Water Policy 14 (2012) 160–173

Ecological ambitions and complications in the regional implementation of the Water Framework Directive in the Netherlands

C. Dieperink[a,*], G. T. Raadgever[b], P. P. J. Driessen[a], A. A. H. Smit[a] and H. F. M. W. van Rijswick[c]

[a]*Copernicus Institute of Sustainable Development, Utrecht University, P.O. Box 80115, 3508 TC Utrecht, The Netherlands*
[*]*Corresponding author. E-mail: c.dieperink@geo.uu.nl*
[b]*Grontmij, Division Transport and Mobility, P.O. Box 203, 3730 AE De Bilt, The Netherlands*
[c]*Centre for Environmental Law and Policy, Utrecht University, Achter Sint Pieter 200, 3512 HT Utrecht, The Netherlands*

Abstract

The Water Framework Directive has introduced a new governance approach that offers implementing agencies in EU Member States policy discretion to implement ecological ambitions. The aim of this paper was to gain insight into the way regional actors use this discretion and into the rationale behind their behaviour. Our research revealed that in regional implementation processes in the Netherlands, limited ecological ambitions have been framed due to several complications. These complications also occur in other EU Member States. As it might be possible to reduce some of the complications by improving collaboration, exchange and learning between the actors involved, the paper concludes by outlining the important role that communities of practice might play in the implementation process of water policy at the regional level.

Keywords: Communities of practice; Ecology; EU Water Framework Directive; Governance; Implementation; Netherlands

1. Introduction

Recent European water and environmental directives reflect a shift in governance. Instead of the more traditional top-down legalistic approach they emphasise the importance of more bottom-up initiatives from the actors who have to implement the directives (see Hooghe & Marks, 2001; Moss, 2004; Newig & Fritsch, 2009). New directives still try to coordinate Member States' (MS) activities but

doi: 10.2166/wp.2011.223

offer a higher level of policy discretion to MS implementing agencies (European Commission, 2001; Knill & Lenschow, 2003; Lee, 2005; Thomson *et al*., 2007: p. 688; Newig & Fritsch, 2009).

Several factors account for this shift in governance (Kallis & Butler 2001: p. 128). French and British calls for deregulation and decentralization of the European Union's (EU) water policy and for a relaxation of standards fitted well in the overall anti-federal political climate of the second half of the 1990s. Legal backing for this shift could be found in the subsidiarity principle institutionalized in the 1992 Maastricht Treaty. The subsidiarity principle defines that action should only be taken at the EU level when this is the best level to achieve policy objectives. MS have the right to express the collective preferences of their citizens in cases in which they can better take into account the variety of conditions across the EU. The shift in governance can also be considered as an attempt to reduce high administrative costs of implementing federal environmental legislation.

The Water Framework Directive (WFD) (2000/60/EC) is an example of this new form of European governance (Rauschmayer *et al*., 2009: p. 162). It contains fewer substantive and more procedural requirements than the Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (1976/464/EC) which it replaces (Howarth, 2009; Lee 2009; Van Rijswick *et al*., 2010). Both directives define issues (lists of priority substances) as well as abatement strategies (uniform emissions standards and quality objectives) at the community level (Krämer, 2002; Jans & Vedder, 2008; Koller & Cashman, 2009), but the WFD combines this top-down approach with a more bottom-up approach. The aim of the WFD is to prevent a further deterioration of aquatic and water-dependent terrestrial ecosystems and to protect and to improve these systems. The WFD calls for (transboundary) collaboration between the competent authorities within the river basin, between different levels and across administrative boundaries, and encourages active involvement of all interested parties (Van Rijswick *et al*., 2010). The WFD also aims to stimulate learning amongst the involved actors about the issues at stake, by setting requirements for monitoring, data exchange between MS and adaptation of plans (see Flynn & Kroeger, 2003; Kaika, 2003; Moss, 2004; Steyaert & Ollivier, 2007; Van Rijswick, 2008; Howarth, 2009; Rauschmayer *et al*., 2009; Keessen *et al*., 2010). However, the WFD offers discretion to the MS implementing actors who have to classify the water bodies, define reference conditions and specify related measures.

