

EV5V-CT94-0368

WATER SUPPLY AUTHORITIES IN EUROPE PREVENTING AGRICULTURAL WATER POLLUTION

SUMMARY FINAL REPORT
JUNE 1997

Key words : policy network approach; agricultural pollution; drinking water resources; fertilisers; water

RESEARCH TEAM :

Coordinator :

Prof. dr. J.Th.A. Bressers

Center for Clean Technology and Environmental
Policy,
University of Twente
P.O.Box 217, NL 7500 AE Enschede,
The Netherlands
Phone: +31-53-4893203
Fax: +31-53-4894850
E-mail: J.T.A.Bressers@bsk.utwente.nl

Project manager

Dr. G.J.I. Schrama

Center for Clean Technology and Environmental
Policy,
University of Twente
P.O.Box 217, NL 7500 AE Enschede,
The Netherlands
Phone: +31-53-4893208
Fax: +31-53-4894850
E-mail: G.J.I.Schrama@cstm.utwente.nl

Partners :

Prof. dr. J.J. Richardson

Department of Government,
University of Essex
Wivenhoe Park, Colchester, Essex CO4 3SQ,
United Kingdom
Phone: +44-1206-872499
Fax: +44-1206-873598
E-mail: jjrich@essex.ac.uk

Prof. dr. K.I. Hanf

Nijenrode Business University
Straatweg 25, NL 3625 BG Breukelen,
The Netherlands
Phone: +31-3462-91542
Fax: +31-3462-91296
E-mail: HANF@BSK.FSW.EUR.NL

Dpl.-Ing. R.A. Kraemer

Ecologic gGmbH
Haus der Demokratie, Friedrichstrasse 165,
D-10117 Berlin,
Phone: +49-30-22651135
Fax: +49-30-22651136
E-mail: Kraemer@Ecologic.de

I. OBJECTIVES

The central research questions were:

1. To what extent can water supply authorities in Europe act as environmental regulators in order to prevent agricultural pollution of drinking water resources?
2. By which means can the European and the national environmental policy makers strengthen the control capacity of water supply authorities in this regard?
3. What lessons can be learned for environmental policy makers who want to affect the behaviour of target groups by means of indirect regulation and 'network management'?

'Water supply authorities' are the organisations which are responsible for the supply of drinking water. Confronted with increasing scarcity of unpolluted resources, and high standards based on EU Directives, these organisations are forced to negotiate with polluters. In the case of agricultural pollution, often financial compensations are paid to farmers in exchange for their cooperation. The aim of this project was to investigate by which means environmental policy makers can strengthen the 'control capacity' of water suppliers in their relation to farmers in order to affect the behaviour of farmers indirectly.

II. METHODOLOGY

The project involved a comparative study of three EU Member States, with special attention to the EU context. These countries were Germany, The Netherlands, and Great Britain. The project made it possible to learn from the experiences of water supply authorities in these countries in preventing agricultural water pollution. However, the problems that water supply authorities have with preventing agricultural water pollution are not specific for these countries. In most European countries water suppliers are faced with the same problems. Therefore this research project, detailed case studies in three selected Member States, are of relevance for all EU Member States and the Union as a whole.

The policy network approach was used as the theoretical framework. In the national case studies the water supply and agricultural sectors and their interlinkages and dependencies were analysed in terms of 'policy communities' and 'issue networks'). The concept of 'control capacity', the dependent variable in the study, was analysed from the perspective of the distribution of critical resources.

The case study methodology has been used. The comparative analysis was conducted at the level of the Member States involved. Although each national team had selected certain regions for doing the actual interviewing with key informants in the policy network, the results were representative at the national level.

III. MAIN RESULTS

III.1 Nature of the problem

The overall image is one of an imminent rather than an acute problem. However it is recognised by the water supply sectors as a serious problem that deserves adequate attention in order to avert future catastrophes, if not in the environmental than in the financial sense. The paradox is that even successful prevention of new polluting inputs may not solve the problem of historical pollution of aquifers emerging in wells in the coming years. This paradox applies mainly to ground water and less to surface water.

