transient or permanent depletion or serious reduction of water supply for the catchment areas thus threatening groundwater dependent ecosystems. In coastal and island areas lowering of the groundwater table may lead to sea water intrusion and salination of the groundwater. Lowering of the water table may also lead to mobilisation by oxidation of hazardous substances from layers hitherto submerged by the groundwater table. Under certain geological conditions lowering of the water table may cause settlement of strata which may cause damage to buildings and installations or other consequences of land subsidence.

Measures to compensate for lack of fresh water include interregional transfer of water and artificial recharge. Transfer of large volumes of fresh water for use elsewhere as drinking water or for irrigation etc from other areas may cause problems for ecosystems in the abstraction area or down-stream on a water course due to draining of the usual water supply. Artificial recharge of groundwater is a common practice to manage (drinking) water supply

in some areas in Member States. Provided such artificial recharge is performed with water of an appropriate quality and with appropriate monitoring and the necessary control, this may be used as an economically feasible way to replenish groundwater both in terms of quantity and quality on a permanent basis or on a shorter term in areas subject to large seasonal variations in water demands and natural recharge possibilities. Control is essential to ensure that no irretrievable damage will be caused to groundwater or to ecosystems depending on supply of groundwater.

Objectives

The objective is to secure an appropriate quantity management of groundwater and surface water within the river basin where groundwater and surface water interact with or depend on each other based on knowledge of resources available. A minimum groundwater level and a minimum flow of water from groundwater maintaining a basic level of water in rivers and lakes to preserve ecosystems should be secured. Heavy abstraction leading to long term overexploitation of groundwater should be avoided.

The objective further is to encourage a policy aimed at fresh water saving in order to keep abstraction of fresh water low and to ensure that appropriate priority is given to encourage water saving, reuse, and good housekeeping of fresh water resources.

Action at Member State level

- * Member States should draw up maps and inventories of groundwater resources at national, regional, and local level providing basic information for the integrated management. Some Member States have already progressed far in mapping, including computerization, while others have only recently started such work. Maps could be drawn up both as descriptive reference maps such as hydrogeological maps, and as derivative maps drawn up for special purposes such as aquifer productivity, vulnerability, identification of interactions with surface water, discharge into streams or lakes etc.
- * An authorization system, where appropriate with general rules, for fresh water abstraction should be directed at all uses e.g. in domestic, industrial, agricultural, and leisure activities. The authorization system for fresh water abstraction should apply to all major abstractions above a certain threshold taking into account resources available, potential conflicts of interest between users, the needs of ecosystems etc. Authorizations should be reviewed periodically and where necessary adjusted. In regions with large annual precipitation and good availability of fresh water more flexible general rules could be appropriate, provided safeguards are taken to avoid that irretrievable damage is inflicted on ecosystems supplied by such fresh water.
- * Where appropriate the authorization system of should cover interregional transfer of large volumes of water as the number of potentially concerned users and resulting conflicts of interest may give rise to particular problems. Further, an appropriate assessment of the environmental impacts in the area of abstraction should be undertaken in order to avoid compromising replenishment of groundwater in the area where the water originates.
- * Care should be taken to ensure comprehensive planning of use of water from hydrographic basins and aquifers extending across administrative borders, in other words through management within a river basin perspective. When considering authorizations for water abstraction special attention should be paid to the interests of down stream users and ecosystems.
- * Possibilities for encouraging saving of water resources and good house-keeping should be considered in order to keep abstraction of fresh water low, especially in areas with water shortage. This could include recommendations for new practices for irrigation, renovation of distribution systems to reduce losses, and differentiation into types of water for different uses, installation of meters, and use of economic instruments such as appropriate pricing and fiscal incentives to promote efficient use. Development of new

processes based on the principles of clean technology and best available techniques should be encouraged as should possibilities for reuse of water, e.g. as requested by Council Directive 91/271/EEC concerning urban waste water treatment.

- * Artificial recharge should be subject to an authorization system in order to secure an appropriate control. Standards for assessment of environmental impact from recharge and for monitoring and quality control should be developed with a view to using best available techniques (BAT) and best environmental practices (BEP).

Action at Community level

- * A legal framework with minimum requirements for abstraction of fresh water should be developed as a response to the increasing pressure on existing fresh water resources. This legal framework should ensure that freshwater is abstracted from the most appropriate source at the most appropriate time. The legal framework should take into account groundwater and surface water availability, seasonal fluctuations and natural replenishment characteristics, as well as any natural interaction and interdependence between groundwater and surface water. The future Framework Directive on Water Resources should include a requirement for the control of abstraction of fresh water from groundwater and surface water, taking into account availability and quality requirements within respective river basins. For ensuring of a high water quality, Community legislation concerning treatment of urban waste water and control of diffuse and point sources of pollution should also be taken into account.

ACTION LINE 3. DIFFUSE SOURCES OF POLLUTION

Environmental challenges from diffuse sources of pollution

Diffuse sources are characterized by having a fairly low intensity per unit area, but coming from large surfaces. The very nature of diffuse sources of pollution therefore often makes it difficult to identify the individual polluters, in particular for pollution of groundwater, where the time-lag between application or release of the polluting substances and the possibility for detection of presence in the groundwater may span up to several decades. Due to this nature of diffuse sources of pollution, a more general approach to remove or reduce the threats to fresh water should be chosen and the corrective measures should address broadly the practices behind the application of the polluting substances.

