

Potential Implications of the EU Water Framework Directive in Sweden

A comparison of the Swedish municipalities' current water planning regime with the requirements of the EU's new Water Framework Directive

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Summary

The Water Framework Directive (WFD) is currently being implemented throughout Europe. As the Directive is likely to introduce major changes to the way in which water is managed in Sweden, this study aims to highlight some of the potential implications of its implementation. The requests of the WFD are compared with the current Swedish municipal system for water planning. Both organisationally and in terms of actual content the current study highlights significant differences in both approach and outcomes. The organisational changes envisaged will bring about a situation where, in essence, two parallel water management planning systems exist. This however implies that there will be significant problems ahead in terms of accountability and legitimacy, as the formal relationship between these separate systems is not clear, while the new system lacks clear linkages to the representative democratic model. The identified differences in terms of content however imply a more effective approach to water management and the potential for a more informed planning process. In order to make this arrangement work, forms of effective co-operation between the municipalities and the Water Authorities, as well as for the involvement of the general public and other concerned interests, need to be developed.

Key Words

Water Framework Directive, National implications, Water planning, Municipal planning, Master plan.

Introduction

A new and extensive system of environmental legislation on water resources management is currently being implemented throughout Europe. The EC Water Framework Directive (EU 2000) came into force in December 2000 and should now have been incorporated into national legislation. Having the character of a framework, the Directive (hereafter referred to as the WFD) connects a number of existing directives for different aspects of water conservation and protection. The aim of the WFD is to make the management of European water resources more efficient and enforceable, and to achieve 'good water status' for all water.

The WFD also aims to create new tools for sustainable water use. A number of the ideas contained within the WFD can be seen to support this goal. Perhaps the most often expounded idea in this context is the promotion of a more comprehensive view on water management. This is to be achieved by prescribing the river basin to be the geographical and administrative basis for water management. Within a river basin, or 'river basin district', all rivers, lakes, ground waters, coastal and transitional waters, will be handled. Furthermore, all factors affecting water quality, quantity and ecology are handled, as well as all activities affected by water. Another feature of the WFD, which also has the potential to promote a comprehensive view, is the emphasis on public consultation. The Directive does not prescribe how the process should be carried out, but instead outlines a consultation process that starts three years before the final version of the management plan for the river basin district is set. Finally, the combined approach to pollution control also contributes to the adoption of this more comprehensive view. Both the Emission Limit Value and the Water Quality Objective approach should be applied, which will make it easier to handle both point and diffuse sources of pollution¹. The approach that gives the most stringent limit value should be chosen. This idea is in line with the precautionary principle, which is another important principle of sustainable development.

A further principle of sustainable development, the polluter pays principle, is also emphasised in the WFD. As such, the costs of water services, protection and restoration should fall on the main users of water (industry, agriculture and households). Economic incentives for sustainable water use should also be created. The difficulties that may follow from high prices should be taken into account, particularly with respect to the provision of drinking water. However, the WFD allows Member States to disregard the requirement of letting the users cover all costs provided that this does not compromise the purposes of the Directive, or the possibility of achieving its objectives. The use of other funding methods is also permitted.

In order to make these ideas operational, the WFD gives detailed instructions for several tasks to be carried out. In short, the main tasks include an economic analysis of the river basin district as well as of its natural characteristics and of the human pressures acting on its water. Based on this analysis, environmental objectives should be defined for each water body and a Programme of Measures, including those needed to attain the objectives, should be derived. A thorough description of the monitoring that should be done is also given. Finally, for each river basin district a River Basin Management Plan (RBMP) should be derived, in which the work is documented. The plan also serves as the reporting mechanism to the commission while fulfilling the communication functions with concerned parties and with the general public. The work is cyclical on a six years basis, with the first programme of measures being set before the end of 2009, after which it will be revised in 2015 and 2021 etc. Even though the general rule is that these environmental objectives should be attained by 2015, the WFD does however provide for the possibility that, under certain circumstances, they be postponed.