The literature reveals that the effectiveness of this new open method of coordination (Knill & Lenschow, 2003: p. 9) is debatable, as it is hard to predict the outcomes of the approach. On one hand, authors such as Newig & Fritsch (2009: p. 198) indicate the growing number of decision points and involved actors (veto players) who might hamper effective policy delivery. On the other hand, authors such as Ostrom (2005) regard polycentricism as conducive to long-term effective environmental policy, while Knill & Lenschow (2003: pp. 8–9) emphasise that such an open form of coordination might result in more opportunities for learning, as adjustment flexibility and context responsiveness are high. So far, the effectiveness of the WFD is hardly addressed in the literature. Research on the implementation of the WFD mainly focused on issues such as the division of tasks and responsibilities (Jans & Vedder, 2008; Van Rijswick, 2008; Howarth, 2009) and stakeholder involvement (Blomqvist, 2004; Watson, 2006; Hophmayer-Tokich & Krozer, 2008). Knowledge about the framing of ecological ambitions in sub-national implementation practice is rather limited. In this paper we try to address this knowledge gap. Our aim is to provide an insight into the way regional actors use their discretionary authority in specifying ecological ambitions and in the factors behind this use. The paper is mainly based on empirical research in the Netherlands, but we have reached more general conclusions by confronting our findings with results from studies concerning regional

implementation practices in other MS. Based on this insight, we suggest that Communities of Practice can play a key role in raising the effectiveness of this new form of governance.

2. Methodology

Three steps have been taken to meet our research aim. First, we conducted a review of policy documents and draft River Basin Management Plans (RBMP) in order to gain an overview of the ambitions framed by the regional parties. Second, we undertook an in-depth analysis of the implementation processes in four of the 25 Dutch water boards. The research concentrated on the policies of the water boards as they have a leading role in the regional implementation processes in the Netherlands (whereas the Public Works Department of the Ministry of Transport, Public Works and Water Management – recently renamed the Ministry of Infrastructure and Environment – has taken the lead in implementing the directive for the major rivers, lakes and seas). The Dutch water boards are democratically elected bodies that maintain the dikes and manage water quantity and quality in regional surface waters; for more detail, see Reinhard & Folmer (2009). We have analysed the regional implementation processes up until the establishment of RBMP in December 2009. In order to account for regional variation, we selected four water boards, those in *De Dommel*, *Hollands Noorderkwartier, Reest en Wieden* and *Regge en Dinkel*, which are located in different parts of the Netherlands and have different natural characteristics (see Figure 1).

An insight into the regional processes was found by studying policy documents and by over 50 semi-structured interviews with regional governmental and non-governmental actors (see Table 1). With the help of a topic list we elicited the perspectives of the interviewees on the implementation process and the complications that occurred. By grouping and structuring the data using labelling techniques (such as the grounded theory methodology; see Strauss & Corbin, 1998) shared views on complications could be found. In a final step, we confronted our case study results with the findings of other authors dealing with the implementation of the WFD in other MS. Relevant literature was found by using the search engines Scopus and Google Scholar.

A more detailed account of the research and its results can be found in two reports: Raadgever *et al.* (2009) and Smit *et al.* (2009); both in Dutch only.

3. Ecological ambitions in implementing the Water Framework Directive in the Netherlands

The WFD aims to protect and improve water quality and biodiversity and to promote the sustainable use of water in EU MS. In 2015, the chemical status and ecological status of the assigned water bodies should be good (Art. 4). Yet, MS have significant discretion in setting ecological objectives and designing programmes of measures to be taken. In their RBMP, MS had to classify their water bodies using the categories: natural, artificial (man-made) or heavily modified waters. Next they had to determine ecological objectives for each water body type, following the format specified in Annexes II and V of the WFD. For each type of water body, MS had to specify reference conditions, which refer to natural conditions (undisturbed by human influence) in terms of hydromorphological, physicochemical and biological quality elements. The ecological objectives to be achieved in 2015 should deviate only slightly from these ideal reference conditions. However, MS are allowed to set less strict ecological

