Participation in the implementation of the Water Framework Directive in Denmark: The prospects for active involvement

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Abstract

Public participation in the form of informing, consulting and actively involving all interested parties is required during the implementation of the Water Framework Directive (WFD). This paper discusses progress with implementation of the WFD in Denmark and the measures taken to conform to the requirements for public participation. The first aim of the paper is to establish whether enough is being done regarding participation in Denmark, the conclusion being that whilst Denmark is in line with statutory requirements, consultation appears limited whilst evidence of active involvement is lacking. The paper then presents the Danish AGWAPLAN project which actively involved farmers in selecting measures to reduce diffuse nutrient pollution from agriculture. The second aim of the paper is to establish whether nationwide implementation of the AGWAPLAN concept is worthwhile. AGWAPLAN resulted in outcomes which could potentially increase the effectiveness of the WFD. Furthermore, the adoption of the project approach would also be one way to satisfy the requirement for active involvement in the Directive. However, some problems exist, relating to time, administrative costs, problems with control and the fact that additional measures to reduce N leaching would be necessary. Whether national implementation is worthwhile requires the weighing up of the advantages and disadvantages of the concept, which is ultimately a political decision.

Keywords: Active involvement; Cost-effectiveness; Denmark; Diffuse nutrient pollution; Public participation; Water Framework Directive

1. Introduction

The Water Framework Directive (WFD) (2000/60/EC) (European Commission, 2000) was implemented in legislation in the EU countries in 2003. The environmental target of the WFD is to improve the water quality of all water bodies in Europe to 'good status', which should be achieved by 2015. Public
participation is emphasised in the Directive, representing one of several major innovations (Kaika & Page, 2003). Article 14 of the WFD contains statutory requirements to inform stakeholders/the public, whilst consultation with stakeholders/the public is required on three separate occasions regarding the production of certain required strategic documents within each river basin; however, over and above informing and consulting, the initiation of more intensive deliberations is considered important. Specifically, Member States ‘shall encourage the active involvement of all interested parties in the implementation of the Directive, in particular the production, review and updating of the RBMPs’ (CEC, 2000). Active involvement refers to people actively participating in the planning process by discussing issues and contributing to their solution.

The WFD requires the introduction of river basin management, involving the identification of basin districts and the preparation of river basin management plans (RBMPs) for each district as a common approach amongst Member States (MS). Each RBMP must contain details of the current water quality, the distance to the target and a Programme of Measures (PoMs) to be implemented in order to reach the target. The WFD is a framework directive and the means by which MS should achieve good status are not stipulated. In other words, it is target oriented, which is in contrast to earlier water Directives, such as the Nitrate Directive, which was means oriented and stipulated the various measures that MS should implement (Wright & Mallia, 2003, 2008). Therefore, the selection of the PoMs is the responsibility of the individual MS. The environmental targets of the WFD should be achieved in a cost-effective manner. Specifically, Annex III of the Directive (CEC, 2000), states that MS should make judgements about the most cost-effective combination of measures in respect of water uses, based on estimates of the potential costs of such measures, thereby directing administrations towards the application of cost-effectiveness analysis for the identification of measures for the PoMs.

However, active involvement is considered particularly important during the selection of the PoMs in the RBMPs, since it will most likely improve the effectiveness of implementation and contribute to delivery in the long term (EC, 2003). Therefore, instead of the national top-down approach to the selection of measures based on cost-effectiveness analysis, selection could be based on the active involvement of stakeholders. This illustrates a contradiction within the Directive between, on the one hand, the requirement for top-down decision-making processes such as cost-effectiveness analysis and cost-benefit analysis, and on the other hand, active involvement (Wright, 2007).

The aim of this paper is two-fold. First, due to the importance of participation for the successful implementation of the Directive, an analysis of the participatory measures which have been initiated in Denmark is provided, essentially to determine whether enough is being done in this respect. Secondly, due to the importance attributed to the active involvement of stakeholders in the selection of measures for the PoMs, the Danish AGWAPLAN project is presented, which actively involved farmers in the selection of measures to address diffuse nutrient pollution. The AGWAPLAN concept could potentially be adopted as an approach in the forthcoming Danish municipality action plans and the paper thus seeks to establish whether national implementation of the project concept would be worthwhile.

The following section provides a concise discussion of public participation in the WFD, focusing on its potential to increase policy effectiveness. Section 3 then discusses the implementation of the WFD in Denmark, with an emphasis on the forms and degree of participation initiated. Section 4 is a presentation of the Danish AGWAPLAN project, which is followed by the results and a discussion, which provides an analysis of whether the adoption of the AGWAPLAN concept on a national basis would be worthwhile. Finally some concluding remarks are presented.
2. Public participation in the WFD

Whereas justifications for public participation have traditionally focused on emancipation or legitimacy, growing attention is being given to its potential to increase the effectiveness of governance (Beierle & Cayford, 2002; Koontz & Thomas, 2006). As a reflection of this, in sustainable water management, participation is one of the emerging principles for effective water governance, essentially because of the potential to handle the inherent complexity and uncertainty of the context (Videira et al., 2009). This focus on effectiveness is apparent in the WFD, with the guidance document on participation (EC, 2003:6) stating that, ‘public participation is not an end in itself but a tool to achieve the environmental objectives of the Water Framework Directive’. Indeed, participation is emphasised in the Directive and it should play a key role during implementation when water managers need to listen to water users, give them some influence in decision-making and share responsibility (Mostert, 2003a). In terms of the increased effectiveness of policy, the substantive reasoning in favour of participation is that it encourages multiple perspectives, which improves understanding of the issues and therefore the selection of appropriate solutions, whilst instrumental reasoning suggests that encouraging collaborative relationships assists with implementation and with defusing conflict (Blackstock et al., 2007). These potential advantages illustrate why participation is considered to be so important for the success of the WFD. EU environmental policy has been plagued by continuing implementation deficit (Knill & Lenschow, 2000) and, in this context, increased participation is seen as a potential solution (Newig, 2007).

