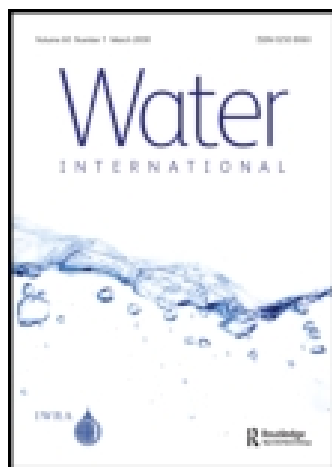


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Sharon Hophmayer-Tokich^a & Yoram Krozer^b

^a The Center for Clean Technology and Environmental Policy, University of Twente, at the Cartesius Institute, Institute for Sustainable Innovations of the Netherlands Technical Universities, the Netherlands

^b Cartesius Institute, Institute for Sustainable Innovations of the Netherlands Technical Universities, the Netherlands

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Public participation in rural area water management: experiences from the North Sea countries in Europe

Sharon Hophmayer-Tokich^{a*} and Yoram Krozer^b

^a*The Center for Clean Technology and Environmental Policy, University of Twente, at the Cartesius Institute, Institute for Sustainable Innovations of the Netherlands Technical Universities, the Netherlands;* ^b*Cartesius Institute, Institute for Sustainable Innovations of the Netherlands Technical Universities, the Netherlands*

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The EU Water Framework Directive (WFD) in effect since 2000, mandates public participation in water management. The directive's requirements are general, leaving it up to the EU Member States to determine how to address the issue. Using case studies, this paper discusses some of the benefits brought about by public participation in water management. The cases are part of a collaborative project involving rural regions in six countries bordering the North Sea, aimed at gaining experience in the implementation of the WFD in rural areas. The findings reveal that working together with key stakeholders and communities has two main outcomes: improved quality and plan effectiveness; and increased acceptance and ownership of plans, leading to successful implementation.

Keywords: Public participation; stakeholders' involvement; water management; the Water Framework Directive; non-point source pollution

Introduction

The *Rio Declaration on Environment and Development* (1992) stated that environmental policy should be handled, at the relevant level, with the participation of all concerned citizens. Following this, the United Nations' Aarhus convention (1998) called for access to information and public participation in decision-making, as well as access to justice in environmental matters. Public participation has been addressed in many countries, but as long as legislation did not stipulate the need to involve the public, decisions about the extent of their involvement were left to policymakers (Thomas 1995). Recently, however, public participation has become embedded in legislation. In the United States, state and federal legislation has mandated public involvement in resource planning (Duram and Brown 1999). In addition, as part of the European Union's (EU) Water Framework Directive (WFD) (2000) Member States must introduce public participation as part of water management. The directive mandates that public participation must be introduced before 2008 in preparation of River Basin Management Plans (EU, 2000/60/EC). In this way, it obligates EU Member States to introduce public participation, and places it at the forefront of integrated water management (Huitema and Van de Kerkhof 2006). This is in accordance with the general shift towards a more participatory and decentralized approach to water management (Garin *et al.* 2002). While the WFD places public participation in the wider

*Corresponding author. Email: s.hophmayer-tokich@utwente.nl

context of decision-making by public agencies (Huitema and Van de Kerkhof 2006) it is one of the first pieces of European legislation that explicitly requires the involvement of non-state actors in policy preparation and implementation (Newig *et al.* 2005).

Public participation, also referred to as public involvement, has been introduced to deal with issues characterized by complexity, uncertainty and ambiguity – all these relevant to water management. It can be defined as a problem-solving process using communication and collective consideration of relevant issues (Renn 2004). In other words, it is a process that allows people other than those acting on behalf of the relevant authorities (non-state actors) to influence plan outcomes and working processes. It includes all forms of participation (Drafting Group 2002). In her ladder of citizen participation, for example, Arnstein (1969) presents eight levels of public participation that have different amounts of influence over the outcome. The ladder starts with “manipulation” and finishes with “citizen control” at the top.

Public participation within the area of natural resource management is not an entirely new concept. In Europe, one finds approximately 530 area-oriented advisory bodies on water management. Many focus in particular on prevention of water pollution and include representatives from various interest groups. Most of them are found in Germany, and began in 1992, involved in the so-called “Zusatzberatung Wasserschutz” (Advisory Board Water Management) (Gerris *et al.* 2002, Oltmer 2002). The US has a long history of public consultation in natural resources management. However, this participation was mostly informal and infrequent and was seen as failing to provide an adequate voice on public interests and views. This criticism eventually led to relevant legislation (Lawrence and Daniels 1996) to address this weakness. More recently, the concept of public participation has grown in terms of its possible forms and its influence on policy formation and decision-making and as it has become apparent that more actors need to get involved in order to support decisions (Webler and Tuler 2001, Beierle and Konisky 1999, Duram and Brown 1999). In this paper we refer to public participation as a set of procedures that involve the public and stakeholders *during* plan preparation and decision-making about the plan, and enable them to influence the decision-making process and its outcomes.