Looking at the extensiveness of the WFD, a basic need remains to consider its possible implications. The Directive's potential general implications, as well as the implications for the UK planning system in particular, are discussed by Howe and White (2002 and 2003). The significance of the changes that the WFD is likely to give rise to across the various Member States will however vary, depending on their former planning systems. The French model for example, provides the basis for the WFD and thus resembles that system (Gustafsson 1989a and Gustafsson 2000), while the Swedish water management strategy has been described as being fundamentally opposed to the French (Gustafsson 1989b). While the French and accordingly the WFD model use both economic incentives and regulatory steering instruments, the Swedish strategy is based almost solely on regulatory instruments. Furthermore, water administrations in Sweden are spread over different institutions at different levels. Central institutions are generally responsible for permits; regional governmental institutions and municipalities manage the environmental supervision, while the municipalities are responsible for the long-term land and water planning, through their master plans. Finally, as long-term water planning is carried out at the municipal level in Sweden, the natural hydrological boundaries are not used as a base for water management (Gustafsson 1994). These aspects all suggest that large changes will occur as a result of the implementation of the WFD in Sweden. Furthermore, the municipalities have been criticised for not dealing with water issues in a satisfactory way in their physical planning (Boverket 1994, Gunnarson and Malmqvist 1996, Gullstrand et al. 2003). Even though the handling of water issues has improved in more recent plans (Gullstrand et al. 2003, Boverket 2004), this also points at the direction of large changes, as the WFD aims to give water issues a higher priority in planning. Other studies, which

directly concern the implications of the implementation of the WFD in Sweden, emphasise the fact that it will be problematic to continue with a situation where two parallel planning systems for water exist (see Boverket 2004 and Emmelin and Lerman 2004). As a result then, many uncertainties arise, mainly concerning the distribution of responsibilities among the many parties involved and the relationship between the different plans for water management (*ibid.*). Further, the implementation of the WFD into national environmental legislation has increased the complexity of the legislation, which may also prove to be a further obstacle to efficient management (Emmelin and Lerman 2004). As such then, these studies point towards the fact that major changes lie ahead, suggesting that a significant level of uncertainty is connected to the implementation of the WFD in Sweden.

Aim and Scope

Even though it is difficult at this early stage to appreciate the real implications of the WFD in Sweden, it is possible to indicate some of the potential implications by comparing the Directive with the current (former) system for water planning in Sweden. The aim of this study is to identify the differences between the two systems. The focus here will thus be on organisational differences and on differences in content. Furthermore, the study will focus on the municipal planning system, which oversees the current system for water planning in Sweden.

Methods

As already noted, water administrations are spread among a number of organisations and across many different levels in Sweden. The main actors in respect of long-term water planning are however the municipalities, and they are therefore chosen as the point of departure for this study. In order to identify changes related to the implementation of the WFD, comparisons are made between the EU Directive (EU 2000) and the domestic system for municipal physical planning, regulated by the Planning and Building Act (SFS 1987:10).

Organisational Differences

In order to identify the organisational differences, the prescriptions of the legislative instruments themselves are used. The WFD has been translated into Swedish legislation. The Regulation on the administration of the quality of the water environment (SFS 2004:660) provides the most detailed instructions for the work implied by the Directive. This regulation, together with the Directive itself, is used in the identification of the organisational differences (by comparing it to the Planning and Building Act).

Differences in Content

In order to identify the differences in content between the two approaches it is useful to begin by comparing the prescriptions of the WFD with the actual outcome of the Planning and Building Act. This is done by comparing the content of a River Basin Management Plan (RBMP), as prescribed by the Directive, with the content of existing municipal plans. The most relevant tool for municipal water planning is the master plan, so the study is based on these plans. The master plan is mandatory it covers the whole municipal territory and controls the other tools in the physical planning system. The aim of the master plan is threefold: to describe the vision of the development of the municipality, to guide municipal and other authorities decisions concerning the use of land and water, and to be a tool of communication between the local and na-

tional authorities with regard to their general interests (Boverket 1996). The method for comparing the master plans with the prescribed content of a RBMP is described in brief below. For a more detailed description, see Hedelin and Gustafsson (2003).

The municipalities situated around the largest lake in Sweden, Lake Vänern, were selected to provide the empirical basis for the study. This necessitated that fourteen master plans be analysed. The plans are for long-term water and land use planning, and most of those studied were from the beginning of the 1990s. The plans were read and assessed against the prescribed content of a RBMP, which is described in Appendix 7 of the Directive. The relevant areas of content (hereafter called AOC) are presented in Table 1.