Numerous typologies (e.g. Thomas, 1993; Beierle, 2002) of public participation exist, many of which use the metaphor of the ladder (e.g. Arnstein, 1969): a hierarchical concept with each rung indicating a greater degree of involvement and influence of the public. Table 1 presents the degrees of participation

<table>
<thead>
<tr>
<th>Levels of participation included in WFD</th>
<th>Detailed description of participatory levels</th>
<th>Legal requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-determination</strong></td>
<td>Parts of water management handed over to interested parties.</td>
<td></td>
</tr>
<tr>
<td><strong>Shared decision-making</strong></td>
<td>Interested parties not only participate actively in planning process but become partly responsible for outcome.</td>
<td>Best practice</td>
</tr>
<tr>
<td><strong>Active involvement</strong></td>
<td>Interested parties participate actively in the planning process by discussing issues and contributing to their solution.</td>
<td>To be encouraged¹</td>
</tr>
<tr>
<td><strong>Consultation</strong></td>
<td>Gather information/opinions from those involved to develop solutions based on knowledge. No share in decision-making, no obligation to take on board people’s views.</td>
<td>Statutory Requirement</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td>To facilitate the participation of the public in the planning process.</td>
<td></td>
</tr>
</tbody>
</table>

¹According to EC (2003), when active involvement is mentioned in the WFD it is this level that is being referred to i.e. participation in development and implementation of plans is considered to be the core requirement of active involvement.
encapsulated in the WFD (EC, 2003), which is also a hierarchical concept. Both information and consultation are statutory requirements of the Directive. The final three levels are defined as degrees of active involvement. Encouraging the first level should be considered the core requirement for active involvement in the Directive, whilst the latter two forms are not specifically required in the WFD but may often be considered as best practice (EC, 2003).

Much of the literature explicitly favours the higher rungs over the lower, advocating greater degrees of public involvement (e.g. Arnstein, 1969; Johnson et al., 2004). Certainly, the potential of the one-way provision of information to lead, for example, to more creative decision-making is very limited. Indeed, in the literature, information is not considered to be genuine participation but is rather a necessary first step (Mostert, 2003b; Pereira et al., 2005). Consultation means that the public can react to plans and proposals developed by the authorities. However, the ex-post nature of consultation means that opportunities to influence plans are restricted, as decisions have already been taken and possibilities to change them may be slight, due to the significant resources which have already been expended to this point. In this case, many of the concerns of the public may not be addressed and participation is less likely to increase acceptance (Mostert, 2003b).

The first level of active involvement entails stakeholders actively participating in the planning process by discussing issues and contributing to their solution. According to Mostert (2003b), to obtain the benefits of participation requires a relatively high degree of participation, involving discussion at least. This suggests that the first level of active involvement, for which there is no statutory requirement, should not only be encouraged but should rather be interpreted as being the bare minimum, in order to increase the effectiveness of the Directive. Indeed, active involvement has been identified as being the most likely key to success with regards to achieving the desired water quality objectives of the Directive (EC, 2003). Discussing issues and contributing to their solution implies increased opportunities for stakeholders/the public to contribute to the planning process with local knowledge and new perspectives on problems, which can increase the potential for better-informed and more creative decision-making (Pimbert & Wakeford, 2001; Mostert, 2003b; Pellizzoni, 2003). Active involvement also implies a greater degree of communication between the involved partners, which has been shown to play an important role in acceptance (Schenk et al., 2007) and thereby better implementation. As active involvement implies more intense interaction and communication between all partners, it typically comprises fewer actors than the other levels of participation (Özerol & Newig, 2008).

Whilst, generally speaking, greater levels of participation are favoured in the literature, different levels of engagement are likely to be appropriate in different contexts, depending on the objectives of the work and the capacity for stakeholders to influence outcomes (Richards et al., 2004). Active involvement is envisaged to occur during the production, review and updating of river basin management plans (CEC, 2000) and is particularly important during the selection of the PoMs in the RBMPs, since it will most likely improve the effectiveness of implementation and contribute to delivery in the long term (EC, 2003).

3. WFD implementation and public participation in Denmark

Denmark is divided into four river basin districts, which are further sub-divided into 23 main catchment areas. A major restructuring of the public sector was finalised in 2007, under which the former counties, which were responsible for the implementation of the WFD, were abolished. Also, the previous 270 Danish municipalities were reduced to 98. Seven new decentralised environment centres, under the auspices of the Ministry of Environment, were established which, together with the 98 municipalities, have
responsibility for the implementation of the WFD. The environment centres are required to produce RBMPs for each of the 23 catchments identified in the country. Each RBMP will, for example, describe the status of the water areas, include the final environmental objective for each catchment and a description of which conditions must be changed to realise the objectives. Each plan should also include a programme of measures, which should describe the general manner in which the environmental objectives of the RBMP will be achieved and the likely costs of measures.