Threats to groundwater and surface water from diffuse sources stem from agricultural and industrial activities, traffic, and urbanization either through local impacts or long distance via atmospheric deposition. As a result of recent more systematic monitoring of groundwater in Member States, widespread occurrence of nitrates and certain plant protection products has been documented across Member States indicating serious threat to the quality of groundwater both for drinking water purposes as well as for the ecological quality of fresh water in general. Application of plant protection products and biocidal products along railway installations, roads, on camp sites etc constitutes other important diffuse sources of concern due to intensive use.

Concentration of livestock farming has given rise to problems with leaching of nitrates to fresh water. Intensive application of manure and chemical fertilizers in agriculture likewise has given rise to eutrophication of fresh water and threats to groundwater quality. Intensive use of certain plant protection products in agriculture and forestry also has led to contamination of groundwater and surface water in concentrations that give rise to concern across Member States. Substantial increases in the spreading of sewage sludge on agricultural and other land as a way of disposing of the increasing amounts of sludge created by sewage treatment plants also will increase the pressure on the environment from diffuse sources.

Air emissions from industry, traffic, heating systems, combustion facilities and other major installations emitting compounds such as nitrogen oxides, sulphur dioxide and other gases are carried over long distances and deposited from the atmosphere increasing the risk of groundwater pollution and causing or adding to eutrophication and acidification of fresh water directly or indirectly via the soil. Deposition via the atmosphere of ammonia evaporating from manure from intensive livestock farming also contributes to eutrophication of fresh water. Further, plant protection products and biocidal products have been shown to be deposited from the atmosphere by rain water.

Objectives

The main objective is to diminish and where possible to avoid threats to groundwater from diffuse sources in order to maintain or improve the present quality of groundwater and to encourage development towards an environmentally friendly land use. Within the overall objective of protection of groundwater, relieving the environmental pressure from diffuse sources should have the highest priority because the largest quantities of groundwater are found and formed in the countryside with agriculture, forestry and nature in general, where diffuse sources constitute the major threats.

The objective further is to establish a Community framework for the development of codes of good practice for sustainable use of substances that cause or inappropriately used may cause threats to fresh water quality through further development of an integrated strategy for sustainable use of plant protection products, including more detailed provisions on the distribution and sales of plant protection products and restrictions of use and substitution of the most dangerous plant protection products pursuing the objectives established by the fifth environment action programme, taking into account differences of practices and conditions in the regions of the Community. In particular, this objective applies to the use of biocidal and plant protection products and fertilizers.

ACTION LINE 3.1. DEVELOPMENT OF A POLICY WITH A VIEW TO ENVIRONMENTAL SUSTAINABILITY OF AGRICULTURE

Strategically, alleviation of the environmental pressure from activities in the countryside should have the highest priority. Threats to groundwater in the countryside stem mainly from agricultural activities with leaching of nitrates from manure and other fertilizers and leaching of plant protection products and biocides. These threats to groundwater and surface water quality will only in the long term be relieved by a change towards sustainable agriculture. Agricultural practices therefore should be targeted as a strategic element in protection of groundwater and surface water quality.

Agriculture policy being an area of exclusive competence for the Community means that actions should be directed towards changes at the level of the Community in order to develop the necessary framework for Member States to take action.

The revision of the CAP in 1992 led to the introduction of new instruments for the management of the agricultural market and of rural development.

- Council Regulation 1765/92⁽¹⁰⁾ linking compensatory payment with obligations to set-aside agricultural land
- Council Regulation 2078/92⁽¹¹⁾ encouraging voluntary introduction of production methods more compatible with the requirements of the environment.
- Council Regulation 2080/92⁽¹²⁾ promoting afforestation on agricultural land.

⁽¹⁰⁾ OJ No L 181, 1.7.1992.

⁽¹¹⁾ OJ No L 215, 30.7.1992.

⁽¹²⁾ OJ No L 215, 30.7.1992.

- The revision in 1993 of Council Regulation 2052/88⁽¹³⁾ for the Structural Funds requiring appraisal of the environmental situation in the regions concerned.
- The CAP also contains non-financial instruments which could help to improve the quality of the water environment. In particular, Council Regulation 2092/91⁽¹⁴⁾ defines organic practices for the production of crops.
- Council Regulation 125/93⁽¹⁵⁾ and 3611/93⁽¹⁶⁾ introducing provisions taking into consideration protection of the environment into the premium scheme for beef producers.

It is still too early for a definitive assessment of these encouraging first steps towards a more environmentally friendly agriculture, but already, preliminary results indicate a positive influence from these measures and further steps towards sustainability undoubtedly would be useful to reduce negative impacts on fresh water quality.

Integrating environmental needs into agricultural practices in order to direct agricultural policy towards sustainability in future developments of the Common Agricultural Policy would not only serve fresh water protection but also be beneficial for a broader range of environmental objectives, as well as having consequences for the achievement of objectives of a broader social-economic nature.

