THE ROLE OF STRATEGIC ENVIRONMENTAL ASSESSMENT IN THE IMPLEMENTATION OF THE WATER FRAMEWORK DIRECTIVE; EXAMPLE FROM SWEDEN

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Abstract

The implementation of the EU Water Framework Directive (WFD) is expected to promote sustainable governance of water resources following an ecosystem approach. A core feature of the WFD is the water planning cycle which, through an iterative process, encourages the development of management strategies to help reach the goal of good status for water bodies in river basin districts. As part of the water management cycle, a Strategic Environmental Assessment is a valuable aid which can help to evaluate and assess the impacts of alternative management strategies. This paper analyses the role of SEA in the implementation of the EU Water Framework Directive and the integration of SEA in the water management process. The paper is based on experiences from an on-going research project of the North Baltic Sea Water District in Sweden.

In accordance with the WFD, Sweden has formed five River Basin Districts (RBDs), introducing a new regional administrative level in Sweden. The case study concerns one of the five districts; North Baltic RBD. A number of different methods have been used to collect and analyze data: interviews, workshops, GIS-based methods, and modeling. The results indicate a mismatch in the organizational settings in the North Baltic RBD that affects the possibility of linking the SEA process with the WFD programme of measures. A synchronisation of the processes for preparing the programme of measures and the SEA can contribute to an improved exchange of knowledge and integration of outcomes of the SEA in the programme of measures.

Introduction

After the enactment of the WFD, five River Basin Districts (RBDs) were established in Sweden introducing a new regional administrative level. The RBDs were established to promote water governance with a better spatial fit between ecological and administrative boundaries. The newly set boundaries of the RBDs overlaps, but does not coincide with the existing administrative boundaries, comprised of 290 municipalities at the local level and 21 County Administrative Boards at the regional level. Each RBD comprises a number of counties and municipalities.

Generally, Swedish municipalities have the main responsibility for land use planning and water-related issues. Implementation of the WFD implies, however, that certain water issues that are administered at the municipal level should also be considered at the RBD-level. The RBDs need to coordinate their activities with other authorities and stakeholders, but the cross-scale institutional and ecological interactions and linkages are not always clear. The lack of coordination implies a risk for a mismatch of land use planning, water management and other related policies, which jeopardizes the effectiveness of the newly established RBDs.

As part of WFD, environmental assessment has been introduced to evaluate the impacts of water management strategies proposed by the RBD authority. In the environmental assessment, institutional and ecological links with other policy areas need to be considered in accordance with EU Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. Taking into consideration the fact that the effects of land use planning are essential to meeting the goals of the WFD, the

environmental assessment should be linked with municipal land use plans within the catchment.

In this paper, the role of environmental assessment, in particular strategic environmental assessment (SEA), is addressed as a means of achieving the goals of the WFD. The paper is based on experiences from an on-going research project of the North Baltic RBD in Sweden. An over-arching aim of the research project is to contribute to an improved understanding of the feedbacks between ecosystems and society, fostering sustainable governance of natural resources. The specific aim of this paper is to examine the application of SEA in the development of water management strategies and to identify approaches to strengthen the interaction between SEA and the steps in the water management cycle.

Methodology

The research project is a multidisciplinary study that combines methods and theoretical ideas from natural resources management, planning theory, physical geography, ecology, and economics. It is a co-operative project involving the KTH Royal Institute of Technology, Södertörn University and Enveco Environmental Economics Consultancy, all based in Stockholm. The research project is organized as three interlinked sub-projects: (i) participatory tools and spatial modeling for improved decision-support in water management; (ii) management of tradeoffs in diverse waterscapes aided by spatial modeling of ecosystem services bundles; and (iii) the role of information management in river basins for building adaptive capacity of multi-level governance of water resources. All three sub-projects are located in the North Baltic RBD, Sweden.

In the research project a number of different methods are used for collecting and analyzing data and information including interviews, workshops, GIS-based methods, and modeling.

Study area

Geographically, the study follows a drainage-basin perspective, focusing on the North Baltic RBD, which includes the Lake Mälaren region and the Stockholm archipelago (Figure 1b). The region covers an ecological and geographical gradient from inland to freshwater archipelago, ending in a brackish archipelago of the Baltic Sea. This region is also in socio-economic transition, with ongoing infrastructural developments to growing urban areas primarily Stockholm affecting land use, water resources and biodiversity.

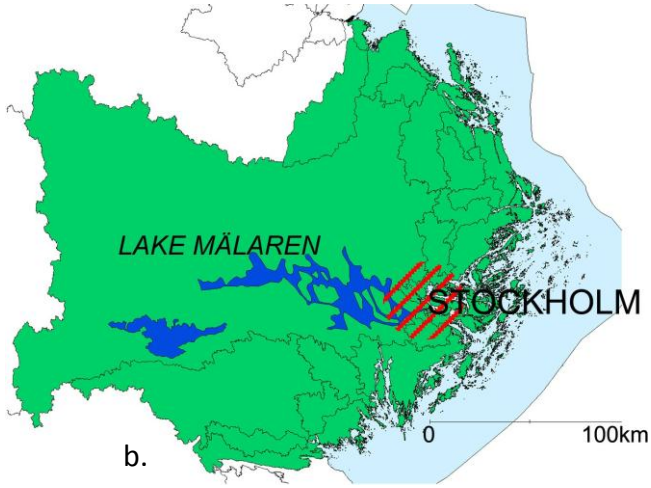

Figure 1a. The Baltic Sea drainage basin and the five Swedish River Basin Districts (RBD). The North Baltic RBD is highlighted (no.3). European countries implementing the directive are typed in blue. *Baltic Sea ArcView GIS data from Baltic Drainage Basin Project (BDBP) (UNEP/GRID-Arendal, 2001).*
Figur 1b. The North Baltic RDB. *Catchment borders from Swedish water archive. SVAR (SMHI 2010) © SMHI, © Lantmäteriet Gävle 2011. Permission I 2011/0097*

Furthermore, the region needs to respond to the challenges of climate change, where the Lake Mälaren region in particular the populated lowland areas is considered to be particularly at risk of flooding due to both seasonal and spatial changes in precipitation patterns (Bergström et al., 2006).