The municipalities have the responsibility to produce action plans subsequent to the publication of the RBMPs, which will give details as to how the requirements of the PoMs will be realised within the borders of each municipality (Ministry of Environment, 2007a). The environment centres have produced a preliminary analysis of the reduction requirement and the costs for all catchments based on preliminary targets in autumn 2008 (Jacobsen, 2008).

Achieving good status for all waters is a very ambitious task and the costs will be high (Kallis & Butler, 2001). A national committee has analysed the likely reduction requirement and the associated costs for reaching good status (Ministry of Finance, 2007). The work from this committee produced 3 different scenarios, which varied according to the stringency of the target that should be achieved and the resulting cost for the implementation of the WFD, which was calculated to be between €16 and €62 million annually to ensure good status in all water bodies (Ministry of Finance, 2007). This work has since been updated and the costs have increased to over €100 million annually for the politically most likely scenario (Jensen et al., 2009).

There follows an analysis of the degree and form of participation initiated thus far in Denmark. Public participation is a broad term which encompasses a myriad of different processes operating at different scales, involving different actors to varying degrees and for different purposes (Richards et al., 2004), something which is very apparent in the following analysis, where a distinction is made between the involvement of ‘the public’ and ‘stakeholders’. This is because such a distinction is quite apparent in Denmark, which has a history of involving stakeholders in the formulation of policy. During the 20th Century, the Scandinavian countries (including Denmark) established strong traditions for involving interest organisations in the preparation and implementation of public policies, a form of governance known as Corporatism (Christiansen & Nørgaard, 2007).

Turning first to the involvement of organised interests in the implementation of the Directive, in keeping with this tradition, a stakeholder group (Aktørgruppen) was established subsequent to the transposition of the WFD into Danish law in 2003, which included all the major stakeholders and provided a forum to discuss the implementation of the Directive in detail, including such topics as how the requirements of the WFD should be interpreted into Danish law. According to certain environmental NGOs who participated (Danmark’s Naturfredningsforening, 2008; Danmark’s Sportsfiskerforbund, 2008), the meetings represented a forum in which it was possible to exert genuine influence on the policy-making process through, for example, upholding the ‘spirit’ of the Directive and insisting on following implementation in strict accordance with the official text. However, Aktørgruppen was closed down after only one year. This coincided with a change in the manner in which the Danish government handled environmental NGOs, with NGOs having to become proactive by asking for specific information, instead of being kept informed through regular meetings (Danmark’s Naturfredningsforening, 2008 and Danmark’s Sportsfiskerforbund, 2008).

Each of the 7 decentralised environment centres established Water and Nature Councils, composed of representatives from officially sanctioned organisations invited to be present, with seats being allocated as illustrated in Table 2. The councils represent a forum for dialogue, without final decision-making powers. Since their establishment in June 2007, each council has held between 1 and 3 meetings, during which the
stakeholders have been informed of progress with the implementation of the WFD and during which it has been possible to ask questions or provide comments concerning, for example, suggestions for the RBMPs.

Environmental NGOs traditionally consulted in the environmental policy-making process have expressed surprise over the fact that the Ministry of Finance, for the first time, has come to play a central role in the implementation of an environmental directive in Denmark (Danmark’s Naturfredningsforening, 2008; Danmark’s Sportsfiskerforbund, 2008), essentially taking over much of the responsibility from the Ministry of Environment. The Ministry of Finance has established working groups to prepare the implementation of parts of the WFD, such as the committee to assess the likely reduction requirement and the associated costs for reaching good status (Ministry of Finance, 2007).

Regarding the involvement of the public, Article 14 of the WFD obliges MS to allow 6 months for written consultations subsequent to the publication of the work programme (WP), the analysis of the significant water management issues (SWMI) and the draft river basin management plan (dRBMP). In Denmark, the requirement to publish and make available for comment the work programme and time plan for the production of the RBMPs was interpreted by the State as being fulfilled through the publication of a pamphlet at the end of 2006, with the public being given 6 months in which to comment (Ministry of Environment, 2007a). The overviews of the significant water management issues were published along with additional material for ‘inspiration’, such as the basic analyses and work programme, and a public consultation phase known as the ‘Idea Phase’ was initiated, whereby authorities, organisations and individuals were invited to send in ideas via a dedicated homepage as to how to improve the aquatic environment. This opportunity was open for a 6 month period from June 2007. The public interest in the river basin planning process exceeded the Ministry of Environment’s most optimistic expectations with nearly 2,500 suggestions being received from a range of stakeholders, from individuals to more organised interests, such as environmental NGOs (Ministry of Environment, no date), which suggests that a desire to participate in environmental policy-making is strong amongst the public in Denmark. The Idea Phase represents a consultative form of participation, which has the potential to increase the effectiveness of the WFD by incorporating the knowledge of local actors, in the form of concrete suggestions as to how to

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### Table 2. Water and nature council official stakeholders (adapted from Ministry of Environment, 2007b).