Action at Member State and Community level

Integration of further environmental concerns into agriculture in future developments of the Community Agriculture Policy should consist of measures specifically developed and directed towards protection of the environment, including fresh water. These measures presently affect only a part of the agriculture budget. Possibilities should be explored for a substantial expansion of the agri-environment measures within the framework of the CAP.

- * All possibilities and strategies to lessen the impact of diffuse sources such as nitrates and plant protection products should be explored. Introduction of economic instruments amongst other measures should be included. These instruments could be based on further incentives encouraging environmentally friendly sustainable farming. Use of the principle of internalizing the environmental costs with the help of taxes and levies directly aiming at the consumption of chemical fertilizers and plant protection products, excessive application of manure from intensive livestock farming etc could be explored. In addition the viability of such instruments it should be explored, including whether economic instruments should better be implemented at Community level in order to avoid distortion of competition.
- * Possibilities for further encouraging environmentally friendly farming are given in a number of Council Regulations:

Council Regulation 1765/92, though the obligations to set aside arable land are mainly aimed at curbing over-production with only limited provisions concerning the protection of the environment. Land set-aside in this framework further is not necessarily taken out of cultivation but may be used for production of non-food crops. Possible environmental impacts from non-food production should be properly addressed also. More precise environmental conditions based on farming practices compatible with water protection and the environment including the usefulness of having a Community framework ensuring proper environmental management of set-aside land should be explored. By combining the need to protect the environment with the need to curb production in agriculture it should be possible to achieve

⁽¹³⁾ OJ No L 193, 31.7.1993.

⁽¹⁴⁾ OJ No L 198, 22.7.1991.

⁽¹⁵⁾ OJ No L 18, 27.1.1993.

⁽¹⁶⁾ OJ No L 328, 29.12.1993.

so called win-win situations benefitting both the interests of the farmers and the environment. With a view to fresh water protection it should be analyzed whether short term set-aside might give only limited benefits or even lead to increased leaching of nitrates.

Land set-aside on a longer term or permanent basis concentrated in vulnerable areas along river banks and in areas with groundwater designated for present or future use for domestic purposes should be useful for the protection of water resources. Compensatory payment should be based on crop yields respecting codes of good agricultural practice. This would include the use of manure, chemical fertilisers and plant protection products in a way compatible with protection of water and nature ("cross-compliance").

Council Regulation 2078/92 ("agri-environment") gives incentive to reduction of the use of fertilizers and plant protection products, including in organic farming, for the extensification of crop and livestock production, and for the voluntary long-term set aside of areas of farmland benefitting also protection of fresh water. Expansion of agri-environmental measures under the "agri-environment" regulation should be explored. Further, additional national and local structures for the effective implementation of this regulation are essential. Also proper monitoring is necessary to ensure the positive contribution of this measure to the improvement of water quality.

Council Regulation 2080/92 gives incentives for afforestation on agricultural land. Afforestation can have important positive or negative effects on groundwater quality depending on the nature and location of the forest, types of plants, soil characteristics and other geological and climatic factors. Careful planting with appropriate native species can help to improve the quality and regulate the supply of groundwater as well as delivering benefits for biodiversity. The application of fertilisers and pesticides and spreading of sewage sludge in forestry may cause damage to groundwater resources, and potential impacts on groundwater should be taken into account. Expansion of measures under this regulation encouraging long term afforestation should be explored.

The Framework Regulation 2052/88⁽¹⁷⁾ for the Structural Funds was amended in 1993. The diversification and reorientation of agriculture is a key part of rural development programmes and actions under the Structural Funds (Objectives No 1, 5a and 5b). If these programmes are to succeed in contributing substantially to the protection of the water environment, environmental authorities should be associated in designing and implementing projects which address key environmental issues. Environmental impacts of programmes and projects should be evaluated in advance and monitored when implemented. This requires a Community framework and effective structures at national and local level which can ensure the coordination of these measures with actions under other initiatives such as the agrienvironment Regulation No 2078/92. The environmental dimension of the Structural Funds should be strengthened when measures have to be prepared for the period beyond 1999.

Council Regulation 2092/91 introduced criteria for organic farming practices. Organic farming avoids or reduces considerably the use of chemical fertilizers, it encourages the use of organic fertilizers. With respect to the problem of nitrate leaching to the environment, care also has to be taken with the use of organic fertilizers in the practices of organic farming. The regulation concerns arable production only, while the Commission is finalizing the preparation of a proposal to extend its scope to animal production. Organic farming was not exempted from the general set aside requirements under Regulation 1765/92 of the 92-revision of the CAP. Taking into account the environmentally friendly character of organic farming, and in particular the avoidance of use of plant protection products it should be considered making room for such an exemption.

⁽¹⁷⁾ OJ No L 185, 15.7.1988.

Action at Community level

- * The Community should play a central role in stimulating and facilitating the implementation of codes of good agricultural practices for environmentally compatible use of plant protection products and chemical and organic fertilizers by securing the sharing of experience and information between Member States.