Though encouraged by academicians, public participation faces reservations on the part of policymakers because of uncertain goals and results (Mostert 2003, Beierle and Konisky 1999). This paper aims to discuss the main advantages of public participation processes in water management in light of these reservations. It also addresses the potential benefits of public participation in water management. The main question involved is: what are the benefits of public participation in water management and how can they be achieved? To answer it, the paper discusses three case studies conducted within the framework of the EU-INTERREG project NOLIMP-WFD (North Sea Regional and Local Implementation of the Water Framework Directive). NOLIMP is a collaborative project that involves authorities and stakeholders in rural regions in six countries bordering the North Sea: Denmark, Germany, Sweden, Norway, the Netherlands and the United Kingdom (Scotland). All of these countries face similar challenges regarding the implementation of the directive, mainly related to non-point source pollution, that is, pollution coming from dispersed sources such as agriculture. Public participation was only one of NOLIMP’s issues and the paper presents only the project’s public participation component.

Public participation in water management

Water management is traditionally a top-down process of policymaking and command-and-control approach in implementation, and is oriented towards technical solutions. Such an approach has limitations due to the complexity and uncertainty involved in managing environmental issues.

These things call for a more decentralized, interactive approach (Garin *et al.* 2002, Pahl-Wostl 2002). Complexity is caused by several issues. Firstly, various interrelated subjects (e.g. water quantity and quality, ground and surface water, land and water interaction, as well as economic and social dimensions) should be covered in policymaking (Duram and Brown 1999, Pahl-Wostl 2002). Secondly, various water users and the variation in usage intensity should be considered, including new uses, such as those involved in recreation and tourism (Mostert 2003, Garin *et al.* 2002). Thirdly, the established technical solutions and infrastructure must be changed to suit new demands arising from environmental, social, cultural and local economic values attributed to water. In addition, these solutions cannot solve pressing problems, such as non-point source pollution, which require the cooperation of the polluters (Pahl-Wostl 2002). Finally, the fact that water resources and thus their management are characterized by discontinuity and overlap between geography and jurisdiction implies that water resource boundaries and administrative bodies rarely match (Delli Priscoli 2004). There is also uncertainty caused by difficulties in predicting environmental changes despite accumulated knowledge and modern techniques (Van Leussen 1996). In addition, there is an unclear definition of the problem, obscure goals and underestimated impacts of actions taken (Newig *et al.* 2005, Pellizzoni 2003a, 2003b). All of these issues point to the need for decentralized decision-making and problem-solving in collaboration with non-state actors (Pellizzoni 2003b). As a result, water management increasingly uses a more participatory approach (Duram and Brown 1999, Van de Kerkhof and Huitema 2003, Van Leussen 1996, Delli Priscoli 2004) and it has now been mandated in the WFD (Garin *et al.* 2002).

Public participation is one of the WFD's core elements. It is mandated in Article 14, which refers to the involvement of the "general public" and "interested parties" (more commonly named "stakeholders"). According to the guidance document on public participation that was developed to support the WFD's implementation, the "general public" is defined as "one or more natural or legal persons, and, in accordance with national legislation or practice, their associations, organizations, or groups". The term "stakeholders" refers to "any person, group, or organization with an interest or 'stake' in an issue, either because they will be directly affected or because they may have some influence on its outcome . . ." (Drafting Group 2002, p. 18). As shown, the definition of a stakeholder is broad and with new stakeholders entering the debate, the distinction between the "general public" and the "stakeholders" becomes blurred. For example, a farmer is a member of the general public and his/her community, but the farmer is also a stakeholder when water pollution control measures must be implemented on his/her farm. In this paper, the term "public participation" is used to cover both the "general public" and "stakeholders". Therefore, the presented cases include examples of both sorts.

Public participation can have a wide ranging degree of influence over the decision making process. Arnstein's ladder of participation (1969) covers different levels, including the higher levels of "partnership", "delegated power" and "citizen control". Thomas (1995) distinguishes "segmented public consultation", "unitary public consultation" and "public decision". Aycrigg (1998) mentions "consultation", "collaboration" and "empowerment". This paper uses the terms "consultation" and "active involvement" as they are included in the WFD. Consultation is a two-way relationship in which authorities develop plan proposals and then ask the public and stakeholders to comment on them in order to obtain input that can be used for plan preparation. Active involvement is a more intensive form of public participation in which authorities and stakeholders develop plans together. In some cases, the decision-making power may be shared. Active involvement also entails consultation, as participants provide input during deliberations (Drafting Group 2002). Public participation increases the general public's and stakeholders' influence on policymaking and reduces authorities' freedom to make decisions.