<table>
<thead>
<tr>
<th>Representing</th>
<th>Stakeholder</th>
<th>Number of seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental authorities</td>
<td>Local environment centre</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>Forest and Nature Agency (chairman)</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>Municipalities from the catchments covered by the environment centre</td>
<td>1 representative from each municipality</td>
</tr>
<tr>
<td>Industry</td>
<td>Danish Agriculture</td>
<td>2 representatives</td>
</tr>
<tr>
<td></td>
<td>The Confederation of Danish Industry</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>Danish Aquaculture</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>The Danish Forestry Association</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>Danish Fishermen’s Association</td>
<td>1 representative</td>
</tr>
<tr>
<td>NGOs</td>
<td>The Danish Society for Nature Conservation (DN)</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>The Danish Society of Sports Fishermen</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>Danish Water and Waste Water Association</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>The Danish Outdoor Council</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>The Danish Bird Society</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>The Danish Hunters’ Association</td>
<td>1 representative</td>
</tr>
<tr>
<td></td>
<td>The Danish Waterworks Association</td>
<td>1 representative</td>
</tr>
</tbody>
</table>
address localised water quality issues, for example, into river basin planning. All suggestions will be read and will be considered for inclusion in the forthcoming municipality action plans, although there is no guarantee that the ideas will be acted upon. Based on an examination of the preliminary dRBMPs, it does not seem as if the suggestions from the idea phase have been used to any real extent, as implementation is mainly based on national regulatory measures. However, under Annex VII of the WFD (CEC, 2000), the competent authority must include a summary in the RBMPs of the public information and consultation measures taken, their results and the changes to the plans made as a consequence. The final targets of the WFD and the necessary reductions were not known when the Idea Phase took place in June 2007, as the EU Intercalibration exercise had not been completed, the purpose of which is to ensure a standardised definition of good ecological status across Europe. This meant that the debate was not as concrete and beneficial as it might have been if it had occurred after the publication of the dRBMPs.

Across the EU MS, a wide range of tools have been used during the three statutory consultation steps, including passive tools, such as websites e.g. the Danish Idea Phase, TV and radio spots, and newspaper articles, and more active tools such as local meetings and exhibitions (Kampa et al., 2009). According to Kampa et al. (2009:12), Denmark is one of the countries which has applied the least number of tools; Poland has applied the most tools with 27, whilst Denmark has applied only 7 tools and is fourth from last amongst the MS in this respect. ‘The number of tools mobilised can be seen as an indicator of the consultation efforts undertaken by Member States, in terms of time and financial resources’ (Kampa et al., 2009:12).

The dRBMPs should have been made public at the end of 2008; consultation on the dRBMPs represents a fundamentally important consultation phase, as they are to be the primary vehicle for consulting the public and stakeholders, and transparent and effective consultation will be of utmost importance for the successful implementation of the final RBMPs (Kampa et al., 2009). However, publication of the dRBMPs was delayed until further notice in the summer of 2008, whilst all debate concerning the plans was effectively stopped by the government (Wittrup & Lykke, 2009). For example, the Water and Nature Councils have not held meetings since the summer of 2008. The Danish municipalities, as well as the National Farmers Union, interpret the closing down of the debate as a break from the long tradition of openly discussing the creation of environmental policy in Denmark (National Farmers Union, 2009; Wittrup & Lykke, 2009).

The official reason for the delay in the publication of the dRBMPs was that they were to be incorporated into a comprehensive environmental strategy entitled Green growth, which was to encompass initiatives for the aquatic environment, together with ammonia, CO2 emissions and biodiversity. Green growth was originally scheduled for publication in January 2009, but was delayed several times, finally being published at the end of April 2009. Once again, the Ministry of Finance played a central role in the production of Green growth, chairing the process, essentially to ensure that the costs are kept as low as possible. Denmark is one of 8 out of 27 MS which have not published their dRBMPs on time (Kampa et al., 2009). It is likely that some initiatives with respect to the WFD implementation will be pushed to the next planning cycle, postponing the achievement of good status to 2021, a tactic which is also being adopted by other member states, such as The Netherlands and the UK (Jacobsen, 2009; Kampa et al., 2009). It is worth noting that in Green growth the Government expects to achieve a major part of the measures required through national legislation, and a tax or quota on nitrogen. It is likely that more measures will be required in the second planning period to achieve the WFD targets. As a large proportion of the WFD implementation is to be achieved through national legislation, fewer funds have been allocated for the implementation of local measures. As of mid-2010, the size of the funds that will be made available to the municipalities to implement the local action plans is still unknown.
<table>
<thead>
<tr>
<th>Phase of planning</th>
<th>Official WFD implementation</th>
<th>Danish implementation&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Actual/predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Programme and</td>
<td>Deadlines 22.12.06</td>
<td>Work Programme and</td>
<td>On schedule</td>
</tr>
<tr>
<td>Time plan</td>
<td>6 months</td>
<td>Time plan</td>
<td></td>
</tr>
<tr>
<td>SWMIs</td>
<td>Deadlines 22.12.07</td>
<td>‘Idea Phase’ (Including</td>
<td>22 June 2007, 6 months ahead of</td>
</tr>
<tr>
<td></td>
<td>6 months</td>
<td>SWMIs)</td>
<td>WFD deadline</td>
</tr>
<tr>
<td>dRBMPs</td>
<td>Deadlines 22.12.08</td>
<td>dRBMPs</td>
<td>Pre-hearing of dRBMP started on the</td>
</tr>
<tr>
<td></td>
<td>6 months</td>
<td></td>
<td>14th January 2010 (8 weeks)&lt;sup&gt;1,2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Final RBMPs published</td>
<td>22.12.09</td>
<td>Final RBMPs published</td>
<td>19 October 2010&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Draft municipality action plans</td>
<td>Probably mid 2011&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final municipality action plans</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( + 3 months)</td>
<td></td>
</tr>
<tr>
<td>Implement programme of</td>
<td>22.12.12</td>
<td>Implement programme of measures</td>
<td>Probably end 2012&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>measures</td>
<td></td>
<td>( + 3 months)</td>
<td></td>
</tr>
<tr>
<td>Achieve target</td>
<td>22.12.15</td>
<td>Achieve target</td>
<td>Probably end 2015&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>1</sup>BLST (2010); <sup>2</sup>Kampa et al., 2009; <sup>3</sup>Landbrugsavisen, 2010.
Table 3 presents an overview of the scheduled river basin planning process in Denmark including hearing periods, compared with the official schedule of the WFD and finally the actual or predicted dates for publication or hearing periods. Due to the delay of Green growth, a date has still not been set for the publication of the dRBMPs, or the subsequent 6 month public hearing process. As can be seen, the delay in the publication of the dRBMPs means that the administration is under significant time pressure, the result being that something must be compromised. Concern has been expressed that the delay will mean that the duration of the public hearings for the dRBMPs and the future scheduled hearings will be reduced in order to meet the deadlines of the WFD, rendering them nothing more than window dressing (Wittrup & Lykke, 2009). However, according to Kampa et al. (2009), the public consultation hearing phase on the dRBMPs in Denmark was intended to start in 2010. Nevertheless, at the time of writing, consultation had still not started. Instead, the Danish government presented the dRBMPs to the municipalities in a prehearing phase, which ended in March 2010 and which allowed the municipalities to comment. The public consultation is scheduled to begin in September 2010. Actual plans for some locations are in place, which will facilitate more concrete discussions. It is expected that all future deadlines of the WFD will be delayed by one year up to the deadline for the implementation of the PoMs, for which the plan is to be back on schedule with the official WFD timetable (Kommunernes Landsforening, 2009). Finally, an additional 8-week consultation phase has been scheduled in Denmark, subsequent to the publication of the municipality action plans.