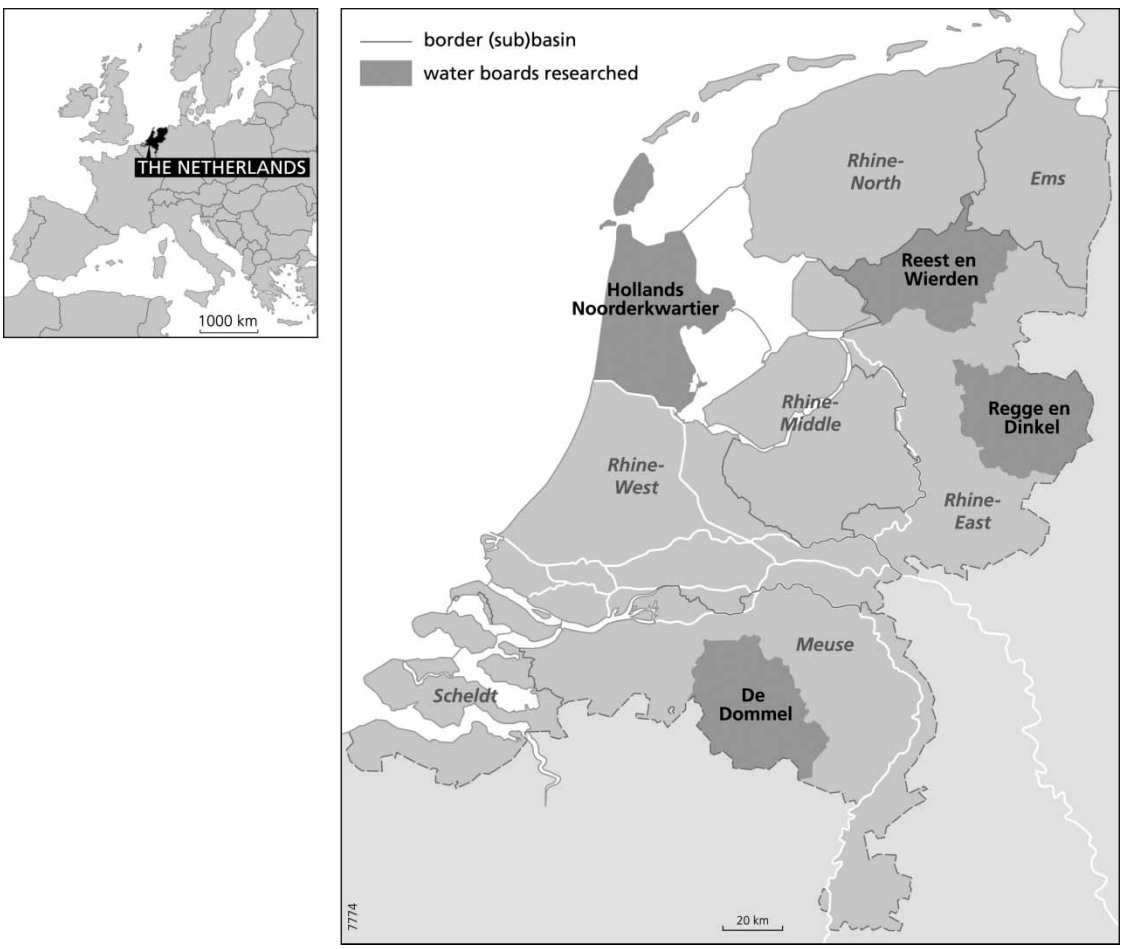

Fig. 1. Location of the De Dommel, Hollands Noorderkwartier, Reest en Wieden and Regge en Dinkel water boards.

Table 1. Number of interviewees per water board area and stakeholder group.

	De Dommel	Hollands Noorderkwartier	Reest en Wieden[a]	Regge en Dinkel[a]
National ministries and their regional agencies	2		1	1
Province	2	1	3	3
Water board	6	3	2	6
Municipality	1	1	2	3
Drinking water company	2	2	1	1
Non-governmental environmental and nature conservation organizations	6	3	4	4
Agricultural/industrial organization	1	1	1	1

[a]The *Reest en Wieden* and *Regge en Dinkel* water boards are located in the same province and thus many of the interviewed actors were relevant for both areas.

objectives for the water bodies they categorized as artificial (man-made) or heavily modified. They are only permitted to set these more lenient objectives if the required hydromorphological changes cannot reasonably be achieved, for reasons of technical feasibility or disproportionate costs (as further specified in Art. 4.3 of the WFD). Furthermore, MS have the possibility to extend the deadline for implementing the planned measures from 2015 to 2021 or 2027 if timely achievement is not technically feasible or too costly (as further specified in Art 4.4). If ecological objectives are not achieved by 2027, but other specified conditions (Art. 4.5) are fulfilled, MS may ultimately lower the objectives set.