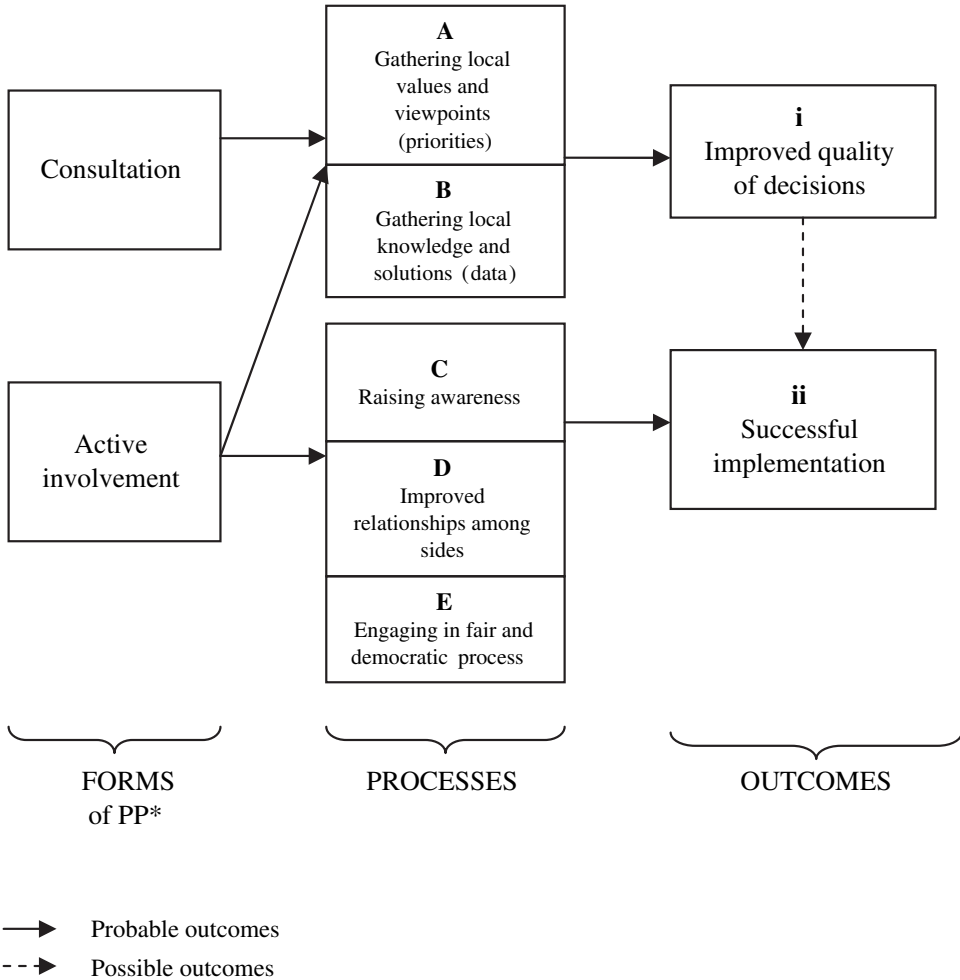


Figure 1. Public participation: forms, processes and possible outcomes.
 Note: *pp = public participation.

The literature notes some advantages gained through public participation. These are given in Figure 1. As illustrated, several processes can occur during consultation and active involvement. For example, consultation can yield: (A) gathering local values and viewpoints (priorities). This is particularly true for those values that cannot be measured in monetary terms such as the restoration of aquatic systems, as well as cultural and social considerations that science has failed to appreciate (Van Leussen 1996, Fischer 2000). It is especially important in cases of decisions associated with uncertainty which are enhanced by different values and goals, as it enables gathering of different perspectives and interests leading to pluralistic dialogues, as well as reveals potential conflicts arising from them (Newig *et al.* 2005). It can thus assist in “better” problem definition in terms of incorporating more viewpoints. It allows exchanging observations and viewpoints, and weighing them (Renn 2004) although within the legal framework and requirements.

This need is reinforced by the fact that current problems and goals are not clearly defined and there is often no shared perception on the “true” nature of the problem (Pahl-Wostl 2002).

Cases from the Hérault watershed in southern France (Garin *et al.* 2002) as well as watershed management in Alabama, US (Mullen and Allison 1999), for example, reveal that there can be a big gap between the way experts, the public and stakeholders perceive the local situation, its problems and its solutions. On the other hand, cases of public participation in North America's Great Lakes region show that multi-value-oriented decisions help to define a common vision and priorities for action (Beierle and Konisky 2001). The consultation can also yield (B) gathering local knowledge and solutions (data) that cannot be gathered in any other way. Local knowledge, based on local observation and experience, provides first-hand knowledge about area circumstances and complements experts' knowledge (Kickert *et al.* 1997, Fischer 2000). Pellizzoni (2003a, 2003b) argues that local knowledge is especially important as scientific knowledge is increasingly questioned because of unexpected technical failures and side effects. This calls for re-interpretation of the boundaries of knowledge so that it includes other forms, such as local knowledge. This is expected to improve the quality of knowledge in conditions of high uncertainty. Furthermore, insights can be gained into the social system in which measures will be implemented, and information can be gathered about possible local acceptance of such measures (Newig *et al.* 2005). Hinchcliffe *et al.* (1995), for example, reviewed 22 cases of participatory watershed development projects worldwide. Despite cultural, political and other differences, all of the cases emphasized the need to use local knowledge and locally adapted solutions to promote successful programmes.