According to the EU Commission (EC, 2007), public participation should be seen as an opportunity for MS to increase the effectiveness of the WFD. The measures initiated in Denmark to date to involve both official stakeholders and the public in the implementation of the WFD are of a consultative nature, the extent of which appears to be relatively limited. The Water and Nature Councils only held between 1 and 3 meetings, and since the summer of 2008 all consultation on the dRBMPs has been stopped. Concerning consultations with the public, the few number of tools adopted in Denmark indicates that initiating the participation of the public has not received high priority to date. Whilst evidence of active involvement in Denmark appears to be lacking to date, this should be expected to a degree as the awaited publication of the dRBMPs, and in Denmark’s case the future Municipality action plans, will be the main focus for participation whereby the public and stakeholders might be given the opportunity for active involvement in, for example, the selection of measures in the PoMs. However, the closing down of Aktørgruppen, which represented the early active involvement of official stakeholders, can be interpreted as a missed opportunity to benefit from stakeholder knowledge and to increase acceptance. Regarding the possible degree of future participation, the delay in the publication of the dRBMPs raises cause for concern. Despite confirmation that the duration of the hearing periods will remain unchanged, the general time pressure under which the authorities are working may well jeopardise an adequate response to the input of the public, for example the measures suggested during the Idea Phase. An inadequate response can result in the opposite of that intended by participation, leading to less public acceptance and more implementation problems (Mostert, 2003b).

4. The AGWAPLAN project

The Danish AGWAPLAN project started in November 2005 and officially ended in March 2009, and was funded under the Life program, the EU’s financial instrument to support environmental and nature conservation projects. Whilst AGWAPLAN only had the status of a technical project, it provides an
example of how stakeholders, in this case farmers, could be actively involved in the selection of measures to reduce diffuse N and P pollution from agriculture for the PoMs in the RBMPs. According to the guidance document on public participation (EC, 2003), active involvement is particularly important during the selection of the PoMs since it will most likely improve the effectiveness of implementation, and contribute to delivery in the long term. The approach adopted in AGWAPLAN could potentially be used as a model to be adopted in the forthcoming municipality actions plans, with the possibility of national implementation.

The overall aim of AGWAPLAN was to demonstrate how the environmental objectives for diffuse pollution under the WFD can be reached by farmers’ voluntary implementation of good agricultural practices (GAP) (Wiborg, 2004). A good agricultural practice is one which ‘minimises the risk of causing pollution while protecting natural resources and allowing economic agriculture to continue’ (DEFRA, 2003). Therefore, AGWAPLAN integrated the central aims of the environmental authorities and the agricultural sector, and the project thus sought to identify win-win solutions with GAP representing the

Diffuse pollution from agriculture is the most significant pressure on the aquatic environment on an EU level and the main threat to achieving good status by 2015 (Kampa et al., 2009). Therefore, effective action to alleviate this problem will contribute significantly to the achievement of the WFD targets. Diffuse N pollution is one of the principal unresolved environmental problems in Central and Western Europe (Messner, 2006) for which there are many reasons. Whilst it is clear that agriculture is responsible for a large proportion of nitrate emissions, the structure of the sector, being composed of many dispersed actors and production sites, makes it virtually impossible to identify those responsible for the pollution. Undefined spatial scales and timescales lead to further uncertainties that are strategically dealt with by different actors and at different geographical scales (Kastens & Newig, 2007: 234). In Denmark, Aquatic Programme III, implemented in 2004, was the first step toward achieving the targets laid down in the WFD. The plan will run until 2015, when the target of good status under the WFD is to be achieved; this plan includes a 13% reduction in N leaching. N leaching from the root zone has been in decline since the beginning of the 1990s; however, monitoring in streams and coastal waters during more recent years indicates that the reduction has stopped (Waagepetersen et al., 2008). With regards to N leaching, the first evaluation of the Aquatic Programme III concludes that N leaching will only be reduced by 3–4% in 2015 under the present programme (Waagepetersen et al., 2008). The emergence of diffuse nutrient pollution has led authors to conclude that centralised efforts are insufficient to solve many environmental problems (Lubell, 2004; Durant et al., 2004). Rather, these authors point to the central role of involving stakeholders in efforts to tackle diffuse pollution in order to develop effective policy.