Table 1. Areas of content (AOC) of the future River Basin Management Plans relevant for studying changes in content due to the implementation of the WFD. The content of the RBMP is prescribed in Appendix 7 of the Directive.

Area of content (AOC)	Description of the prescribed content
A	General description of River Basin District, according to article 5 <ul style="list-style-type: none"> - Surface water: (maps of location of boundaries; eco-regions and surface water types; reference conditions for different water types) - Ground water: (maps of locations and boundaries)
B	Summary of significant pressures and impacts of human activity <ul style="list-style-type: none"> - Point and diffuse sources of pollution; impacts on water quantity and pressures/impacts from other types of human activity
C	Identification of protected areas, according to article 6
D	Maps of monitoring networks and monitoring results <ul style="list-style-type: none"> - Ecological and chemical status for surface water - Chemical and quantitative status of groundwater - Status of protected areas
E	Environmental objectives including extensions and derogations, according to article 4.
F	Summary of an economic analysis of water use, according to article 5
G	Summary of programme of measures, according to article 11
H	Summary of public information and consultation as well as their results

For each master plan, an assessment of the similarities between the content of the plans and of the RBMP were made for each AOC. A four-graded scale (0, 1, 2, 3) was used to describe the degree of accordance. High scores mean high similarities between the plans, while low grades mean low or no similarity between plans (see Table 2). For all grades, assessments are made of how the areas of content will be treated in future river basin plans.

Table 2. The scoring system describing the degree of accordance between the master plans and the future River Basin Management Plans.

Score (0-3)	General meaning
0	The AOC of the river basin plan is not touched on at all in the master plan
1	The AOC of the river basin plan is only briefly touched on
2	The AOC of the river basin plan is described in the master plan, but not fully covered.
3	The AOC of the river basin plan can be seen as fully covered in the master plan

Results

Here the comparison of the relevant legal frameworks (for the organisational differences) and the comparison between future RBMP and the selected municipal master plans (for the differences in content) are presented. Differences between current and future systems of water planning are thereby identified and described.

Organisational Differences

The current system for water planning in Sweden is mainly based on the 290 municipalities, which represent the local level of the national administrative organisation. Since 1987 the responsibility for planning of land and water has rested on the municipalities, regulated by the Building and Planning Act (SFS 1987:10). The overall aim of the Act is to promote wise use of both land and water. Through different tools (plans, regulations and permits) the municipalities steer the use of land and water within their administrative boundaries. Thus, planning of land and water are currently integrated into one system. The municipalities have a far-reaching formal mandate to control land use, though mechanisms remain for the state to exert influence to some extent. Regional authorities (County administrative boards) represent the state in matters of national interest such as general interests, environmental and risk issues. The Building and Planning Act has linkages to the Environmental Code (SFS 1998:108), which among other things regulates environmental issues connected to water.

In the WFD, the organisational arrangements for water administration are to be found in Article 3. In short, it says that the geographical boundaries for administration should be based on river basin boundaries. Several small river basins can be combined to form River Basin Districts. The regulations of the WFD should be applied in each District. Furthermore, a Competent Authority responsible for putting the regulations into practice should be appointed for each District. The application of these prescriptions in Sweden has resulted in the formation of five River Basin Districts, each draining into one of the major sea basins around Sweden. The Districts are prescribed in the regulation on the administration of the quality of the water environment (SFS 2004:660). Five Competent Authorities were accordingly appointed, and are represented by one of the County administrative boards in each District. These authorities are called the Water authorities.