Active involvement can also yield: (C) raising awareness about problems and the need for solutions. Cases of public participation in the Great Lakes region (Beierle and Konisky 1999) and in watershed planning initiatives in the US (Duram and Brown 1999) reveal that raised awareness motivates people to recognize their contribution to water pollution and to take more responsibility for problems, which enhances cooperation in problem-solving. Moreover, (D) improved relationships among sides can lead to better understanding among different stakeholders due to improved communication, and possibly lead to agreement on joint actions despite initially diverging viewpoints (Pellizzoni 2003b). In the cases of watershed planning initiatives in the US, Duram and Brown (1999) found that participation created better understanding of other viewpoints and common ground for debate. In most of the cases involving the Great Lakes region, participants indicated that the participation process had improved relationships among the stakeholders and decreased the level of conflict (Beierle and Konisky 2001). Finally, active involvement can yield (E) a feeling of engaging in a fair and democratic process thus increasing the legitimacy of plans (Webler and Tuler 2001). It is argued, for example, that since water determines life and livelihood, those who are affected and who would benefit from water must have the opportunity to participate in its planning and management in order to increase the legitimacy of political decisions (Delli Priscoli 2004).

Public participation processes are expected to generate two main outcomes: (i) improved quality of decisions by better defining priorities for action and by gathering local data, knowledge and solutions; and (ii) successful implementation by raising awareness, and encouraging stakeholders to work together to develop solutions that satisfy a wider range of interests, and engaging in a fair and democratic process that leads to broad acceptance of and support for the plans. This, in turn, leads the public and stakeholders to agree to cooperate. The processes and outcomes, described in Figure 1, are used in the case study analysis presented in this paper.

Despite the advantages of public participation described in the literature, some have reservations about it because a decision-making process involving various viewpoints is complex and calls for compromise, while it also disperses power in policymaking. This paper presents opportunities afforded by public participation based on several NOLIMP cases, with a particular focus on non-point sources (diffuse sources) in rural areas. Currently non-point source pollution is

considered one of the biggest water pollution problems in all EU Member States. Hence, the NOLIMP experiences have wide implications for the EU.

It is important to point out that the WFD requires public participation at the river-basin-district level. This can be a challenge and the lessons gained from it remain to be seen. However, more local attempts to involve the public and stakeholders are currently being developed and accumulatively they will be able to assist in reaching the overall goals of public participation in water management. The presented cases provide examples of such attempts. They include one case of community involvement and two cases of stakeholders' involvement.

Methodology

As already mentioned, the NOLIMP project is a collaborative effort involving stakeholders from rural regions in six countries bordering the North Sea. These regions – sharing common challenges – worked together to test locally WFD implementation by promoting individual projects and exchanging experiences based on project results through workshops, reports, and websites. Using local partners, each region initiated and executed local projects, including the public participation component. Thus, the case studies presented in this paper were promoted and evaluated by the different NOLIMP partners. The authors were responsible for exchanging experiences about public participation among the partners, by gathering the information from each partner, analysing the results provided by the partners, and drawing conclusions. The methods used to produce these results included a workshop at which all partners presented public participation cases, followed by interviews held with those responsible for each case. The overall results were presented in a workshop report. Some of the cases are presented in this paper. The specific organizations involved in each case, as well as the methods they used to evaluate the results, are as follows:

The Scottish case

The Scottish NOLIMP project, known locally as the 3 Dee Vision Project, comprises several organizations: Aberdeenshire Council, Scottish Environment Protection Agency, Scottish Natural Heritage, Scottish Water, the Macaulay Institute, and the University of Aberdeen. The 3 Dee Vision project conducted the public participation programme and evaluated and reported its results. In order to get stakeholder feedback on public participation in the Dee Basin, all participants were asked to complete a questionnaire. In addition, the case's specific results on community involvement presented in this paper (Tarland village) were based on the organizer's observations as well as interviews with members of the community during community meetings. While this paper focuses on one case within the overall project, general conclusions from the public participation programme for the 3 Dee Vision project are described in Walker and Langan (2004) as well as Walker (2003).

The German case

Most of the information on the “cooperation model for ground water protection in Lower Saxony”, including the results of the cooperation among stakeholders, was gathered by the Landwirtschaftskammer (Department of Agriculture Weser-Ems region) using water protection advisers as well as its own employees. Research was conducted regarding the stakeholders' level of cooperation and its results (Even 2003), using a questionnaire sent to farmers in the water protection areas of Weser-Ems. It asked them to describe their experience with the cooperation model. Other reports regarding the cooperation model (mainly technical ones, but also those regarding stakeholders' cooperation) were published (see for example, Heinz *et al.* (2001)).