AGWAPLAN encompassed the active involvement of 20 farmers in partnership with the Danish Agricultural Advisory Service (representing agricultural interests) and the Danish Institute of Agricultural Science (representing agricultural research and the environmental authorities). It encompassed three pilot areas; however, this paper focuses on the results achieved at the Norsminde Fjord pilot area where the aim was to reduce N leaching to an estuary.

AGWAPLAN was based on 3 tools: a GAP manual, an integrated advisory service (IAS) and a data information system (DIS). The GAP manual consisted of the description and calculation of the effect on N and P leaching of a series of good agricultural practices, including the cost per ha of each measure. The farmers in the AGWAPLAN project could implement those measures on the farm which they thought suitable. The IAS was the core of the AGWAPLAN project and occurred both at the level of the catchment
and the individual farm. At the farm level, the IAS started with an initial meeting, which lasted approximately 3 to 4 hours between the farmer, agricultural consultants and a representative from the environmental authorities. At the catchment level, the focus was on informing farmers regarding the progress of the project and on discussing potential catchment level solutions, which would require cooperation between farmers.

Implementing the target-oriented WFD will require detailed environmental and agricultural data at catchment and farm level (Wiborg, 2004). Therefore, AGWAPLAN sought to develop a comprehensive data information system (DIS), which was composed of detailed information from the pilot areas and farms on soil resources, hydrogeology, agricultural production and structure, nutrient balances and land use (Wiborg, 2004). The DIS presented the data in the form of an electronic map system, which farmers could use to zoom in on their farm and which could identify problem areas for nutrient leaching by focusing right down to the level of the individual field.

5. Results and discussion

Due to the importance attributed to the active involvement of stakeholders in the selection of measures for the PoMs, this section analyses whether the adoption of the AGWAPLAN concept on a nationwide basis is worthwhile as an approach to be used in the coming municipality action plans. The conclusion to this question is based on several considerations. First, as AGWAPLAN entailed the active involvement of stakeholders, an analysis of the outcomes of AGWAPLAN is presented, to determine whether active involvement resulted in outcomes that would increase the effectiveness of the WFD i.e. an improved quality of decisions and the subsequent increased acceptance of those decisions, which would be expected according to the theoretical literature on participation. The outcomes of AGWAPLAN were identified during a series of interviews with project participants (see Wright & Jacobsen, 2010). Secondly, as the cost-effective achievement of the environmental targets of the WFD is required, the degree to which an adoption of the AGWAPLAN concept would satisfy this criterion is provided. Thirdly, as administrations have limited budgets, an analysis of the potential costs involved in a national implementation is also provided. Fourthly, the environmental results that were achieved in the project are discussed. The section concludes with a discussion which summarises the results but then moves on to consider a number of additional factors, which make the national implementation of the AGWAPLAN concept problematic.

5.1. Potential to improve effectiveness

Despite the fact that, in general, awareness and acceptance of less visible problems such as diffuse pollution amongst farmers is low, participation in AGWAPLAN positively influenced farmer acceptance of the environmental objectives of the WFD, with the majority of farmers accepting that something needs to be done about nutrient pollution and acknowledging that they have to implement measures, so that it is no longer a question of whether something should be done or not (Wright & Jacobsen, 2010). An increased acceptance of plans is a potential benefit of participation (e.g. Mostert, 2003b). Schenk et al. (2007) identify the very act of communication itself as playing an important role in the subsequent acceptance of policy.

The potential of participation to decrease hostility and aggressive attitudes amongst participants has been discussed (e.g. Fiorino, 1990; Rauschmayer & Wittmer, 2006; Blackstock et al., 2007). Historically, the
creation of environmental policy concerning the aquatic environment in Denmark has been characterised by conflict between the environmental authorities and agriculture, a conflict which has its roots in an episode of severe eutrophication caused by nutrient leaching in the Kattegat in 1986, and the discovery of dead lobsters which drew intense media and political attention, and sparked the creation of the first plan for the aquatic environment in 1987 (Andersen & Hansen, 1991). However, improved relations between farmers and the environmental authorities have been reported by both sides. The improved relations can, in part, be attributed to the establishment of a communicative process between the farmers and the environmental authorities, which resulted in empathy and a mutual understanding of the respective positions of each party (Wright & Jacobsen, 2010). Such a process can lead to a mental reconstruction of each actor’s argumentation (Renn, 2006).