On 27 November 2009, the Dutch government approved the RBMP for the Ems, Meuse, Rhine–North, Rhine–Middle, Rhine–East, Rhine–West and Scheldt sub-river basins (see Figure 1). These RBM plans are a synthesis of lower level plans made within the sub-river basins by the regional water boards and one or more of the 12 provinces. The water boards had classified regional surface water bodies and had formulated objectives and programmes of measures for these water bodies in collaboration with the municipalities that are responsible for urban water management and sewerage (Mostert, 2008; Van Rijswick, 2009). The provinces had to approve and designate input from the water boards in the regional water plans. They also had the leading role in the implementation of the WFD for groundwater bodies.

Drinking water companies, environmental and nature (natural heritage) organisations, as well as agricultural and business organisations, also participated in these regional processes.

An analysis of the RBMP revealed that the ecological ambitions in the Dutch practice appeared to be limited. First, the RBMP show that water boards have abstained from designating small waters, often with strong ecological potential, as official water bodies in order to limit their reporting and monitoring tasks. Second, only 3% of the 723 water bodies has been classified as natural, whereas 55% has been assigned as artificial and 42% as heavily modified (see also Willemse, 2008; Keessen *et al*., 2010). This allowed less ambitious or, as some state, more realistic and feasible objectives and programmes of measures to be set. Third, the RBMP contain few ecologically beneficial measures such as changing water level regimes, improving waste water treatment plants or establishing manure-free buffer zones (Willemse, 2008). Moreover, the implementation of a substantial part of the measures will only start after 2015. According to drinking water companies and environmental organisations, the pragmatic approach chosen will only result in modest ecological improvements (Helpdesk Water, 2010). The Dutch Environmental Assessment Agency predicts that in 2027 only 40–60% of the water bodies will have realised all ecological objectives (Ligtvoet *et al*., 2008). However, other authors as well as many of our interviewees question the plausibility of these predictions, as they state that knowledge about ecological responses to policy measures is rather limited (Van der Wal & Waajen, 2010: 13).

In our four case study areas, all water bodies were designated as either artificial or heavily modified. Up until 2015, the four water boards will predominantly implement already planned measures, the effects of which are pretty certain. Most of these measures, such as developing nature-friendly riverbanks, can be implemented by water boards, almost independently of other actors.

4. Complications in the regional implementation

This section aims to explain why the water boards' ecological ambitions are limited. It identifies a set of seven interrelated complications as perceived by the interviewees. Table 2 shows that the data from

Table 2. Number of actors perceiving complications per area.

	De Dommel ($N = 12$)	Hollands Noorderkwartier ($N = 9$)	Reest en Wieden ($N = 10$)	Regge en Dinkel ($N = 11$)
Political unwillingness	5	7	8	9
Fear of legal obligations	7	4	7	8
Lacking knowledge	4	5	8	8
High implementation costs	4	4	3	6
Mutual dependencies	6	8	8	9
Misfits between EU directives	7	6	8	9
Public participation problems	8	5	8	8

the interviews produce a rather robust image, as the complications were perceived by actors in all four case study areas.