The Norwegian case

Most of the public participation programme was carried out by the Morsa Catchment Organization and the involved local authorities. The results were evaluated by the Morsa Catchment Organization through participant interviews and observations done by the programme's organizers. In addition, the case was evaluated by an independent researcher and described in a number of papers (e.g. Stokke 2004, 2006).

Below is a summary of these three case studies.

Public participation in water management: the NOLIMP experience

Community involvement in wastewater treatment, Tarland Burn Catchment, Aberdeenshire, Scotland

The Scottish NOLIMP project focuses on three sub-catchments of the River Dee. The River Dee catchment is situated in the Aberdeenshire area located in the northeastern part of the country. It is a rural area with forestry and agriculture as its main land uses. If one excludes the city of Aberdeen situated at the mouth of the Dee, it has a population of 44,000 people living in small, widely dispersed settlements (Walker and Langan 2004). This was one of the project's public participation cases, and it emphasizes the need to replace and upgrade wastewater treatment works (WWTW) serving the village of Tarland in the sub-catchment of the Tarland Burn. Tarland Burn is a small catchment (51.7 km²) with a population of about 1500. Approximately 600 inhabitants reside in the village and the rest comprise the surrounding agricultural community. The village's growth caused the existing treatment system – a settlement tank and irrigation to grass plots, to work under overloaded conditions. This contributed to the degradation of the water quality in the catchment. Scottish Water, the responsible agency, demanded that the existing system be replaced to meet regulatory requirements. It held a public meeting on the issue and presented its proposal to the local community.

Scottish Water's proposal was to construct an intensive WWTW and discharge the effluent into the stream. This resulted in two local concerns: (1) the existing grass plots system supported local biota and created a habitat for birds. The proposed solution would have meant the loss of this local biota and habitat. The local community wanted a solution that continued to support the bird habitat; and (2) the local community called for a WWTW with bigger capacity than the one proposed by Scottish Water, to allow the village to expand. As a result of those local concerns, Scottish Water agreed to rethink its plan, and community representatives, MacRobert Estate (a major local landowner), the local council, the Royal Society for the Protection of Birds and the Scottish Environment Protection Agency, were involved in the ongoing discussions. In order to cooperate, all of these stakeholders were consulted and a shared "document of aspirations" was prepared. This was used as background for later meetings where modifications to the original plan were discussed, in order to satisfy the wider range of interests.

Working together led to two main processes: (1) gathering local values and viewpoints (priorities) (A in Figure 1); (2) improved relationships among sides (D in Figure 1).

Gathering local values and viewpoints (priorities)

This case demonstrates the importance of collecting information on all relevant values and concerns during plan preparation. Scottish Water's definition of the problem led it to promote a solution that would satisfy the regulatory requirements, thus it presented a plan that coincided with its view of the matter. Involving the community enabled the agency to understand local concerns. Accepting these concerns assisted in formulating a better definition of the problem.

Ultimately, it promoted a solution that satisfies the regulatory requirements while it continued to support local needs.

Improved relationships among sides

Working together led to improved relationships and better understanding between the agency and the community. The community's awareness of the problem was raised, as they understood the regulatory limitations faced by Scottish Water. Scottish Water, on the other hand, understood and accepted local concerns. As a result, the agency was willing to investigate other options suggested by the local community, such as lagoons. Understanding each other's viewpoints led to a problem definition on which they could agree and they also reached consensus on a shared goal. Good working relationships were established and the process improved cooperation between the parties. Most importantly, working together eventually led to a compromise that was accepted by all sides: the creation of a wetland around the intensive WWTW and the decision to discharge the effluent into the wetland and not the stream. In this way, the wetland will continue to sustain wildlife habitat while polishing the effluent from the WWTW. In addition, Scottish Water agreed to increase the WWTW's capacity to allow the village to expand within the scope of the five-year "Local Plan". After reaching the compromise, further meetings were held to agree on the plan's technical and ecological aspects.

It is interesting to point out a positive, indirect effect of the discussions regarding the WWTW. In parallel to the described meetings, community evenings were held on the projects in the area, including Scottish Water's new WWTW, in order to inform the community and solicit comments. In an effort to establish good relationships with local farmers in order to promote farming-related measures, farmers were also invited to these meetings. Listening to the discussions about the village's waste water problem made local farmers realize they were not the focus of the water quality debate, but rather part of a broader process in which everyone had to take responsibility. As a result, farmers perceived the process as fair and became willing to engage in relevant management activities. (These farming-related activities carried out in the sub-catchment are not presented here.)