The possibility of improving the quality of decisions by incorporating the knowledge of local actors has been widely discussed (e.g. Pimbert & Wakeford, 2001; Pellizzoni, 2003) and such a conclusion is supported by the outcomes of AGWAPLAN. The communicative process, entailing the exchange of ideas between individuals facing the common problem of reducing N and P leaching, resulted in the generation of several novel solutions including selling farms to part-time farmers, leading to extensification, the establishment of wetlands, mini-wetlands and the re-establishment of lakes to absorb nutrients. In many of these instances it was the farmers themselves who thought of the potential solutions based on their in-depth knowledge of the local conditions. The potential for unearthing such creative solutions is negligible under traditional top-down policy-making, which imposes general measures at a national or regional scale to be implemented at the farm level.

According to Blackstock et al. (2007), there is a lack of published peer-review literature evaluating whether the benefits of participatory approaches are achieved in practice. The analysis of the outcomes of AGWAPLAN documents a number of the benefits occurring, which can be summarised as an improved quality of decisions due to the incorporation of local knowledge and increased acceptance of, and hence improved implementation and potential compliance with, the WFD, thereby providing modest empirical evidence in support of the occurrence of the advantages of participation in practice\(^1\). Such outcomes corroborate the importance attributed by the authors of the guidance document on participation (EC, 2003) to active involvement during implementation.

5.2. Cost-effectiveness

The cost-effective achievement of environmental targets is required by the WFD (CEC, 2000). The choice can be between national measures and more local measures, and the cost efficiency can be difficult to determine (Jacobsen, 2007). In this respect, local pollution control of the discharges from agriculture is one of the most cost-effective policy instruments for achieving the WFD’s objectives (De Økonomiske Råd, 2009). Following on from this, comprehensive knowledge of the site-specific hydrological and agricultural conditions is indispensable in determining the appropriate local objectives and the most cost-effective measures to achieve them (Heinz, 2008), whilst a combination of site-specific efficiency and costs helps to locate the most cost-effective locations (Jacobsen et al., 2007). Some of the measures suggested in AGWAPLAN are listed in Table 4, all of which were implemented voluntarily and without state

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\(^1\) For a more detailed analysis of the outcomes of AGWAPLAN see Wright & Jacobsen, 2010.
compensation. The efficiency and cost have been based on work prior to the National Aquatic Programme III (Jacobsen et al., 2004).

The results of AGWAPLAN support the above conclusions in that, through a combination of the detailed information contained in the DIS and the active involvement of farmers, AGWAPLAN lead to the identification of cost-effective measures for reducing nutrient leaching. The concept therefore fulfils the requirement of Annex III of the WFD (CEC, 2000), which states that the most cost-effective combination of measures should be included in the PoMs.

5.3. Cost of national implementation

It is important to consider the potential administrative costs of a national implementation of the AGWAPLAN concept in order to conclude whether it is worthwhile or not. In order to estimate the costs of national implementation, the AGWAPLAN concept has been separated into two elements. The first element is the increased agri-environmental data which would be necessary to compile the data information system, requiring activities such as soil mapping. It is assumed that the additional data would be required nationwide, in light of the necessary reductions to achieve good status in coastal waters. The cost of the data collection to establish the detailed soil mapping has been estimated at approximately €27 per ha (Lund & Wiborg, 2009). With 2.0–2.7 million hectares requiring mapping, the one-off cost has been estimated at €54–73 million. The second element is the integrated advisory service, encompassing all the deliberations between the partners in the project, including the farm visits, meetings at the catchment level and demonstrations of GAP measures etc. With farm visits and advice amounting to 12–25 hours per farm and based on an hourly rate of €107, the cost has been estimated at €1,284–2,675 per farm (Lund & Wiborg, 2009). It is assumed that some 10–15,000 farms will be involved nationwide. The maximum is equivalent to all farms in Denmark with more than 50 ha. The advice-based cost would then be €13–40 million as a one-off investment. On top of this would come the increased administrative costs for the environmental centres, estimated to be roughly half of the additional advice given to farms, or approximately €14 million.

The total cost of adopting an AGWAPLAN approach in the implementation of the action plans is €71–115 million (see Table 5), or an annual cost of €6–10 million, based on 20 years and 6% interest.

The costs estimated in Table 5 will not in all cases be additional costs compared to the present implementation of the WFD. The current estimate for the public administrative costs in the national analysis is €12 million per year (Jensen et al., 2009), which does not include the farmer’s administrative costs.

Although there is some unavoidable uncertainty related to the estimates, it appears reasonable to conclude that using the AGWAPLAN concept would increase the administrative costs considerably.

Table 4. AGWAPLAN measures: reduction in N losses to water body, costs and cost-effectiveness (source: Plantedirektoratet, 2008; Sorensen & Skovgaard, 2009).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Reduction in N losses to water body (kg N loss/ha)</th>
<th>Cost (€/ha)</th>
<th>Cost-effectiveness (€/kg N lost to waterbody)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early sowing of winter cereals</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ammonium fertiliser</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spring ploughing of grass</td>
<td>12.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Later cultivation of catch crops</td>
<td>8.5</td>
<td>42</td>
<td>5</td>
</tr>
<tr>
<td>Catch crops in maize</td>
<td>12.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spring ploughing before spring crops</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Compared to the estimated administrative costs of €12 million per year, the costs could potentially almost double. Compared with the total cost estimate of €100 million per year for implementation of the WFD in Denmark (Jensen et al., 2009), the share of administrative costs would then increase from 12% to 18–23%.