ACTION LINE 3.2. ENVIRONMENTAL CHALLENGES FROM NITRATES AND OTHER MINERAL EMISSIONS

The nitrate content of groundwater and surface water has been increasing in certain areas of the Community leading to a threat to the quality of drinking water with limit values being approached or exceeded in a growing number of cases. Concentrations even lower than the levels posing a risk to human health may lead to eutrophication detrimental to animal and plant life and nature, especially in the receiving areas of the Community, e.g. the North Sea and the Baltic Sea.

Action at Member State level

- * Groundwater quality should be appropriately monitored and assessed with respect to content of nutrients in order to allow Member States to follow the development of quality of aquifers and in particular to detect early signs of deterioration and eutrophication.
- * Implementation of Council Directive 91/676 concerning the protection of water against pollution caused by nitrates from agricultural sources should be the major element of the actions on the nitrate question. Other contributions responsible for eutrophication such as atmospheric deposition should be addressed also. These sources are dealt with under action line 4 on point sources.
- * In order to maintain the quality of unpolluted groundwater, preventing further pollution and restoring where appropriate polluted groundwater, preventive action should also be taken in order to keep concentrations as low as possible in areas with fresh water containing less than 50 mg/litre as defined by the criteria for designation of vulnerable zones by the nitrate directive. For restoration of polluted groundwater a minimum target should be at least the relevant drinking water standards. Priorities should be set taking into account realistic timescales and practicability.
- * All possibilities, including use of economic instruments in order to reduce use of manure and chemical fertilizers to the amounts required for crop production and compatible with protection of the environment and fresh water quality should be explored. Necessary changes in the pattern of agricultural land use, including the use of crop rotation schemes to avoid surplus nitrates reaching ground and surface water and other environmentally vulnerable areas should be made. A balance between nitrogen inputs and outputs should ensure that losses to the environment are kept within acceptable limits. Losses should at least be compatible with compliance with drinking water requirements, and should not cause eutrophication of receiving waters. This might entail use of input-output accounting systems and other measures for assessing and controlling the balance. At the same time this would reduce considerably the risk of pollution from phosphates, as phosphates are often applied as an integral part of fertilizers and contained in manure.
- * The development of codes of good agricultural practice for environmentally compatible production should be at the centre of actions taken. Appropriate measures to monitor compliance with the codes of good agricultural practice should be established. As compliance with the codes in itself may not be sufficient to achieve the objectives in certain regions, measures of a further going nature to ensure environmentally compatible production could be developed. Possibilities for using the principle of cross-compliance should be explored in this context. In order to avoid distortion of competition and to

create so called win-win situations benefitting both the environment and the farmers, strategies to compensate farmers should be developed also.

Action at Community level

- * The Commission should undertake to follow up closely on progress in the ongoing implementation of Council Directive 91/676 on nitrates in Member States.
- * The Commission should undertake to consider possibilities to ensure further development of agriculture policy towards sustainability. With a view to environmentally sound use of fertilizers an expansion of the budget for targeted environmental measures as well as the introduction of explicit environmental conditions in the general set aside regulation should be explored.

ACTION LINE 3.3. ENVIRONMENTAL CHALLENGES FROM PLANT PROTECTION PRODUCTS AND BIOCIDAL PRODUCTS

Plant protection products and biocidal products are widely used in agriculture and forestry, on industrial sites, along traffic lines, on public land, and domestic use. Due to geological and climatic differences and to differences of traditions of use, etc., the use of these products varies considerably between regions in the Community.

Monitoring of fresh water quality has revealed concentrations of plant protection products exceeding the limit values laid down for water intended for human consumption in an increasing number of cases, thus indicating threats to groundwater and surface water quality and potentially posing a risk for human health depending on the sources of fresh water supply and the type of active ingredients.

In relation to protection of groundwater, plant protection products and biocidal products that are highly mobilizable, with a high water solubility, or persistency are of main concern due to their potential for leaching to groundwater. Focus may vary from region to region as actual leaching will depend on many parameters related to mode of application, climatic and geological conditions, etc.

Action at Member State level

- * Groundwater quality should be appropriately monitored and assessed at least for products commonly used and or known or expected to leach to groundwater in order to follow closely any increase in concentration of plant protection products and biocidal products. The costs of an overall monitoring could be excessive. Monitoring therefore could be targeted to areas of particular concern either because of specific activities of e.g. agricultural or industrial nature such as high application rate of plant protection products, use of specific products, or due to high precipitation, sandy soil, or groundwater reservoirs of a particular importance. Registration of uses could be considered as a means of focusing monitoring activity.
- * A system with indicators for monitoring the environmental impact of plant protection products should be developed. At present no single parameter gives a full picture of the environmental impacts of plant protection products. Until such indicators have been developed, monitoring could be based on indicators such as frequency of treatment and amount of product sold, hectare-doses, human and/or ecological toxicity, mobility, solubility and bioaccumulative characteristics. Particular attention should be paid to those new types of plant protection products where environmental or toxicological impacts of the product may occur even with concentrations below the present limit values for water intended for human consumption.