At this as yet still early period in terms of implementation (the Water authorities are just beginning to form) three important organisational changes can be identified based on the summarised regulations. The most obvious difference is the change of geographical planning unit from the municipal boundaries to the boundaries of the Water Basin Districts. As the municipal borders are not related to hydrological boundaries,

the change represents a shift from a purely administrative to a more natural regional basis for water planning. Secondly, the 290 geographical units for water planning have been reduced to five. This entails a tremendous change in scale, with water planning taken away from the very local level and introduced to a regional level based on large regions. It should also be noted here that the proposal (SOU 2002:105) that preceded the translation of the WFD into national legislation suggested a complementary organisational level of about 100 sub-catchments. The role that these sub-catchments will have in future planning is however at present far from clear. As they are not mentioned in the legal texts however it is clear that they will not be appointed with any formal responsibility. Thirdly, instead of an integrated approach to the planning of land and water these issues are now to be handled separately. The municipalities will still have an important role to play in planning issues relating to land and water within their territories, but the new water planning system will limit their formal power substantially. Water planning will be performed separately on a regional level influencing the municipal physical planning from above.

Differences in Content

The results of the comparison of content between future River Basin Management Plans and the studied master plans are presented in Figure 1 below. The highest score possible is 24, which represents full coverage of the content of the future RBMP as prescribed in the WFD. The highest score that is obtained among the studied master plans is 12, while most of the plans actually scored less than 8.

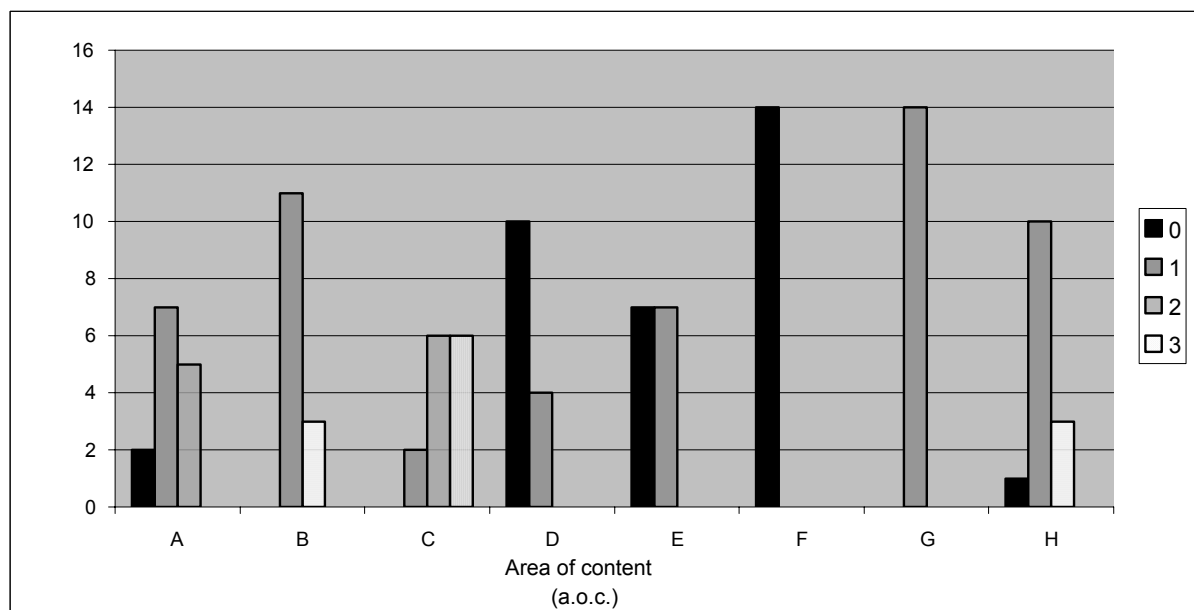


Figure 1. Degree of similarity between the prescribed content of a River Basin Management Plan and the studied municipal master plans. High frequencies for low scores mean low similarity between the RBMP and the master plan. See Table 1 for description of the AOC. See Table 2 for an explanation of the scoring system.

Exactly how the different AOC are represented in the master plans varies. The AOC where most similarities are to be found is the identification of protected areas (C). In most master plans protected areas are described to a high or to a full extent compared to what can be expected in the future RBMP. Other areas are touched on briefly, as for example the general description of the district (A), the summary of significant

pressures and impacts from human activity (B), the summary of the Programme of measures (G) and the summary of public consultation (H). The areas monitoring (D), environmental objectives (E) and economic analysis (F) are however only touched upon very briefly if at all in the municipal master plans.