4.1. Political unwillingness

The concern that WFD-related measures would limit existing or future economic activities was an important driver for Dutch regional politicians to make pragmatic choices. The Ministry of Transport, Public Works and Water Management (TPW) supported this by issuing several memoranda in which they emphasised that implementation has to be guided by the principles of pragmatism, feasibility and affordability (Parliamentary Papers, 2004). The designation of artificial and heavily modified water bodies was encouraged, as this allowed for setting more lenient objectives (Parliamentary Papers, 2005), and phasing of the execution of measures (until 2027), in order to limit the costs per year (Parliamentary Papers, 2006). In 2007, the Dutch Parliament decided that the implementation of the WFD may not cause any extra costs for the agricultural sector (Parliamentary Papers, 2007). As a result more ambitious measures disappeared from the regional agendas, for they would conflict with vested agricultural interests in several ways. Measures such as remeandering of rivers or fallowing may promote biodiversity development but require scarce additional space along water bodies. Farmers are not keen on selling their land on a voluntary basis for this purpose. Establishing a good (ground) water quality and ecology could require measures aiming at a further reduction of pollution from diffuse agricultural sources such as pesticides, or such as nutrients from cattle droppings or the application of fertiliser. This could be costly for the agricultural sector. However, monitoring and controlling of these diffuse sources is difficult (see Kirk *et al*., 2007). Moreover, nature areas in general require higher ground water tables in the polders than agricultural areas. For nature areas bordered or surrounded by agricultural lands, water boards have to make a trade-off to define the appropriate water level, in collaboration with provinces and municipalities. The decision has to be included in the water boards' water management plans, approved by the provinces and finally implemented by the water boards. Although the planning was to determine preferred water level regimes by 2002, in many parts of the Netherlands such regimes have still not been determined. As both timing and outcomes of the process to determine preferred water level regimes are highly uncertain, the water boards largely excluded this topic from the RBMP. Nature organisations were not satisfied with this. However, agricultural organisations expressed their concerns that the requirement to achieve the

ecological objectives set will ultimately limit their activities, as in their view the European Commission will only stop demanding new measures the moment the set objectives have been reached.

4.2. Fear of legal obligations

It should be noted that, in the field of environmental and nature conservation policies, EU Law is binding for the EU MS. Because of the principle of Community loyalty enshrined in Article 20 of the Reform treaty, MS are obliged to do everything that is necessary in order to give full effect to EU Law and to refrain from opposing the full effect of EU Law in any way. Possible consequences of non-compliance with the WFD are that the EC will not be satisfied with the developed RBMP or with the extent to which measures are executed and goals are achieved. Ultimately, compliance can be enforced through infringement proceedings brought by the European Commission before the European Court of Justice (ECJ) and through preliminary ruling procedures brought by national courts in the course of settling disputes over Community law (Articles 251, 258 and 260 of the Treaty on the Function of the European Union). As a result, MS can be penalised and forced to comply with EU Law.

In the perception of the interviewees, the WFD requires the implementation of the measures included in the RBMP. These actions have to be taken *with the aim of* achieving ecological objectives. If monitoring shows that the objectives will not be achieved by the deadline, additional measures need to be taken until the objectives are achieved (Mostert, 2008; Howarth, 2009; Uitenboogaart *et al*., 2009; Van Rijswick, 2009; Keessen *et al*., 2010). According to the interviewees, such an obligation to achieve results conflicts with the Dutch policy tradition, according to which the effort put into achieving goals is often more important than achieving them. So, out of fear of sanctions from Brussels, politicians decided not to promise more than necessary in the RBMP. Unofficially, however, many water boards have higher ambitions to improve the status of waters and are willing to go beyond a strict implementation of the measures specified in the RBMP. For instance, in all regions, water boards and agricultural associations experiment with voluntary fallowing along water bodies in order to evaluate its impact on water quality improvement.

4.3. Lacking knowledge

The fear of legal obligations was increased by the large uncertainty about the behaviour of the natural system. The WFD requires monitoring and assessment of the ecological status of water bodies, as well as a prediction of the effects of potential measures. This has to be done following a structured and partly quantitative approach, as described in Annexes II and V of the WFD and related national guidelines. According to several ecologists, this approach overestimates the extent to which ecological processes can be generalised, quantified and predicted (Lagacé *et al*., 2008; Moss, 2008; Van Rijswick, 2008). The interviewees identified three major knowledge gaps that occurred during the implementation. First, assessing the ecological status of water bodies was hampered by a lack of knowledge. In many cases, the available monitoring data were insufficient to assess status fully in accordance with the official methods. As a result part of the assessment had to rely on expert judgement instead. A second knowledge gap concerned the influence of hydromorphological and physicochemical quality elements on biological quality elements. In particular there is uncertainty surrounding the influence of nutrient concentrations on biodiversity and the potential to achieve ecological goals in specific water bodies. As a consequence, it was difficult to determine appropriate norms for hydromorphological and physicochemical quality elements. The largest knowledge gap raised by the interviewees concerned the effects

of different types of measures on water quality and ecology. The WFD presupposes that the effects of measures can be predicted and that this knowledge can be used to set feasible objectives. In practice, however, insufficient knowledge and natural variability render it almost impossible to quantify measure–effect relations. This also hampered the identification of cost-effective measures.