5.4. Environmental effectiveness

Preliminary calculations indicated that a reduction of 25% in N leaching would be achieved due to the on-farm GAP measures implemented by the farmers during AGWAPLAN. The cost to the farmers of this reduction was relatively low, when compared with expected cost estimates, as many cost-efficient measures were used (see Table 4). Initially, a target of a 50% reduction in N leaching was set by the environmental authorities, which was what was considered to be necessary to achieve good status. Therefore, the measures taken by farmers were sufficient to reach halfway towards the initial target of a 50% reduction in N leaching, suggesting that the project approach has the potential to make a significant contribution to the reduction of diffuse N pollution, which has been identified as being the most significant threat to the achievement of good status.

5.5. Discussion

The AGWAPLAN concept, by actively involving farmers, resulted in a number of positive outcomes, which suggest that adoption of the concept in the municipality action plans could contribute positively to the effectiveness of the WFD, indicating that national implementation is worthwhile. However, a number of problems exist which might inhibit its widespread adoption. The final reduction targets of the WFD require a reduction of 19,000 tonnes of N. A reduction of 25%, whilst significant, will not be enough to meet the long-term reduction requirements of the WFD, indicating that additional measures over and above the adoption of the AGWAPLAN concept will also have to be implemented. The high administrative cost of the concept is problematic, especially when considered in the context of a global financial crisis. However, whilst the required accumulation of detailed farm-level agri-environmental data would mean that the approach would be relatively expensive, these extra costs could be viewed as an investment as the data would serve as a useful resource for future planning (Wright & Jacobsen, 2010). Furthermore, the outcomes generated by AGWAPLAN, summarised as better informed local decisions and the improved
acceptance of, and potentially compliance with, the WFD, can be expected to lead to low decision failure costs.

It is the municipalities that would be in a position to implement the AGWAPLAN concept and enter into agreements with individual farmers as part of their local action plans. However, the municipalities in Denmark are under extreme time pressure regarding the deadlines of the WFD. This is partly due to the recent major structural reform in Denmark and partly due to the delay in the publication of the draft water plans by the state. The municipalities should have received the draft water plans in October 2008. Indeed, staff members within the municipalities connected with the AGWAPLAN project have voiced serious doubts concerning the feasibility of adopting an AGWAPLAN approach during the current phase of river basin planning (Favrskov Municipality, 2008). However, such an approach would be more feasible in the second phase of planning from 2015 to 2021.

 Whilst the GAP measures implemented by the farmers in AGWAPLAN are both efficient and cost-effective, an analysis of the measures (Plantedirektoratet, 2008) concludes that some of those listed in Table 4 are difficult to control. This is problematic due to the traditional emphasis placed on control within environmental authorities in general, coupled with the traditional lack of trust between the agricultural sector and the environmental authorities in Denmark. For example, the early sowing of winter crops will result in a reduction of N leaching but whether the measure is actually implemented by the farmer is difficult to control, as this would require a farm visit during the 14 days during which the sowing has been moved forward. Therefore, some may doubt whether farmers would in fact implement any measures agreed upon, especially if they are relatively expensive. It is also questionable whether the EU Commission would accept a nationwide approach based on voluntary agreements.

Whilst this paper has focused on the value of an AGWAPLAN approach in the context of Denmark, the experience from the project can also potentially be applied in other MS. The extent to which such an approach might be successful depends on the existing culture of participation within the MS in question. For example, the UK is a highly centralized state and the political institutions and culture in the UK have not been conducive to the development of public participation (Tunstall & Green, 2003). This is not to say that culture cannot change of course, and the WFD, with its statutory requirements for public participation, may well act as a stimulus for such change. Recently, the UK Environment Agency has undertaken a substantial body of R&D to evaluate methods for public participation and stakeholder engagement.

6. Conclusion

The analysis of the measures initiated in Denmark for public participation during implementation of the WFD indicates that they are of a predominantly consultative nature, the extent of which appears to be relatively limited. However, the delayed dRBMPs and the future municipality action plans are to be the main vehicle for participation and may provide an opportunity for active involvement. However, the delay in the publication of the dRBMPs raises cause for concern, as the general time pressure under which the authorities are working may well jeopardise an adequate response to the input of the public (for example, the measures suggested during the Idea Phase), potentially leading to less public acceptance and more implementation problems.

In the context of future involvement, the AGWAPLAN concept, if implemented on a national basis as an approach within the municipality action plans, would be one way to address the requirement in the WFD to encourage active involvement. Also, the analysis suggests that actively involving farmers in the
selection of instruments for the PoMs could lead to the increased effectiveness of the WFD. As well as meeting the requirement for active involvement, the estimated reductions in N leaching were achieved in a cost-effective manner, so that national implementation of the project concept seems to have the potential to satisfy the requirement in Annex III of the Directive.

To temper these positive conclusions, a number of disadvantages have been identified with the AGWAPLAN concept relating to the time and finances required to implement the approach on a national scale, such as the fact that a 25% reduction in N leaching will probably not be enough to achieve the reductions required in the WFD, thereby necessitating further measures, as well as the difficulty of controlling a number of the measures and the voluntary nature of the scheme in general.

The AGWAPLAN concept will undoubtedly involve additional resources in terms of money and time, and will require new partnerships based on trust to be built between the environmental authorities and farmers. Ultimately, whether the potential advantages outweigh the perceived disadvantages of implementing the AGWAPLAN concept on a national basis is a political decision which will rest with each of the 98 municipalities within Denmark, although their scope for initiating a planning approach in accordance with the AGWAPLAN concept may be limited by the time and the amount of money that is finally earmarked for the implementation of the WFD in Denmark.

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