For some of the AOC large variations can be seen between the municipalities. This is the case in respect of general description of the district (A) and in terms of the identification of protected areas (C). Other AOC are treated to the same or similar extent among the municipalities. These areas are the economic analysis of water use (F) and the summary of the Programme of measures (G). See Hedelin and Gustafsson (2003) for a presentation of the individual municipality scores.

The results as summarised in Figure 1 provide an overview of the identified differences in content. However, in order to better understand the following changes, a more detailed description of the differences for each AOC is necessary. Starting with the description of the River Basin District (represented by the municipal territory in the case of master plans), the municipalities generally include a map in the plan, where the location and boundaries of surface water can be seen. The quality of the map varies however, and for some municipalities the map is the only description of the territory that is provided. In some cases the location of used groundwater aquifers are shown, while on occasion some of the characteristics of a number of water bodies are presented. Generally though, the description is not undertaken in a systematic or comprehensive way. No classification of water is made, reference conditions are not given and the concept of eco-regions is not used.

With respect to pressures and impacts from human activity, all municipalities provide maps showing land use. The information on the maps varies, from those highlighting only roads, forest and agriculture to those that show the location of housing areas, industries, water treatment works, mining activities, landfills, shooting-ranges and stocks of animals. In many cases potential impacts from different kinds of human activities are described, but whether the activity has in reality caused any impact is seldom noted. In rare cases real impacts are however described. The most obvious shortcoming of the master plans is the lack of connections between human activities and the pressures they actually cause or have caused. In order to propose adequate measures it is of course essential to be aware of these connections. In the WFD it is stressed from the outset that the impact on water status from human pressures must be assessed. It is also proposed that modelling techniques should be used for the assessment.

The next AOC – identification of protected areas – is generally covered to a large extent in the master plans. One important type of area however that in most cases is not mentioned as being protected is that of protected areas for drinking water supply. More work on defining such areas will therefore have to be done. In addition to this, new arrangements in respect of identifying protected areas are needed in order to cover the AOC fully. In contrast to this, in most cases the issue of monitoring is not mentioned at all in the master plans. Significant work therefore seems to be needed here. The reason for this may be that most of the monitoring undertaken in Sweden is not handled by the municipalities themselves². Therefore, one could assume that much of the monitoring work is already being done, even though it is not indicated as such in the municipal master plans.

The AOC in respect of environmental objectives is also poorly treated in the master plans, varying from merely blandly stating that the municipality aims to develop in a 'sustainable manner', to explaining that the municipality is prioritising the protection of biodiversity and ecologically sensitive areas, or that it must economise in terms of the overuse of natural assets etc. These kinds of goals do not specifically concern water. In a few rare cases objectives more specifically relating to water are however expressed, such as, 'The large scale distribution and waste water treatment systems should be sustainable.' In some master plans one or more specific goals for specific water bodies are stated. The current situation is thus far from what is prescribed in the WFD, where the objective 'good status' (or exceptions thereof) should be defined specifically for each water body.

While the AOC of environmental objectives is treated rather poorly, the AOC in respect of economic analysis is totally absent. Not a single line concerning the water economy is written in any of the studied master plans. Significant work therefore remains to be done here in order to meet the requirements of the WFD.

Do the master plans give any guidance in respect of the Programme of measures? The aim of the master plan is to provide guidance for decisions concerning the use of land and water in the municipality. Master plans are not legally binding as such, what is stated are recommendations. These recommendations can lead to future measures or other decisions that affect water. In this study, such 'recommendations' are treated as a kind of measure, which although diffuse, allow us to give all municipalities the grade 1 on this AOC. In addition to the recommendations, another type of statement is sometimes made, that can also be interpreted as a measure. For example, statements such as: one should act to decrease the growth of weed in the shallow bays; or, one should work to increase the breeding possibilities for a certain kind of fish in a specific river. Throughout however, real measures are rarely stated in the studied master plans. In some cases, references are made to other documents, environmental programmes etc., where measures are *said* to be presented. Master plans do not however seem to be regarded as a proper forum for the presentation of measures.

As regards the area of public consultation and information, the studied responses vary from simply not mentioning the process or its outcome at all, to describing the process in depth and presenting the different opinions that came up, and moreover, how these were handled. Nevertheless, the municipalities that included such information did not however obtain full grade in this area, the reason being that the WFD prescribes a process of public consultation that starts long before the final version of the RBMP is finished, and the importance of mutual understanding in respect of the proposed measures is very much stressed. It must therefore be assumed that in future, public consultation processes are to be much more thorough as compared to the best attempts at consultation in today's planning processes.