Diffuse source pollution of drinking water resources is not only of agricultural origin. In Great Britain and The Netherlands the water supply sector has dealt successfully with municipalities and the national railways. Industrial pollution stems mainly from point sources, and is often a big problem too.

III.1.1 Policy issues, policy networks, and policy styles

Agricultural sector: The three EU Member States offered some fine examples of disintegrating policy communities. All of them have known true **agricultural policy communities** with 'iron triangles' at their cores for a long time. Developments within the agricultural sector - with the reconstruction of the EU agricultural policy, and the pressure evoked by the general concern about agriculture's impact on the environment as major driving forces - have eroded the bases of the policy communities.

The interesting question is whether 'old' disintegrating policy communities are similar to 'new' issue networks concerning the typical policy styles. In The Netherlands and the UK alike, there is a strong external pressure from

the European Union to use more direct regulation, now the old ways of the (former) agricultural policy communities have failed in solving the problem of too high nitrate concentrations in the ground water. Perhaps The Netherlands are the most far off from compliance with EU standards, and the Dutch Government is most concerned (although the EU directive as such plays no significant role in the publicity about the manure policy). Changes in policy styles are not only towards more regulation (away from ineffective self-regulation), but the consensus base is also diminishing. The big problem is that a new policy must be implemented and enforced within a sector that is accustomed to a consensual approach by tradition, and where support for the new policy is lacking, at least in what the most mobilised parts of the sector are concerned. In The Netherlands in particular, it remains to be seen whether the new top-down approach is feasible, given the resistance and obstruction by certain farmers groups.

Water policy networks. The issue of agricultural water pollution lies in the overlap of two major policy fields: agriculture and water management. The agricultural sector is almost the archetype of a policy community, while the water management sector also has comprehensive policy networks in the countries under study. In Germany and Great Britain, the water supply sector is more or less part of a larger water management sector, which is organised at the national or federal level in all kinds of discussion fora dealing with water pollution - not only from agricultural sources - and the affected interests. Such fora are less manifest in The Netherlands, where the emphasis is on the regional level. Here the water supply sector is relatively well organised around the issue of agricultural pollution of drinking water resources.

Conclusion. As the subject of this study concerns a problem of affecting farmers' behaviour, the efforts of policy makers are focused on agricultural policy and the corresponding policy networks, notably in the United Kingdom and The Netherlands. In these countries the traditional consensual policy styles have changed towards more regulatory ones, due to external pressures exercised by environmental interests and the need for implementation of EU directives. As a result the characters of the policy networks have changed too, and they are no longer the tight policy communities they used to be. In Germany the policy on protection of drinking water resources from agricultural pollution has been developed within the water management network. This policy certainly brings restrictions to farmers' behaviour, but it did not affect the agricultural policy or the nature of the agricultural policy network.

III.1.2 National policy and choice of policy instruments

There are no specific national policies concerning the issue of protection of drinking water resources. National policies concerning agricultural pollution in general have been developed in The Netherlands and the UK, while the situation in Germany is differentiated, as this concerns the authority of the individual States. Introduction of new and more stringent regulations of manure practices, evoked by the need of implementation of EU directives, are disrupting the traditional consensual policies, most significantly in The Netherlands. Pesticides policies have been characterised by indirect regulation of pesticides use through regulation of the market and by harmonisation all over Europe.

In general the choice of the policy instruments matches the policy network characteristics. To the extent that the traditional policy communities are still functioning, communicative instruments are predominant. The typical policy instruments mix involves information exchange to show farmers sustainable alternatives for the prevailing agricultural practices, and to convince them that these will have no negative effects on their incomes. These communicative instruments are , often supported by economic ones with positive stimuli, such as subsidies for investment or transition costs. The policy instruments applied contain usually no explicit moral appeals to farmers, although the British system of Codes of Good Agricultural Practice can be conceived as a way to institutionalise a moderate form of moral appealing.