4.4. Implementation costs

The proposed WFD measures require new and/or increased management efforts. The costs (and affordability) of these measures have been a constant point of debate among national and regional politicians. The water boards' predominant concern was to keep the required annual increase in the water board taxes within acceptable limits. Therefore, they promoted innovations and the implementation of measures that could create synergies between different water-related goals (Verhulst, 2006) and a phased implementation of measures (Parliamentary Papers, 2006). As a result, indications of the total implementation costs of the WFD in the Netherlands have decreased over time. Our interviewees stated that the financial means were sufficient to implement the measures specified in the draft RBMP. More ambitious measures would require additional funding which, according to the interviewees, would not be provided.

4.5. Mutual dependencies

Water boards, as functional governments, have little authority in fields other than water management. Therefore they are highly dependent on other regional actors for formulating and implementing the RBMP. According to the interviewees, these dependencies have influenced the content of the RBMP. First, they made clear that the water boards lack authority to acquire land to realise environmental objectives such as remeandering of rivers. Provinces do have the legal authority to acquire land but are not keen on using this authority in practice, as this is costly and may frustrate the original landowners. Second, the interviewees mentioned that water boards manage water levels in polder areas but also that the elected provincial council can decide that they themselves should approve the preferred water level regime. Finally, the interviewees reported that the water boards lack the authority to impose fallowing, or to restrict nutrient and pesticide usage near a water body.

Although, for the implementation of the WFD, regional collaboration has been set up in each sub-basin, the interviewees indicated that mutual dependencies often resulted in indecisiveness amongst public actors. According to the interviewees, the latter was also due to the internal compartmentalisation of these governmental actors. Internally, nature, water and agricultural departments often didn't cooperate.

4.6. Misfits between EU directives

Complications also resulted from a lack of synergy between the implementation processes of the Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC) (HD), on the one hand, and that of the WFD on the other. Many regional actors are involved in both implementation processes at the same time. The aim of the Birds and Habitats directives is the development of Natura 2000, the network of special areas of conservation for specific species of flora and fauna. Two-thirds of the 162 Dutch Natura 2000 sites are open water, and the other third of the sites require water quality and (ground)water levels that support biodiversity conservation. According to the WFD, the ultimate deadline for achieving all standards and objectives for a protected area, such as Natura 2000 sites, is 2015 (Art. 4.1.c), although

there is a discussion on the possibility of giving exemptions for these sites. However, the final designation of special areas of conservation by the Ministry of Agriculture, Nature and Food Quality (ANFQ) and the formulation of site-specific management plans for the Natura 2000 sites by the provinces in the analysed regions had not been finalised when the draft RBMP were formulated. This introduced the complication that the water boards had to plan measures to realise the water conditions required at Natura 2000 sites, without an explicit set of requirements put forward by the Ministry of ANFQ and the provinces.

Interviewees stated that the Ministry of ANFQ and the provinces considered water boards knowledgeable and capable enough to set goals and propose measures for achieving appropriate water conditions for Natura 2000 sites. The water boards, however, refused to do so unless the Ministry and the provinces clarified the habitats and species to be protected at each site, and the water conditions required in order for this to be achieved. Non-governmental organisations (NGOs) and the water boards felt that the Ministry and provinces were reluctant to explicitly choose one function over the other, i.e. nature over agriculture, or the other way around. The realisation of potential synergies by a simultaneous implementation of the WFD and the HD was also hampered by differences in the geographical scale of the directives (Natura 2000 sites are often much smaller than water bodies), aims (the WFD is oriented more towards integrated water management) and governance style (the HD relies more on top-down governance).