Discussion

Based on the identified differences between the current (former) and the evolving system for water management some potential implications of the implementation of the WFD in Sweden are discussed in brief below.

Parallel planning systems and models for democracy

As shown here and as pointed out by others (see Boverket 2004 and Emmelin and Lerman 2004), a situation in which two parallel planning systems for water coexist will be created due to the coming changes in respect of the implementation of the WFD in Sweden. The municipalities will continue to plan for the use of water resources within their territories, alongside the new EU induced system for water management. These systems are mainly regulated by two separate legal frameworks: the municipal planning system by the Building and Planning Act, and the new system for water planning by the Environmental Code (which has been adjusted to the WFD regulations). One can therefore expect the new planning system to have far reaching consequences for the current municipal physical planning, limiting as such municipal planning sovereignty, while the Water Authorities will have the power to decide on management plans that will have significant impacts on the municipal land use planning. The exact relationship between the two systems however remains unclear. According to the National Board of Housing and Planning (Boverket), which is responsible for the national implementation of the Building and Planning Act, there is no legal support for the responsibility of the municipalities to implement the Programme of Measures taken by the Water Authorities (Boverket 2004). The situation is thus unclear, and as emphasised by Boverket, there are major uncertainties about how the parallel systems should work together. (For a thorough survey of the various uncertainties relating to the implementation of the WFD, see Emmelin and Lerman (2004)). In order to handle this practically however, Boverket argues that better procedures for communication and co-operation between the municipalities and the Water Authorities have to be created (Boverket 2004).

Connected to the murky nature of the relationship between the two planning systems are the continuing uncertainties relating to the authority and the responsibilities of the various organisations involved in water management (Emmelin and Lerman 2004). This, and the lack of clear linkages to the representative democratic system, is identified as a major obstacle for 'good governance' by Lundqvist (2004) who has studied the whole organisational system proposed in respect of implementing the WFD in Sweden³. He characterises 'Good governance' as simultaneously satisfying the core values of effectiveness, participation and legitimacy. The municipalities are well embedded within the representative democratic system while the new Water Authorities will not be run by representatives elected by the *demos*' of the River Basin Districts. (The *demos* here is those who are concerned by an issue and whose voices should therefore influence the outcome of a decision). Stemming from the "top-down" character of the Directive, the multi-level governance structure created for the implementation of the WFD prioritises effectiveness over legitimacy, which runs counter to the Swedish political and administrative culture (*ibid.*).

Putting the implementation of the WFD into a larger perspective, problems relating to questions of democracy and legitimacy are common in cases where EU policy has major effects on Member States' national politics (see for example Heinelt 2002, Schmidt 2002, Elander 2002). It is clear from this discussion that the WFD is merely one example of the democratic difficulties encountered when attempting to implement EU legislation in individual national legislative systems. National priorities and plans, which are based on national representative democratic systems, may have to change to accommodate EU policy. The EU strategy for implementation often includes different kinds of partnership models, which are seldom co-ordinated with those of the Member

States (Elander 2002). Furthermore, in the EU, the influence of the private citizen, and thus the democratic model, is based on 'voice' instead of 'vote' as in the representative model (Heinelt 2002). Thus, a precondition for the implementation of EU-directives to be 'democratic' is that people see themselves as political beings, taking active responsibility and engaging politically (*ibid.*). As the representative system demands far less of the *demos* in terms of active political participation, the question is, how can a civic culture that matches the EU model be created? This is a particularly valid question in connection to water planning in Sweden, which has been accused of lacking procedures for public participation (Gullstrand et al. 2003). As such, formal procedures for participation will have to be developed and put into practice. Key questions waiting to be handled then are – Who should participate? –How can accountability be created? How should the participatory processes be shaped? Additionally, in order to make the democratic system work as a whole, the participatory decision-making processes must have a clear relationship to the representative democratic system (Allmendinger 2002 pp.207). Such a relationship is of course still waiting to be established in the case of the WFD.