The main outcomes of involving the community in this case were: improved quality of decisions (the plan), (i in Figure 1), based on a new problem definition and investigating alternative options; and successful implementation (ii in Figure 1) due to the local community's acceptance and support of the plan. The construction of the WWTW began in September 2004.

Stakeholders' participation in groundwater protection, Weser-Ems region, Lower Saxony, Germany

The German NOLIMP project focuses on the Weser-Ems region. Situated in the northwestern part of Lower Saxony, the Weser-Ems district is a typical, large, rural area dominated by agricultural activities. As the German partner joined NOLIMP at a later stage, results from the NOLIMP pilot project have not been finalized yet. Nevertheless, the partners presented a case on "the cooperation model for groundwater protection", which provides good insight on the possibilities and potential problems of working with farmers to promote groundwater protection measures.

Cooperation started in 1993 with representatives of the regional authority, the local authority, local water suppliers, the Department of Agriculture, affected farmers, and a groundwater protection advisor, who served as mediator. The programme relates to groundwater protection areas in Lower Saxony. Because agricultural practices are the main polluters, the goal was to work with farmers to promote and implement measures to protect the groundwater. Some measures

are already required by law in groundwater protection areas and farmers must implement them. As they have to compete with farmers working in non-protection areas in the free market, these local farmers are financially compensated for the extra costs of the basic measures. However, groundwater protection calls for more measures than those required by law. Therefore, voluntary agreements to implement additional measures were initiated. Those involved in the cooperative effort worked together to develop a programme of measures which were presented in a catalogue. Each farmer could choose the preferred extra measures in addition to the basic ones and be compensated for the extra costs. The farmers' agreement to implement such measures was essential to ensure the programme's success.

Working together led to two main processes: (1) improved relationships among sides (D in Figure 1); (2) gathering local knowledge and solutions (data) (B in Figure 1).

Improved relationships among sides

Working together led to improved working relationships and cooperation. In the beginning of the process, the water supply companies and the farmers expressed a great deal of mutual mistrust and the level of conflict was high. The water companies blamed farming for water pollution and portrayed farmers in a very negative light. They held the opinion that the best way to protect groundwater was to buy land in the water protection area and stop agricultural activities. This, of course, would have had a great impact on local livelihoods and way of life. At the same time, farmers resented the way they were portrayed. However, both sides agreed to cooperate. Due to the existing conflict, both sides communicated mainly through the mediator during the process, who was perceived as fair and neutral. The mediator aided cooperation between these groups using his knowledge of local conditions and his relationship with both sides. In addition, all of the stakeholders met a few times a year. As time passed, and the mediator was succeeding in promoting solutions that satisfied both parties, the stakeholders slowly learned that cooperation provided advantages for both sides. The water companies realized that there were other options to protect the groundwater instead of stopping agricultural activities, and the farmers agreed to cooperate as long as their interests were respected. The level of mistrust gradually decreased and working relationships improved. The meetings became more productive and the better atmosphere allowed a real discussion. This case illustrates that cooperation, at times with a mediator, leads to better relationships and implementation, even when stakeholders share initial high levels of mistrust and are engaged in conflict.

Gathering local knowledge and solutions (data)

Gathering local knowledge and solutions was possible as the stakeholders worked together to develop the programme of measures. During its preparation, new measures were developed. Some of them were suggested by farmers, based on their local knowledge and experience. These new ideas were tested independently on a standard plot, and if found to be successful, they were presented in the catalogue. This led to an increased number of alternative measures. Since the programme was built in a voluntary way – allowing farmers to adopt the measures suitable for them – the more measures available, the more chances that they would be implemented. In addition, reliable local data on compensation for measures was gathered.

It should be noted that the process was not always smooth, depending on individual personalities and other local circumstances. Historic conflicts and hostilities can take a long time to be resolved, and in some cases will not be resolved. Nevertheless, the successful cases show that cooperation is possible and provides new solutions. In this case, having the water company and

farmers work together resulted in: improved quality of decisions (quality and effectiveness of the programme, in this case) (i in Figure 1) due to the additional measures that were identified, and successful implementation (ii in Figure 1) achieved through the agreement to cooperate. As a result of the programme, farmers have implemented additional measures with almost 100% participation in the most sensitive areas. Although this case is not exactly a model for WFD implementation as the scope of groundwater protection cooperation only relates to drinking-water-protected areas while the WFD aims to achieve good water status area-wide and because financial compensation played a major role, this case does present a good example of the potential benefits reaped from working closely with stakeholders, in this case, farmers, to promote successful implementation of measures aimed to reduce non-point pollution.