- * Codes of good agricultural and forestry practice for use of plant protection products and for use of biocidal products should be drawn up and implemented. They should address protection of all fresh water and as appropriate take into account local and sectoral requirements.
- * Directive 91/414⁽¹⁸⁾ introduced a Community definition of integrated control, which could form the basis for further development of codes of good practice and which could be used as an important element in the establishment of reduction programmes.
- * Supplementing Directive 91/414, some Member States have established programmes for reduction of use of plant protection products. Drawing on experience gained, all possibilities should be explored by Member States in order to secure the overall objectives of prevention of pollution of groundwater. Possible programmes could include inter alia integrated control aiming at strict demand oriented application, vocational training, certificates for professional users, record keeping of applications, a network of authorized instructors, and voluntary or obligatory testing and inspection of equipment combined with full or partial reimbursement of or subsidies for costs of testing. Progress could be followed on an annual basis through the results of monitoring of groundwater quality and indicators for changes in product use.
- * Until an active substance has been introduced into the Community system of assessment and reassessment of active substances of Directive 91/414/EEC, Member States should explore possibilities for such assessment and re-assessment of active substances and products of potential risk to groundwater. Authorization of products with active substances found in groundwater with values exceeding limit values for drinking water in spite of having been used properly should be reviewed. Member States should consider applying the uniform principles also for such products.
- * Use of economic instruments as incentives for good house-keeping, rational use or even renunciation of use could be explored. Such instruments already exist or are being considered for introduction in some Member States, inter alia Sweden, The Netherlands, Denmark and Austria.

Action at Community level

- * The Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market should provide the legal framework for authorizations taking into account inter alia water protection. Annex VI of Council Directive 91/414 introducing uniform principles for the evaluation of plant protection products will be established through the adoption of a specific Council Directive.
- * Environmental standards and regulations for plant protection products and biocidal products should be developed further. Regulations on plant protection products should be designed in such a way that for normal and proper use the products or residues hereof should not occur in groundwater in concentrations exceeding requirements for water intended for human consumption and/or having harmful effects on ecosystems receiving such groundwater.
- * A long term scheme should be implemented for assessment and reassessment of active substances for use in plant protection products, with Council Directive 91/414 providing the legislative framework for a Community system for assessment of active substances and plant protection products and for re-assessment of such active substances and products on a 10 year basis. Work is under way for the initial assessment of active substances for inclusion in the Community system in Annex I of Directive 91/414. For the purpose of protection of groundwater, plant protection products with high water

⁽¹⁸⁾ OJ No L 230, 19.8.1991.

solubility, mobility, persistency, and bioaccumulative characteristics should be given a particular priority.

- * Further development of an integrated strategy for sustainable use of plant protection products, including more detailed provisions on the distribution and sales of plant protection products and restrictions of use and substitution of the most dangerous plant protection products pursuing the objectives established by the fifth environment action programme. Similar objectives should be pursued for use of biocidal products.

ACTION LINE 3.4. ENVIRONMENTAL CHALLENGES FROM USE OF SEWAGE SLUDGE

Following the establishing of treatment plants for urban waste water sewage sludge is produced in increasing amounts. In order to bring the contents of the sludge to good use or to dispose of it, a practice of applying sewage sludge on agricultural land has developed in some Member States. In this way the contents of nitrate and phosphate may be recycled. Control of pollution from urban waste water, septic tanks, leaking sewers etc is dealt with in action line 4 on point sources.

Sewage sludge may contain high concentrations of dangerous substances and heavy metals, and the concentration of nitrate and phosphate varies considerably for different types of sludge, thereby making the sludge less reliable than chemical or organic fertilizers. Inappropriate application may create problems with pollution of groundwater and surface water and of soil similar to the problems encountered with use of other fertilizers. Problems of hygiene may arise thereby potentially threatening groundwater and surface water as well as the quality of the crops themselves. Smell also could pose problems e.g. near built-up areas and in public forests.

Use in agriculture is regulated by Council Directive 86/278/EEC⁽¹⁹⁾ on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture. The directive lays down minimum limit values for content of heavy metals and periods of application for the purpose of hygienic safeguards. Some Member States have laid down more strict limit values than the directive and limit values have been fixed for additional dangerous compounds or heavy metals. Some Member States also require that spreading of sludge on land must serve a purpose such as fertilisation or soil improvement and not simply be used as way of disposing of waste.

Use outside agriculture is not at present regulated at Community level.

Objective

The objective is to avoid negative effects on groundwater from the use of sewage sludge in order to allow continued or increased recycling of organic matter in sludge on agricultural and other appropriate land.

Action at Member State level

- * Possibilities for further environmentally sound use of sludge on land should be examined.
- * A good and constant quality of sludge not exceeding the limit values for heavy metals and other contaminants should be ensured, thus allowing for the use of sewage sludge on agricultural land for improving the texture of the soil as well as a fertilizer. This should make recycling of nutrients possible in an environmentally sound way. Nutrients in the sludge should be accounted for in the overall nutrient balance.

⁽¹⁹⁾ OJ No L 181, 4.7.1986.