The content of water management

As illustrated by the comparison of municipal master plans and future River Basin Management Plans, public consultation or participation can be expected to increase as a result of the WFD (H). Looking at this in the context of the potential decline in legitimacy that the implementation of the Directive entails, this is therefore a positive sign. Participation has long been stressed as a key feature for creating commitment and acceptance in connection to water management (see for example Stout 1998 and World Water Council 2000). A further potential implication of increased consultation and participation in this respect is connected to the knowledge and different perspectives held by the general public and the other interests that are involved in the planning process. It is well documented that people living in a local environment possess valuable knowledge about the management of their local ecosystem (see for example Olsson and Folke 2001). In addition, different persons or actors represent different value orientations or perspectives, which can be related to water management (Hemmati 2002, Söderbaum 2003). Increased participation thus increases the chances of integrating such knowledge and perspectives into planning, which may result in more informed decision-making.

Another identified change relating to the implementation of the WFD is the economic analysis of water in each District (F). Such analysis has not been performed to any extent previously, and thus represents a new issue in Swedish water management. One reason for this is the Swedish tradition of environmental management, where economic incentives are seldom used to reach environmental objectives (Gustafsson 1989b). Moreover, there is no tradition of full cost recovery of water provision in Sweden, for either the services or the environmental costs of provision and pollution. One reason for the attitude to water pricing then is probably that water is not a limited resource in Sweden. It is more politically acceptable to have stringent emission limits than to charge for water use and extraction. Thus, Sweden will probably take the opportunity given in article 9, to not use the principle to its full extent. Nevertheless, irrespective of how Sweden chooses to use the economic analysis contained therein, it will provide new information and knowledge for the planning process. In this way, two of the identified changes caused by the WFD, namely, *increased participation* and *the economic analysis* imply that the potential for making informed water man-

agement decisions will increase. Connected to the increase in information in respect of the water management, the study of master plans also showed that monitoring would increase significantly as a consequence of the Directive (D). This would mean a tremendous increase in the amount of information gathered. In addition, although monitoring falls out of the scope of the municipal master plans it is already performed to a large extent by organisations such as the River basin entities among others. It can thus be expected that the municipalities already use such information (at least it should be available for them).

Furthermore, other differences in content that should be mentioned here include the definition of an environmental objective for each water body (E) and the development of Programmes of measures (G). Through this approach the connections between objectives and how they should be practically reached are made much clearer as compared to what has previously prevailed. As long as the defined objectives are not inconsistent with sustainable development, one might therefore expect this to have positive implications for effective sustainable water management. This is in line with the view of the Directive in terms of placing 'effectiveness' higher on the agenda.

Integrated water management?

Perhaps the most important question to discuss is whether the implementation of the WFD will promote its own objectives. As was noted in the introduction, sustainable water use is an overall aim of the Directive, with the idea being to obtain a comprehensive or holistic approach to water management. So then is the implementation of the Directive in Sweden currently contributing to integrated water management? Based on the identified changes following the implementation of the Directive both positive and negative indications in respect of integration can be found.

As discussed above, increased participation and the introduction of an economic analysis both have the potential to contribute to a more informed planning process. This implies an increased potential as regards integration, which needs to be obtained across the dimensions of knowledge, values and actors (Jepson 2001). Increased participation enhances the potential for integration across all three dimensions, as the engagement of diverse actors in the planning process can contribute towards the recognition of new realms of knowledge perspectives or values. In addition, the economic analysis can contribute to producing integration across knowledge, as it will bring new information to the process.

The identified *organisational* changes point in different directions, both towards an increasing and towards a decreasing potential for integration. The change in geographical planning unit from a purely administrative one such as the municipal territory to a more natural unit such as the River Basin District, can also be seen to imply an increased potential for integration. The hydrological system that ties together different water related activities within the river basin is handled as a whole and the connections between the sources of pollution and their recipients are for example not broken. From a natural or water management perspective this change clearly increases the chances of achieving an integrated and thus sustainable management of resources (Barrow 1998). On the other hand, the change also implies a divide between land and water planning, as pointed out by the national Board of Housing and Planning (Boverket 2004). In the new organisational order, water management is lifted out of the former system where land and water are treated together in municipal physical

planning. One could still argue that the change is not a drawback, assuming that the water management induced by the WFD is comprehensive in character and connections between land and water will still be made. But as most of the development of the physical environment is steered by the municipalities, it would still be difficult to argue that the change is not 'disintegrative' in term of the management of land and water. The physical, chemical and ecological water quality is closely related to land use through the hydrological system, this is why the effective management of water must include the management of the surrounding landscape. To compensate for this, new and workable forms of co-operation between the Water Authorities and the municipalities within their River Basin Districts are vital.