In all countries the most powerful tool created at the national level seems to be the possibility of establishing some kind of ground water protection zones. In The Netherlands and Germany this option exists for a relatively long time, the authority is delegated to the Provinces and the States, where it has been applied on a large scale. In both countries it involved mandatory additional restrictions to farmers. In the UK it concerns more recent measures, not widely applied, originally on voluntary and only later on a mandatory base, while the executive power has been kept at the national level, within the Ministry of Agriculture.

Farmers in the groundwater protection zones are entitled to financial compensation to the extent that they are subject to more restrictive regulation than other farmers in the country. In Germany the compensation payment schemes still involve large sums of money. In The Netherlands the differentiation in legal standards was removed out in 1995, and so was the right to compensation. In both cases the money was extracted from the water supply companies, and finally from their customers. In the UK only the first cohort of pilot projects was supported by a

subsidy scheme. Later on additional legal restrictions were imposed without compensation.

The national policies reviewed are contributing to the protection of drinking water resources in many ways, but the ground water protection zones are the only direct contributions to the control capacity of the water supply sector.

III.1.3. Actual control capacity of the water supply sector

The basic research question concerned the control capacity of the water supply sector. The latter is the designation used for the water supply industry and the regional water authorities. Control capacity is the entirety of:

- the mission and orientation of the organisations of the water supply sector;
- the available organisational resources;
- the selected steering strategies.

The situations in the three EU Member States under research show remarkable similarities. Although no alarming situations have been found, the overall picture is that the water supply industry has to comply with severe preconditions concerning their output (drinking water), while they have hardly any control over the quality of their input (raw water). Everywhere, the control capacity exercised at the regional level by the water supply sector is limited. This includes also the water management authorities (the National River Authorities (NRA), the provinces and the States).

Mission and orientation In all cases, the water supply industry, together with the rest of the water supply sector, endorses the principle of pollution prevention, but they do not consider protection of drinking water resources as part of their core mission. It is a rational choice for them to get actively involved in the protection of drinking water resources, only under certain conditions and up to a certain level. In The Netherlands some water supply companies are remarkably pro-active in developing stimulation programmes, more than elsewhere. This can be explained by the seriousness of the threat of nitrate contamination, and - compared to the UK - by differences in the institutional context of the water supply industry.

Available resources and their application. The problem is not that water supply companies are short of **financial resources**. As far as there are feasible options for investments in reductions of agricultural pollution, they are considering such investments in terms of economic returns. And their involvement has to be of a temporary nature: they rather invest in bringing about transitions of agricultural practices than in structural support of less polluting practices.

The most relevant **legal authority** for imposing and enforcing additional restrictions on farmers within the water catchment areas are part of the competencies of the water management authorities (NRA, the provinces and the States). Water supply companies do not have legal authority, and they do not want to have them. In certain cases, however, they have acquired control over land use by buying pieces of land in endangered zones (in Germany and The Netherlands).

The Dutch case study shows the best examples of concerted action by all members of the water supply sector, contributing legal authority as well as financial resources and organisational capacity to preventive activities aimed at farmers. Many of these activities originate from the negotiations about the compensation payments.

Other relevant resources are **expertise** of farming practices, including sustainable alternatives, acquired **confidence** in the eyes of farming communities, and **information** about the state of the water catchment areas. All case studies show several examples of, predominantly small scale, prevention programmes initiated by the water supply sector with reasonable success in terms of farmers cooperation.

Size is a relevant resource too, for the scale of the water supply companies does make a difference. Larger companies are able to build up and employ sufficient resources (financial, organisational, legitimacy) to actively deal with the issue. In The Netherlands the larger water companies have taken the lead in dealing with agricultural pollution within their catchment areas.