4.7. Public participation problems

In each of the seven Dutch sub-basins, sounding boards were established which included all relevant non-governmental actors. These sounding boards met regularly and provided input for the political meetings at the sub-basin level. In addition, many water boards organised meetings with municipalities and/or non-governmental actors within their territories or within the area of specific (groups of) water bodies. At those meetings, the participants were informed about the WFD and its implementation and contributed to the discussion, particularly in debates about the measures. According to the interviewed regional governments, participatory processes were useful to develop trust among the participants. In addition, some interviewees claimed that the participatory processes significantly contributed to the debate about environmental objectives and programmes of measures, as the participants exchanged their knowledge, values and interests in a constructive way. However, others argued that the formulation of goals was technically so complex that non-expert participants could hardly contribute. Some of the interviewed non-governmental stakeholders confirmed that the design of the participatory processes and their influence on decision-making were unsatisfactory. Most stakeholder organisations have national and regional divisions that span several river basins, whereas many participatory processes were organised at a much smaller scale. Consequently, each division had to participate in several processes at the same time, which demanded a large investment in time, knowledge and money. This was particularly problematic for the nature conservation organisations and other environmental NGOs that have limited funds and personnel. Given their large investment in the participation processes, the interviewees from these organisations were unsatisfied with their limited influence on the resulting plans.

5. The implementation of the WFD in other MS

In the previous section, we established that ecological ambitions in the regional implementation of the WFD in the Netherlands were limited due to seven interrelated complications. Recent studies in

the Netherlands support the plausibility of our findings (I-Five.eu, 2010; Junier, 2010; Ten Heuvelhof *et al*., 2010). Confronting our results with studies concerning the implementation of the WFD in Ireland (Flynn & Kroeger, 2003), Sweden (Hedelin & Lindh, 2008), Germany (Moss, 2004; Uitenboogaart *et al*., 2009; Keessen *et al*., 2010), the UK (Kirk *et al*., 2007; Moss, 2008; Woods, 2008; Howarth, 2009; Uitenboogaart *et al*., 2009; Keessen *et al*., 2010), Denmark and France (Uitenboogaart *et al*., 2009; Keessen *et al*., 2010), Luxembourg, Belgium (Flanders, Wallonia), Italy, Romania, Spain and Portugal (Keessen *et al*., 2010) indicates that, in most aspects, the Netherlands is no unique case.

First of all, literature suggests that in all countries the ecological ambitions of the WFD were watered down to some extent. A relatively small deviation from the original ambitions occurred in France and in Denmark, although the latter country as well as Belgium and Spain has not adopted the catchment plans in a timely manner, resulting in legal proceedings through the Court of Justice. A relatively large deviation occurred in the UK, Germany and the Netherlands (Moss, 2008; Howarth, 2009; Uitenboogaart *et al*., 2009; Keessen *et al*., 2010). The latter countries designated more artificial and heavily modified water bodies, and appear to rely more strongly on the phasing of measures, which has allowed for a greater focus on the feasibility of measures than on the environmental objectives to be achieved (Uitenboogaart *et al*., 2009). Furthermore, studies suggest that most of the identified complications also occur in other MS.

Socio-economic interests, in particular agricultural interests, limit the political will to define high ecological ambitions in other MS as well (Moss, 2008; Howarth, 2009; Uitenboogaart *et al*., 2009; Keessen *et al*., 2010). A lack of knowledge about the functioning of the natural system and about diffuse sources of pollution, as well as in fields such as law, economics and public participation, also frustrated the implementation in the UK and Sweden (Kirk *et al*., 2007; Hedelin & Lindh, 2008). Financial limitations also restricted the setting of ecological ambitions, as implementing agencies in other countries also aimed at a balancing of costs and benefits by defining affordable measures, e.g. by phasing their execution (Kirk *et al*., 2007; Howarth, 2009; Uitenboogaart *et al*., 2009; Keessen *et al*., 2010).

Similarly, mutual dependencies between the implementing authorities played a role in several other MS where problems were also faced in integrating water, nature and agricultural policies, and where problems resulting from the simultaneous implementation of the WFD and the HD were also experienced (Moss, 2004; Uitenboogaart *et al*., 2009; Keessen *et al*., 2010). Complications in public participation processes were manifest in the UK, Ireland, Germany and Sweden. It appeared difficult to integrate normative discussions, in which all interested parties could be involved, and substantive discussions, which were highly complex and only accessible for technical experts (Steyaert & Ollivier, 2007; Hedelin & Lindh, 2008; Moss, 2008; Howarth, 2009). Furthermore, it was also recognized that resource constraints among both organising and participating actors limited participation (Flynn & Kroeger, 2003; Kirk *et al*., 2007; Woods, 2008; Howarth, 2009).