- * Limit values and standards for content of polluting substances and nutrients in sewage sludge should be reviewed as appropriate with a view to development of standards for other relevant compounds where such are not presently established.
- * General rules should be established for spreading of sludge, including appropriate restrictions on application within protection zones with groundwater resources intended for drinking water purposes.

Action at Community level

- * Community legislation should be reviewed with a view to establishing and/or implementing measures to minimize discharge of dangerous substances and heavy metals into sewage systems from households and industrial facilities.
- * Limit values of Directive 86/278/EEC on use of sewage sludge should be reviewed with a view to scientific updating.
- * Standards for characterization methods for sewage sludge should be developed. The Commission should follow the studies initiated by the European Standardization Organization, CEN, scheduled to be completed by 1998.

ACTION LINE 4. CONTROL OF POINT SOURCE POLLUTION FROM ACTIVITIES AND FACILITIES WHICH MAY AFFECT GROUNDWATER QUALITY

A point source is a source of pollution with a rather limited and well defined spatial extension. It is often of a concentrated nature with a high intensity of pollution per unit area. Point sources are by their nature in principle traceable to specific activities and installations handling the polluting substances, though in practice this often proves difficult when possible point sources are many or interact. Point source pollution in principle is suited for measures at the source to avert or limit spreading of the polluting substances or containment of damage to groundwater.

Activities which may produce or induce pollution by discharges and emissions are extremely diverse and numerous. Of particular concern are: installations handling substances which are potential pollutants; distribution and storage systems for oil and petrol and buried tanks for heating oil; storage installations for industrial hazardous products, agrochemicals and manure from intensive livestock units; activities discharging effluent into the environment of a liquid or solid nature (e.g. dairy industry, slaughter houses and paper mills); urban facilities discharging into the environment of a liquid or solid nature such as septic tanks, leaking sewage system etc; landfills for urban and hazardous waste; graveyards and animal burial sites; gravel pits, mining activities in use or abandoned, including tips, tailings and dewatering; abandoned industrial sites and other contaminated land. Activities and installations in function or abandoned are, especially in urban areas and industrial centres, often located on top of aquifers where a considerable deterioration of groundwater quality may already have happened. Emissions to the air of nitrogen oxides, sulphur dioxide and other substances give rise to long-range transboundary air pollution when deposition takes place via precipitation, causing acidification and eutrophication of fresh water.

Objectives

The objective is to ensure a high level of protection from activities and installations producing liquid and solid effluent and/or representing a potential risk of accidental pollution of groundwater resources. A general and high level of protection of all groundwater should be the rule, with specific rules and particular attention paid to additional needs for protection when required by extraordinarily high risks, sensitivity and/or vulnerability, or by the need for protection of important groundwater. In order to avoid or reduce the risk of pollution of fresh water via precipitation the objective is to ensure a reduction of emissions to the air of substances causing eutrophication and/or acidification.

For existing contaminated sites and areas with polluted groundwater or risks of pollution, such as old abandoned landfills and mines, or industrial grounds, the objective is to ensure decommissioning, containment or reclamation where appropriate of such contaminated sites and groundwater.

Action at Member State level

- * The proposed Council Directive on Integrated Pollution Prevention and Control⁽²⁰⁾ should eventually provide the overall principles at Community level for the authorization of major installations and activities (IPPC's), including considerations for the protection of groundwater against point source pollution. Major efforts have to be made to implement and further develop the principles of the integrated pollution prevention and control approach.
- * Protection of groundwater against pollution from smaller ("non-IPPC's") installations and activities that may act as point sources of pollution should equally be ensured. Authorization should be operating in a transparent, rational and predictable way. Overlapping and duplication should be avoided.
- * An authorization system should cover any point source from installations and activities that may negatively affect groundwater quality by direct or indirect discharge. For reasons of proportionality it should be noted that the existing Groundwater Directive excludes from this requirement "discharges which are found by the competent authority of the Member State concerned to contain substances ... in a quantity and concentration so small as to obviate any present or future danger of deterioration in the quality of the receiving groundwater". The authorization system also should be directed towards potentially polluting point source activities such as industrial and urban installations, landfills, distribution and storage systems for oil, petrol and other substances, and mining activities. Permits for discharges should take into account possible effects on aquifers, and permits for installations should request the best design for groundwater protection. Authorizations granted under this system should take into account also the need for decommissioning such installations and activities in such a manner that groundwater is protected.
- * Leaching, spills, polluted run-off water etc should preferably be taken care of through careful designing and planning of facilities. Safeguarding of the environment could also be secured by establishing rules for certification of types of installations, oil tanks, etc. In an integrated management system such safeguarding should be an integral part of the general planning and localization system.
- * Possibilities for encouraging development and use of environmentally friendly production processes and procedures such as promotion of best available techniques, clean technology and water saving devices etc should be explored.
- * An inventory of potential point sources as complete as possible should be drawn up and updated on a step by step basis and according to priorities. The inventory should include urban and industrial facilities and installations, industrial and other contaminated land, landfills, and gravel pits, mines and quarries etc. Small facilities such as septic tanks may be exempted if their environmental impact is negligible or unless they are located within sensitive zones.
- * Based on the inventory, priorities should be set and decommissioning plans should be implemented for abandoned installations and sites e.g. contaminated industrial land, mines, underground storage depots, landfills, old wells etc according to level of risk, practicability and realistic timescales. Where appropriate the necessary containment and rectification measures should be taken.