Strategies adopted by the water supply sector. To the extent that the water supply sector is engaged in preventive activities, they follow in all of the three cases a consensual approach which involves direct contacts with the local and regional farming communities. Cooperation of the farmers is acquired by persuasion and to a lesser extent by material stimuli. (The most important material stimuli are, of course, the compensation payments, but this is no strategic choice of the water supply sector, as the farmers are entitled to it according to the national legislation on groundwater protection zones in Germany and The Netherlands.)

There is a growing distinction between the consensual approach of the water supply sector at the regional and local level and the national trends towards a more regulative policy style concerning agricultural pollution at the national level in all of the three countries. In so far as the national policies are effective, this contributes to the protection of the drinking water resources, but at the same time the legitimacy of environmental policy to the farmers and their confidence in all agencies involved, including the water supply sector, is under pressure. This may have a negative effect on their control capacity.

III.1.4 Conclusions and recommendations

The issue of agricultural pollution of drinking water resources as reported here can be characterised as a complex problem with different levels involved, which cannot be considered in isolation:

- The impact of the **European Union** is manifest in almost every aspect. Although the main conclusion of the EU case study was that there is very little that the European Union can do directly in dealing with the present problem. However, the European Union has a very important role to play in generating resources and action opportunities for other actors, in the form of legislation and regulations that define the objectives of water quality and set the parameters within which the various groups of actors must operate.
- At the **national level** the issue is part of the more comprehensive issue of agricultural pollution in general. Member States are still struggling with the implementation of EU Directives concerning water quality standards, while the policy styles towards the agricultural sector are getting more imposing and regulative, and the traditional agricultural policy networks are under heavy pressure (if they have not been already largely disintegrated).
- At the **regional and local level**, especially where agricultural pollution has damaged drinking water resources most, many successful - but chiefly small scale - initiatives have been developed by the water supply sector.

Interrelatedness. The case studies show that rather frequent and direct contacts between the water supply sector and the agricultural sector (“interrelatedness”) are an important condition for successfully influencing agricultural practices. The attitude chosen by all parties involved is predominantly rational, oriented at their own (economic) interests. The traditional policy communities at the national level are under heavy pressure, and a joint approach based on common interests and shared perceptions (“mutual commitment”) is usually not feasible. In such situations - high levels of interrelatedness and low levels of mutual commitment - the appropriate policy instruments are:

- juridical instruments: restrictive, but based on consensus with the actors in the policy field;
- communicative instruments: information provision without a moral appeal;
- economical instruments: enlarging involving positive incentives as well as restrictive ones.

Credible legal regulation. Apart from the issue network conditions of direct contacts (interrelatedness) at the regional or local level the project demonstrated the crucial role of credible legal regulation, which is the basic driving force for nearly all actors involved, from the agricultural sector as well as from the water supply sector. Indirect steering through the water supply sector (network management) may be an appropriate way to exercise (additional) control over the agricultural sector - especially in those cases where drinking water resources are threatened - but government should keep on performing its control function at some distance and not release the matter altogether.

Legislation

A recurrent theme throughout the whole research was the importance of legal regulation. Legal standards - concerning drinking water quality, and also ground and surface waters - are virtually the only substantial benchmarks for all parties involved. The research showed also the importance of credible legal regulation: acceptance of the legal standards by policy subjects, and consequent implementation of these standards followed by consequent monitoring and enforcement. These matters are not inconsistent with a policy style aimed at consensus and self-regulation, they are in fact preconditions to its effective application. In the project, notably the EU legal standards on nitrates and pesticides are spent to be performing this function. Although the content of these standards is disputed, they function as a rather unequivocal benchmark after they have been established (and with respect to the debates on these standards, it seems that where these debates are most fierce, compliance with these standards is taken most seriously.)

European Union. In the field of legal regulation by the European Union much is set in motion already. As mentioned, the importance of clear legal standards is demonstrated by the case studies. Generally speaking

reinforcement of the control capacity of the water supply sector should not be sought by more regulation, but rather through implementation of prevailing EU Directives by the individual Member States.