However we have not found any indications in other MS that fear for the legal obligations of the WFD limited the specification of ecological ambitions. Indeed, in France the opposite appeared to be the case. Initial ambitions were raised as French authorities feared that setting more modest objectives would not be accepted by the Commission and could be followed by condemnation by the Court of Justice. In France, the latter had previously occurred with the implementation of other water directives (Uitenboogaart *et al*., 2009).

6. Discussion and conclusion

The open method of coordination promoted by the EU structures processes in the MS. However, within these pre-structured processes, pragmatic approaches are allowed. Our research has revealed that the latter is the case in the regional implementation processes of the WFD. Regional actors creatively comply with the Directive and tend to frame modest ecological ambitions. This limited ambition is the result of a lack of political willingness to take risks to improve water ecology. Knowledge restrictions, financial limitations, mutual dependencies, misfits with other EU directives and public participation problems also contributed to a modest level of ambition, not only in the Netherlands but also in other MS. Fear of legal complications hampered implementation processes, especially in the Netherlands.

One could consider the lack of ambition in the implementation of the WFD a failure of the 'experiment' with more bottom-up governance, and see it as a reason to fall back on traditional top-down approaches. However, in line with the notion of subsidiarity, we believe that ecological ambitions ask for creative tailor-made solutions that cannot be specified in detail at the EU level (see also Ostrom, 2005: 281). Generating such solutions requires a bottom-up governance approach. At the same time, we believe that top-down enforcement of the realization of these solutions is necessary. Therefore the European Commission and, ultimately, the Court of Justice, will need to make sure that the goals are achieved in time, as set down in article 1 and 4 of the WFD. We therefore opt for continuing the experiment. Like many of our interviewees, we see that the WFD has already increased ecological awareness, so we expect that reducing the perceived complications might result in higher ecological ambitions and a higher level of ecological effectiveness. Therefore, the identified complications should be dealt with where possible.

Complications resulting from a lack of knowledge, mutual dependencies of implementing agencies, perceived misfits between EU directives and public participation problems could be resolved by focussing even more than is currently the case on mutual collaboration, exchange and learning between the actors involved (see Huitema *et al*., 2009; Pahl-Wostl, 2009; Van Rijswick *et al*., 2010). This could be done by (further) development of communities of practice (Wenger, 2000) that try to generate and exchange knowledge about specific aspects of the implementation of the WFD, through discussing specific types of water bodies, specific measures (e.g. to jointly achieve the ecological objectives of the WFD and the HD), monitoring and assessment procedures, or public participation. The RBMP provide a good basis for knowledge exchange, mutual comparison and adjustment. In a later stage, exchange of knowledge about the effects of specific measures may reduce knowledge gaps related to their (cost-) effectiveness. Communities of practice could also discuss more meaningful, effective and efficient forms of public participation such as participatory multi-criteria methods, scenario workshops and mediated modelling (e.g., Kallis *et al*., 2006; van Kouwen *et al*., 2009). Such methods allow for intensive collaboration between policymakers, researchers and other stakeholders and may facilitate learning from each others' knowledge, values and interests (Raadgever, 2009).

Such collaboration processes could also result in a gradual identification of policy options that are both ecologically sound and politically attractive for the regional actors. If these communities of practice are institutionally well-embedded at the administrative, governmental and political level (Edelenbos *et al*., 2009), they could have a positive impact on political willingness at the regional level to set more ambitious ecological targets. The European Commission could contribute to these regional processes by facilitating the development and continuation of communities of practice, and by arranging

reflection and feedback meetings between these communities. Researchers in the field of water and environmental governance could contribute to these meetings and the more general learning processes by identifying good practices of WFD implementation in different MS and regions.

Acknowledgements

This paper is based on research financed by the Living with Water programme 'Aquaterra-Nederland' (project number P1027). The authors gratefully acknowledge this support. The authors also wish to thank all interviewees for their contribution and Clare Barnes for her language corrections.

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Received 29 October 2010; accepted in revised form 9 May 2011. Available online 16 July 2011