Finally then, what does the change from a local to a supra- regional level of planning mean for the possibilities of integrated water management? Also this change has implications that point in opposite directions. Firstly, including all lakes, wetlands, ground waters, rivers and streams within a large river basin represents a holistic approach since the hydrological system is treated as a whole, including its different sub-systems or sub-river basins. Wide system limits should increase the possibilities to include more of the important factors that affect the system, which is a precondition for integration. But increasing the scale also brings with it other implications. Integrating local knowledge of local environment might become an increasingly difficult task in the planning process if the scale is too large. And as an understanding of the processes and activities at both the local and the regional scales is necessary for a comprehensive view of the system to be managed (Cash and Moser 2000), increasing the scale will not be enough to ensure an integrated approach. As the answer is to link these scales (*ibid.*, Olsson and Folke 2001), again the solution is to establish robust forms of co-operation between the concerned authorities. The ways in which the general public and other concerned actors can be more fully included in the planning process are also dependent on the management scale. As the scale increases as a result of the implementation of the WFD, forms of participation adapted to the larger scale must be used. This is essential in view of the necessity for participation to compensate for the potential decrease in legitimacy implied by the actual implementation of the Directive.

Conclusions

Three main organisational differences were identified on comparing the current (former) system for municipal water planning with the system that is currently under implementation. Firstly, the geographical borders constituting the basis for planning will be shifted from the municipal territory to River Basin Districts. The change represents a shift from a purely administrative to a more natural basis for water planning, in respect of river basins. Secondly, the change of geographical borders also brings a dramatic increase in management scale, from about three hundred units to five regions. Lastly, there is a change in approach from handling both water and land within the same planning system to handling issues of water separately. In the context of these changes then it is plain that a situation will arise where we have two parallel planning systems for water management. The formal relationship between each system is remains however unclear. This implies that problems of accountability and legitimacy will result, as the new approach lacks clear linkages to the representative democratic system.

Furthermore, in terms of content the study indicates that the WFD may actually entail significant changes to how water is managed in Sweden. Detailed definitions of objectives for all waters and a related Programme of measures are new features, which do imply a more effective approach to water planning. In addition, another new issue is the economic analysis prescribed by the Directive. Water Economics as such seem to have been rather overlooked until now. The economic analysis together with increased public participation, which is also identified as a significant change, may contribute to a more informed planning process concerning knowledge and perspectives.

The WFD aims at sustainable water management through the adoption of an integrated approach. There are potentials for increased integration due to the implementation of the Directive in Sweden, but this requires that forms of effective co-operation between the municipalities and the Water Authorities be developed, in addition to similarly effective cooperative models for the involvement of the general public and other concerned interests. This is necessary in order to take relevant knowledge and perspectives into account and to compensate for the decline in legitimacy implied by the weakening of the linkage to the representative democratic system.

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Notes

¹ Peter Chave (2001) has a clear explanation of the approaches, summarised as follows: The “Emission Limit Value” approach is the one most commonly used, and is well suited for point sources of pollution. Here, maximum limits for discharges are set depending on the industry involved and the constituents of the effluent. In the alternative “Water Quality Objective” approach emission limits are set depending on the receiving water body. A limit is set to the quantity that allows the recipient to remain within its quality objective concentration.

² Much of this work in Sweden is being done by so called river basin entities (Gustafsson 1994). These are associations, which take interest in bigger lakes or river systems. The members represent different interest groups such as fishing organisations and the representatives of different industries, using the water as recipients or for their production, i.e. the municipalities, sailing associations etc.

³ The only part of the proposal (SOU 2002:105) that has been formally undertaken is the creation of five River Basin Districts and five corresponding Water Authorities.