In accordance with the principle of subsidiarity, there is much sense in leaving substantial leeway to the individual Member States for specific national and perhaps even regional interpretation of the EU policy and legal regulation. Too rigid restriction imposed upon the Member States will harm the policy effectiveness, especially where the governmental relationships with the agricultural sector are problematic and alternatives to the former policy community have to be created.

With respect to new EU regulation, one exception may be made for the establishment of zones with special legal status, such as the groundwater protection zones in The Netherlands and Germany. Examination of the sufficiency of the legal grounds of these very effective policy instruments in EU law and their applicability in all Member States may be considered¹

Finally, the credibility and acceptance of EU legal regulation requires ongoing research into their scientific foundations, such as drinking water quality standards, the ecological effects of nitrates and pesticides, especially where these standards are criticised because of their allegedly arbitrary nature.

National level. With respect to indirect steering through intermediates, such as the water supply sector, national governments must be aware of the need to maintain the credibility of legal regulation through consequent monitoring and enforcement, in particular of farming practices. Regional water authorities must be encouraged and supported in this respect by providing the required organisational and financial capacity.

With respect to the water supply companies, it makes little sense to give them some sort of legal authority over farmers, and they are not asking for it. Nevertheless, the project highlights their contribution to the success cases of direct contacts with farmers. National governments must be aware of the full (potential) role of the water supply companies and can stimulate this basically in two ways. (1) To make sure that the traditional technical orientation - which induces them to take technical measures when confronted with agricultural pollution - is strengthened by a complementary preventive orientation that induces them to undertake attempts to influence farming practices. (2) To lift formal barriers for water supply companies to enact preventive actions and to apply their organisational resources for this purpose, including the option of financial incentives for individual farmers through onetime or temporary support schemes.

Another issue is the distribution of the “burden of legal compliance” on the parties involved, which is not properly balanced. Water supply companies on the one hand are no polluters themselves, but they are under close scrutiny for complying with drinking water quality standards, which induces them to spend great efforts to secure legal compliance. Farmers, on the other hand, are polluting drinking water resources, but it is not easy to make them give account for the consequences of their actions. The most extreme form would be civil liability, for instance through legal proceedings started by water supply companies that suffer (economic) damage. The problem is that it is almost impossible to establish which individual farmer is responsible for which particular damage. A less extreme form, but still not very feasible, is to make farmers responsible for the groundwater quality of their own properties, or else a collective responsibility for groups of farmers within particular areas. The prevailing approach of regulating the amounts of manure spread on the land may not be related directly and unequivocally to the resulting environmental damage, but it is one of the few means for getting a legal grip on individual farming practices.

Economic incentives

Positive economic incentives are most effective for influencing farmers behaviour, but the water supply sector is - rightly - opposed to permanent schemes of compensations or rewards for - self-imposed? - restrictions on farming practices. Apart from the issue of the sufficiency of the financial resources - either of the governmental agencies involved or of the water supply companies - these economic incentives may be incompatible with the Polluter Pays Principle. Therefore, positive economic incentives to farmers must not have a permanent nature, and be directed at the stage of transition, such as training, advice, investment costs and - if necessary - temporary income supplements, to take away some barriers for individual farmers who are willing to chance to more sustainable farming methods.

1 In agreement with the personal opinion of an COPA officer expressed in the EU case study.

Negative economic incentives are applied in various forms throughout the European Union, notably levies on pesticides use or manure surpluses. The often very modest pesticides levies may serve as transition to the means for registration schemes, but they have no demonstrated effects on pesticides use. The effects of levies on manure surpluses, as applied in The Netherlands, are also unclear, just as the implementation of the measure, including the system of manure bookkeeping, is rather troublesome.

Communicative steering

Communicative steering can be undertaken by governments, regional water authorities, or water supply companies. Since several studies have shown that differences in farming practices - notably in the amounts of pesticides used - are not only related to the types of crop or to differences in natural (i.e. geological, hydrological, climatic, etc.) conditions, it makes much sense to address individual farmers on this point.