⁽²⁰⁾ OJ No C 311, 17.11.1993.

- * Guidelines and procedures for decommissioning of installations should be provided for all new installations and sites.
- * Prohibition of direct discharge into aquifers of hazardous substances, including urban and industrial waste water, polluted run-off water etc must be made.
- * Compulsory treatment of all urban and domestic waste water as prescribed by the Council Directive 91/271/EEC on urban waste water treatment thus speeding up the implementation of the directive. A priority plan within the schedule given by the directive could be drawn up and monitoring of benefits of the treatment should take place.
- * For use of septic tanks, a sufficient capacity and a system for regular emptying should be ensured. Waste should be brought to a treatment plant where possible, or disposed of in an environmentally safe way. Establishment of standards for best available techniques equipment could be explored.
- * Remedial action should be taken towards leaking sewers in order to avoid pollution of groundwater.
- * Possibilities for using economic instruments such as, as appropriate, charges and fiscal measures as an incentive to internalize environmental costs to reduce the amounts of pollution from discharge of effluent as well as possibilities for the use of voluntary agreements should be reviewed.

Action at Community level

- * The drawing up in collaboration with and placing at the disposal of Member States of comparable data on the feasibility and effectiveness of prohibiting discharge of dangerous substances into groundwater.
- * Work on general provisions and standards for safety equipment and procedures for installations handling and storing substances harmful to water in particular with a view to use of best available techniques should be developed. As different levels in standards, provisions and especially the use of economic instruments to internalize environmental costs may lead to distortion of competition between Member States, introduction of such elements should be considered at Community level consistent with the relevant provisions of the other Community policies concerned.
- * Eutrophication and acidification from atmospheric deposition should be regulated through international agreement. Development, review and amendment as appropriate of international conventions and protocols on long-range transboundary air pollutants should be pursued by the Community. Appropriate implementation of such agreements should be ensured in Community legislation and policies. Air quality objectives and emission standards in Community and Member State legislation should take into consideration the effects on fresh water quality of emissions to air of substances causing eutrophication and/or acidification. This applies not least to exhaust from traffic.

A significant body of legislation already exists for control of emissions from mobile sources and in particular of car emissions. The Commission is preparing proposals for legislation which will further tighten such emission standards. Proposals concerning passenger cars, light duty vehicles and heavy duty vehicles are expected to be adopted by the Commission in the near future.

The Commission further will develop Daughter Directives on specific air pollutants as a follow up to the proposal for an Air Quality Framework Directive⁽²¹⁾ currently under negotiation in Council and Parliament. A proposal on control of nitrogen dioxide will be presented at the end of 1996.

As a follow up to the Council's request of December 1995⁽²²⁾ the Commission is presently developing a Community strategy for control of acidification. The Commission intends to present this strategy to Council in the beginning of 1997.

PART 2. IMPLEMENTATION OF THE ACTION PROGRAMME

The rôle of the Commission

- * In order to ensure common water management principles the Commission intends to present a proposal for a Framework Directive on Water Resources in which basic provisions for management of groundwater will be included. The Framework Directive will include provisions on protection of groundwater and thus take over the provisions of the present Groundwater Directive as explained in the Communication on European Water Policy. The Framework Directive will also introduce a requirement for control of abstraction of fresh water. The Commission intends to present the proposal for the Framework Directive on Water Resources at the end of 1996.
- * The Commission should review and where appropriate consider adaptation of existing Community legislation in line with the objectives of this action programme.
- * The Commission should ensure a further integration of water policy into other Community policies where this is necessary for fresh water protection and management. Areas such as agriculture and regional development have a profound impact as well as dependence on availability and quality of groundwater resources and the further integration into the Common Agriculture Policy and the Regional Policy are particularly important for achieving the objective of sustainable fresh water protection and management. Following from the general outline set out by the Fifth Environment Programme, "Towards Sustainability", and further specified in the recent Commission proposal for a Review of the Fifth Action Programme, the Commission will pursue the further integration of water policy into other Community policies where this is necessary for fresh water protection and management. A number of options for such integration in particular into agriculture policy to be considered by the Commission are presented in this action programme. The importance of research and development to water management and protection has been recognized by the Community research programme "Environment and Climate 1994-1998", which devotes one of its research areas to improvement and rationalisation of the future management of water resources. Water has also been identified as a priority area for additional concentration of the Community research effort under the Commission's proposal for supplementary funding of the fourth RTD Framework Programme.⁽²³⁾ Additionally, a special Task Force on Environment and Water has been created in 1996.
- * Progress with implementation of Community water legislation should be followed closely, notably with the Directive on Nitrates from diffuse sources and the Urban Waste Water Treatment Directive, in order to secure their full implementation and functioning.
- * The Commission in close cooperation with Member States should undertake the development and use of economic instruments, voluntary agreements and other non-legal instruments as well as research and development of less water consuming technologies

⁽²¹⁾ OJ No C 59, 28.2.1996.