Stakeholders' involvement in watershed management, the Morsa catchment, Norway

The Norwegian NOLIMP project focuses on watershed management in the Morsa catchment. Situated in the southeastern part of Norway, the catchment is a rural area, dominated by agriculture (16%) and forestry (80%), with a population of 40,000. Vansjø, a big lake in the watershed, provides drinking water for 60,000 local inhabitants and is also important for outdoor recreation. Diffuse pollution from agriculture and households in sparsely populated areas, especially high phosphorus (P) loads, is the biggest water pollution problem in the catchment. As a result, Lake Vansjø suffers from eutrophication and algal blooms. Although the lake's water quality has been a major concern for decades, no substantial action was taken. Various stakeholders blamed each other for causing the problem. For example, farmers claimed that municipal wastewater was the main problem. There was also a lack of communication and cooperation and levels of mistrust and conflict were high.

During the past decade, potentially harmful algal blooms occurred with increased frequency, leading to an urgent need to take action and to the project's establishment. The Morsa project began in 1999 and in 2002 it became a national pilot area for implementing the WFD. It is based on voluntary cooperation among all of the relevant stakeholders. The project's goals have been to improve the lake's water quality and that of its tributaries, increase biological diversity and the possibilities for outdoor recreation, and support sustainable industrial and commercial development based on the water resources. The Norwegian case illustrates both the general framework of stakeholder cooperation in the Morsa project as well as supplying one of the participation cases.

When the stakeholders agreed to cooperate, they first established the project's organization. A board was established, in which all authorities and stakeholders were represented: mayors of the municipalities in the catchment, representatives from the two counties sharing the catchment, the farmers' organization from both counties, an environmental organization, the water supply company, the hydro-electric power company, the paper mill, etc. All agreed to establish a shared level of objective knowledge, based on scientific studies because there had been no initial agreement on the cause of the problem and suitable solutions. Thus, a scientific report was prepared by neutral experts, describing the problem, the P reduction targets, and possible measures. All stakeholders were consulted during the report's preparation. The report's objectivity was accepted by all sides and it was used as a shared base for cooperation. To facilitate this cooperation, three working groups were established: waste and wastewater treatment; agriculture; and forestry. Each group was represented by all relevant authorities and stakeholders, and was responsible for identifying and implementing measures within its domain. The groups worked on local plans and measures at municipality level, based on the findings of the scientific report. Once the local plans were adopted, an action plan was prepared.

Getting all of the stakeholders to work together resulted in two main, crucial, processes: (1) improved relationships among sides (D in Figure 1); (2) engaging in a fair and democratic process (E in Figure 1).

Improved relationships among sides

Working together led to better relationships among the parties and increased cooperation. All stakeholders could take part in the decision-making process through their representation on the board and in the working groups. The scientific report brought agreement on the goal to improve the lake's water quality and the need for joint action. Thus, the process of working together reduced the level of mistrust and conflict and promoted real cooperation. A survey indicated that confidence and trust among the partners had increased remarkably during the project period (Stokke 2004).

Engaging in a fair and democratic process

Engaging in a fair and democratic process occurred because the process was perceived as fair and legitimate. Cooperation did not allow free riding, that is, allowing any stakeholder to be a "non-paying passenger" who enjoys the benefits of others' actions without taking his/her own action. As various stakeholders started to take action, others became committed as well.

After gaining agreement on the scientific report, specific plans had to be promoted and measures implemented. It was done step-by-step: in the first year, a pilot project was established with 60 farms, with plans for an additional 60 farms the following year (out of approximately 400 farms in the catchment). Although some restrictions were required due to regulations, and although in this project funding was available, farmers' cooperation was essential for implementation. Meetings were held with farmers to raise awareness and motivate them about the measures. Although the first meetings were not very productive because of non-cooperative attitudes, things began to change when advisors began to visit individual farmers during the pilot with recommendations about suitable measures for implementation. Authorities, via the advisors, worked with the individual farmers.

Working together with the farmers resulted in three main processes: (1) raising awareness (C in Figure 1); (2) gathering local knowledge and solutions (data) (B in Figure 1); (3) improved relationships among sides (D in Figure 1).

Raising awareness

Farmers became more aware as they received explanations and education on the importance of the measures for saving the lake. They understood, for example, that measures taken by farmers would reduce a quarter of the P loads entering the lake, and that this would have a great effect on the water quality. As a result, they became aware of their contribution to solving the problem and agreed to cooperate.

Gathering local knowledge and solutions (data)

This occurred as useful local information was gathered regarding the best way to adapt the measures and implement them based on the farm's specific local conditions. The farmers' local knowledge was very important as conditions differ on farms.

Improved relationships among sides

This consequence was the result of the individual approach. Better relationships with farmers evolved, cooperation improved and levels of trust were raised among the stakeholders. Farmers became more cooperative and realized that cooperative actions improved their public image. Prior to the project, farmers were portrayed in a negative way and accused of polluting the lake in the local media. After the implementation, media changed their attitude towards the farmers and praised them for taking action. This gave incentives for cooperation.