Communicative steering can be aimed at: (1) furnishing knowledge about (more) sustainable agricultural methods, such as effective pesticides use (pesticides leaching into groundwater are also economic losses to farmers). (2) increasing transparency of individual farming practices, for instance through a system of “best management/agricultural practices,” to which farmers can commit themselves.

European Union. The European Union may consider to develop such a system that is attuned at different types of crop, different natural conditions, and perhaps certain national factors. By committing themselves to these standards individual farmers will be able to demonstrate to legal authorities, water supply companies, and to other stakeholders that theirs are sustainable farming practices. Such a system of codification can be complemented by a system of certification (analogous to EMAS). Certificated farmers can recommend their products at auctions and to retailers and consumers by attaching labels to it (which gives them certain competitive advantages over to uncertificated farmers and competitors from outside the EU). The UK already has a system of “Codes of Good Agricultural Practice” (without certification) which is very helpful in the relation between farmers and regulators.

National level . With respect to retailers as stakeholders in agricultural practices - notably pesticides use in horticulture - the British case study points to effective interventions by large retail chains (who are serving their own interests by paying attention to consumer attitudes towards pesticides use in horticulture). Similar activities by retail chains are known for other countries. National governments may support these mechanisms through stimulating public awareness and by creating the conditions for smaller retail chains to get involved in similar activities, for instance through a system of labelling agricultural products.

IV. SCIENTIFIC INTEREST AND POLICY RELEVANCE

IV.1 Research and Development

In the sphere of R&D two main areas can be distinguished where further extension of knowledge is required as a contribution to the solution of the problem of agricultural pollution of drinking water resources: (1) reduction of agricultural pollution as such through further integration of agricultural and ecological research into (a) sustainable farming methods, notably the reduction of pesticides and fertiliser use, (b) animal manure, the causes of the manure surpluses and ways of processing surplus manure, (c) ongoing research into less harmful pesticides, (2) hydrological research into behaviour of pesticides and nitrates in aquifers and other drinking water resources, which should contribute to more effective approaches to the problem of agricultural pollution of drinking water resources.

IV.2 Contacts between the water supply sector and the agricultural sector

The project demonstrated that the situation at the regional and local levels are rather favourable for effective influence on farmers’ behaviour. Good contacts between the water supply sector and farmers promote the latter’s receptiveness for communicative steering, while consensual approaches may create favourable conditions for economic and juridical steering.

A common phenomenon at the national level is the disintegration of the old agricultural policy communities. At the same time as the traditional consensual policy style is under pressure, national agricultural policies are changing towards more top-down direct regulation, with all problems of acceptance, control, and enforcement. The project showed that these developments are no obstructions for successful initiatives at the regional and local levels where farmers are addressed through consensual approaches.

The scopes of these initiatives are different. At the national level, it concerns the full agricultural policy, where environmental considerations have been given an important place. The scope of the successful initiatives discussed in the project were much more confined to a particular issue, agricultural pollution of drinking water resources. In terms of policy networks, it concerns second order issue networks, in which some core actors of the larger agricultural policy network participate together with other parties with a stake in the particular issue (and to the extent they have gained access to the policy networks constellations).

Reinforcement of the control capacity of the water supply sector can be realised by the proliferation of these types of second order issue networks. In the first place, this can be aimed for at the horizontal level, to regions with similar problems of agricultural pollution where no direct contacts between the water supply sector and farmers have yet been established.

Proliferation of issue networks may also be considered along vertical lines: reinforcement of the relations between farmers' organisations, water managers and the water supply industry into issue network on the national and perhaps European level, that should not get entangled in the problems of the agricultural policy networks. Their functions should be to facilitate the proliferation of issue networks on the horizontal level and to exchange information (a similar function as the discussion fora that exist in the UK and in a certain sense also in Germany).

A final consideration is that the issue of agricultural pollution of drinking water resources is not the only one that can be the subject of second order issue networks as relatively autonomous elements of the larger agricultural policy network constellation. Therefore the outcomes of the present research project may be relevant to for these other areas.