⁽²²⁾ Council Conclusions on Acidification, 1895th Council Meeting - Environment - 18.12.1995.

⁽²³⁾ COM(96) 12 final.

and practices and various research inter alia for mapping, monitoring, definitions of groundwater vulnerability.

- * The Commission should serve as a focal point for the development of guidelines and recommendations e.g. for drawing up codes of good practices and assisting in exchange of information and experience as appropriate.

National Action Programmes

- * Member States should establish their own national action programmes taking full account of national conditions.
- * National action programmes should be based on the following principles: (1) Integrated planning and management should be developed, (2) Rules for quantitative maintenance of groundwater resources, including where appropriate a regulatory framework for abstraction of fresh water should be established, (3) Measures to protect groundwater against pollution from diffuse sources, including codes of good practices and indications of longer term measures to secure further integration of water protection and management notably into agricultural practices should be taken, (4) Instruments for control of point source emissions and discharges, including a regulatory framework should be further developed. Also incentives for development of environmentally friendly production processes and procedures are important.
- * National action programmes should be developed with a view to a long-term compatibility with a river basin management approach.
- * National action programmes should indicate how and when measures will be undertaken and with a view to questions of a transboundary nature programmes should indicate which measures will be undertaken at a national level and which measures will require addressing within the wider perspective of a transboundary river basin management.

National action programmes should contain the following elements:

- Mapping and characterization of groundwater systems.
- Monitoring to provide information on development of quantitative and qualitative aspects of groundwater resources.
- Reporting schemes to follow progress in mapping and monitoring.
- Review of the water sector and adjustment of administrative structures and legislation, including instruments to assess future trends in demand for fresh water.
- Integration of groundwater protection and management into spatial planning, including establishment of zoning of vulnerable and other important areas.
- Drawing up inventories of point sources and polluted groundwater and soil, and setting priorities for decommissioning, containment, and rectification of installations, polluted sites, and groundwater.
- A comprehensive regulatory system and rules for fresh water abstraction and for activities and facilities that may lead to pollution of groundwater.
- Encouragement of development and use of environmentally friendly production processes and procedures such as best available techniques, clean technology and water saving devices, etc.
- Review and implementation of strategies and measures to control pollution from diffuse sources, including the establishment of codes of good practice.

- Introduction of measures to promote water saving, reuse, and sustainable use of fresh water resources, and where appropriate reduction of consumption of water.
- Possibilities for use of economic instruments, including taxes and levies.
- Plans for information and involvement of the public, and in particular of specific user groups when drawing up and implementing national action programmes.
- Timetable for the implementation of the national action programme.

PART 3. REVIEW OF PROGRESS WITH IMPLEMENTATION OF THE ACTION PROGRAMME

Review of progress with implementation

- * In practical terms, implementation should be seen as an on-going process with initiatives being taken on a short, medium, and long term basis depending on their nature, role and importance. A schedule for implementation of national action programmes should be laid down as soon as possible. The types of action needed will vary from Member State to Member State depending on the environmental state of groundwaters, on regional and local conditions, on existing legal and administrative structures, and on measures already taken or decided.
- * Member States as soon as possible should draw up national action programmes and decide upon target years for the ensuing actions to be laid down as appropriate according to the national, regional and local situation but with the year 2000 as an overall target year for a functioning national action programme. Appraisal of action taken, review of time schedules, and appropriate adjustments should be foreseen and appropriate check points laid down in order to follow progress with the programmes.
- * Some measures will reach beyond or be taken after the year 2000. Such follow-up measures for securing the long term strategy should be clearly indicated and accompanied by an appropriate time schedule. Short term actions such as completion of mapping, of monitoring, review and improvement of administrative and legislative structures and performance of the water sector, designation of vulnerable and other important protection zones, establishment of authorization systems, and promotion of water saving should be launched as first steps.
- * Actions on the longer term require more preparation or depend on assessment of the groundwater situation based on results of mapping and monitoring etc. This applies e.g. to integration of general fresh water protection into spatial planning and land use, the setting up of cross-sectoral administrative structures, to drawing up inventories of point sources, and to setting priorities for decommissioning and restoration etc. Execution of decommissioning and restoration work would be tasks reaching into the 21st century in a prioritized and staged approach.
- * Review of progress and achievements of Member States should take place at regular intervals. The year 2000 could be an appropriate target year for the first overall appraisal of progress. Member States should report to the Commission on progress with the national action programmes in order to facilitate sharing of experience.
- * Review of the overall progress in the Community should take place at appropriate intervals. Based on the assessment of progress by Member States and on reports on the environmental state of groundwater from the European Environment Agency and Eurostat, the first review of progress by the Commission should follow closely after the appraisal in the year 2000 by Member States.

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ISSN 0254-1475

COM(96) 315 final

DOCUMENTS

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14 15 03

Catalogue number : CB-CO-96-349-EN-C

ISBN 92-78-06852-7

Office for Official Publications of the European Communities

L-2985 Luxembourg