The outcome of stakeholder participation in the Morsa project was: successful implementation (ii in Figure 1) due to raised awareness, a broader sense of ownership, and a commitment to take action. In the farming-related activities alone more than 35 retention dams (coffer dams) were built, more than 100 km of vegetation zones were established and autumn tilling has been reduced.

Discussion and conclusions

The NOLIMP partners have described several cases showing public participation. The presented cases differ in their public participation methods: community consultation and deliberations in the Scottish case, a mediator to enable stakeholders to communicate in the German case, and a board and working groups as well as an individual approach for agricultural activities in the Norwegian case. Participation was held in different stages of the process. In the German and Norwegian cases, participation took place from the beginning of the process. In the Scottish case, authorities had already drafted a plan but, as a result of community consultation, all stakeholders agreed on modified plans. The cases show that there is no single “fit-for-all” approach to public participation. Nevertheless, common conclusions can be drawn.

The NOLIMP experience shows that public participation in water management does provide advantages for policymaking. Two main outcomes have been identified: improved quality and effectiveness of plans as well as successful implementation. This is in line with experience with public participation recorded in the literature.

Improvements in the quality of decisions and plans in the presented cases occurred because of a better definition of the problems and goals for actions as well as through the collection of local knowledge and alternative solutions. The Scottish and German cases demonstrate the importance of gathering all viewpoints to define the problem as water issues encompass various environmental, economic and social dimensions such as maintaining local biota and habitat as well as ways of life and local livelihoods. Incorporating important local values into plans led to a better definition of the problems. Once problems were better defined, more suitable courses of action could be sought, e.g. several alternatives for wastewater treatment in the Scottish case. This, in turn, led to a “better” decision, because the decision addressed a wider range of concerns entailing a broader set of solutions, and thus resulted in acceptance of these plans. In general, actions taken based on problem definition that addressed more viewpoints, satisfied a wider range of interests and thus enjoyed broader acceptance. Findings from the German and Norwegian cases show that gathering local knowledge and alternative solutions from farmers generated important information that would not be generated in any other way. The farmers’ knowledge and experience with alternative measures in the German case, and the farmers’ information regarding the adjusting of measures to fit farm conditions in the Norwegian case illustrate this. The farmers were found to be a viable source of information, which led to better plan quality.

The presented cases also show that public participation broadened the acceptance and support for plans, which brings about successful implementation. This is an important finding because successful implementation is the ultimate goal of every policy. Firstly, the cases illustrate

that getting various interests to work together raises their awareness about their contribution to the problem and the need for a solution. It creates a sense of ownership of problems and solutions, which leads to a greater willingness to take action. In the Norwegian case, for example, once farmers realized the effect of their actions on improving the lake's water quality, they became more willing to cooperate and indeed implemented the necessary measures. Secondly, allowing all the relevant stakeholders to discuss issues enhanced their understanding of the need to find a solution that satisfied a wide range of interests. This was demonstrated especially by the Scottish case as the stakeholders managed to reach a compromise. Thirdly, public participation improved relationships, reduced levels of conflict and initial mistrust. This was found in both the Norwegian and German cases. In the Norwegian one, working together for a shared goal improved cooperation among different stakeholders and increased their sense of partnership. This led to agreement on implementation and made it difficult for some stakeholders to stand by and not take action. In the German case, better relationships led to additional implementation of measures. Finally, working together to promote action that has been considered by all interests is thought to be fair. The findings reveal that people are willing to cooperate if they sense that they are being treated fairly and if everyone has to comply. This was demonstrated in the Norwegian case as farmers agreed to reduce their burden on the lake, in the German case in which farmers agreed to cooperate as long as their interests were protected, and in the Scottish case in which farmers realized that all of the responsible parties needed to take action and agreed to actively participate. In all of the presented cases, involving communities and stakeholders resulted in easier implementation and possibly, implementation that would have not been realized without it.

The NOLIMP cases show that public participation is a key factor when addressing non-point source pollution in rural areas. It is clear that the measures need to be accepted even if they are required by law. The findings also reveal that a personal approach and fairness are important factors in successful implementation. The presented cases provide examples of achievements made with a participatory approach to water management and show the benefits that can be attained on a local level. A similar outcome should be expected at the level of river basin management, which is addressed by WFD. However, management of public participation on a river basin level is challenging because of the diversity found within the area's socio-economic and natural conditions. Therefore, a bottom-up process, working from the local level to the river basin can be beneficial.

In addition to the opportunities found in the NOLIMP cases, some limitations and difficulties were also mentioned. Most partners reported that public participation is time and resource-intensive, and that it needs to be properly organized and facilitated. Some cases, such as the German one, reported additional difficulties such as historical hostilities. These can affect the stakeholders' ability to communicate and can make the process long and difficult – and possibly not a complete success. Nevertheless, public participation is a good alternative to the traditional top-down process and the NOLIMP experience shows that public participation is possible to implement within the WFD framework. It ensures better preparation for policymaking, brings about improved implementation of measures, and gains broader support for political decisions.

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