The main environmental concerns in the Baltic Sea include eutrophication, pollution of chemical substances, over-fishing, and deterioration of biological diversity by for example the degradation of habitats. Eutrophication in the

Baltic Sea is primarily caused by discharges from land-based activities, such as agriculture, within and even outside the drainage basin. Approximately 75% of the nitrogen load and at least 95 % of the phosphorus load is discharged from land via rivers (HELCOM 2007).

Water management

The WFD aims at protecting inland surface waters, transition waters, coastal waters and groundwater, with an aim of achieving good ecological status of all waters by the year 2015, while actively involving citizens and stakeholder organizations in the water management process. In order to meet the overall aims, a 6-year water planning cycle is introduced in the WFD. The water planning cycle comprises five steps (Figure 2) (i) a baseline is compiled in which the current conditions are mapped and analyzed; (ii) environmental targets and norms are defined; (iii) the programme of measures is developed together with an environmental assessment; (iv) a monitoring plan is drawn up; (v) a management plan is prepared and reported to the EU. In accordance with the WFD, the first river basin management plans were produced in 2009.

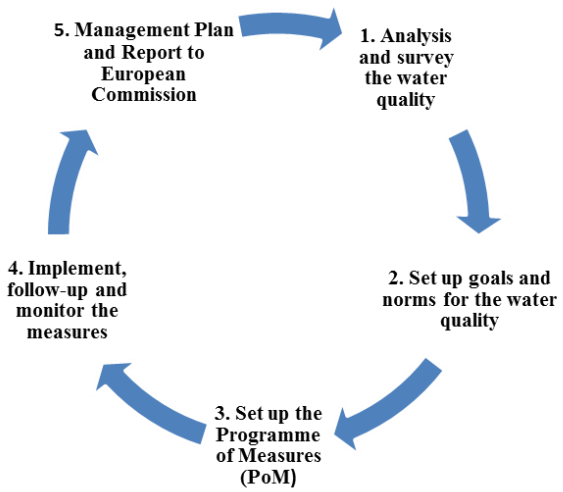

Figure 2. Steps of the 6-year water planning cycle according the Water Framework Directive

The implementation of the WFD in Sweden has caused significant legislative changes in the Swedish Environmental Code, involving the establishment of a new regional division for water planning, environmental quality norms (equivalent to the WFD environmental objectives), a programme of measures and a management plan for water (Hedin et al. 2007). In each RBD, one of the County Administrative Boards is assigned the role of water authority and is responsible for co-ordinating water management with other counties in the basin. Each county has a planning secretariat responsible for operative work, which should take place in coordination with the water authority above them, and with municipalities and other local actors below them. At the local level, a number of water management associations, municipalities, industry and other actors are responsible for managing water resources within catchments they are thus responsible for management of water-related information (Andersson et al. 2012). To coordinate the activities at catchment level, local water councils can be established including various local stakeholders.

Municipal land use planning

The Swedish planning system has a long and strong tradition of local self-government, insuring that municipalities have a considerable degree of autonomy concerning land use planning and water related issues (e.g. sewage, drinking water provision and, storm water handling). In their comprehensive plans, municipalities provide policy guidelines regarding land and water use. On the basis of the comprehensive plan municipalities can make more detailed decisions regarding land and water use issues. In this way municipal comprehensive planning provides effective instruments in water governance. Hence, the municipalities play a key role in water management; thus close cooperation between the RBD authority and the municipalities is essential. To facilitate collaboration between the RBD authority, municipalities and other stakeholders, strategic environmental assessments can provide an opportunity.

Strategic Environmental Assessment

Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment was adopted with the aim of providing a high level of protection of the environment and to aid integration of environmental issues in the development of draft plans and programmes (Article 1). SEA is supposed to be a strategic decision tool to promote a more holistic and environmentally integrated perspective and to improve the decision making for plans and programmes (Vicente and Partidàrio, 2006). The SEA Directive is linked with common objectives established by the EU environmental policy (European Commission, 2004). Additionally, the SEA process encourages public participation (Glasson et al. 2005; Therivel, 2010).

The WFD and SEA Directive are linked to each other, as well as to other legal frameworks for example, the Habitat Directive and the Aarhus Convention (Carter and Howe 2006, Hartje and Klaphake, 2006). Both the WFD and the SEA Directive aim at the overall goal of ensuring the sustainable use of natural resources.

There are, however, significant constraints affecting the links between the implementation of the WFD and SEA Directive. The processes involve complexity and problems of fit in institutional, temporal and spatial scales.

Results and discussion

While the need for coordination is recognized within the WFD there are no clear forms for achieving dialogue between RBD authorities and other stakeholders. The RBD authorities are responsible for achieving effective coordination within their respective RBDs. At the local level water councils provide a platform for active involvement of municipalities and local stakeholders. However, the results from the case study show that water councils and municipalities lack clear roles, responsibilities, financial resources and other forms of support.

Since, RBD authorities have limited instruments and resources to implement the actions that are identified in the programme of measures, the effectiveness of water management is dependent on the commitment of municipalities and local stakeholders. Hence, water management strategies developed within an RBD have to be harmonized with municipal land use planning, which provides effective tools and procedures that can be applied to achieve the goals defined in the program of measures. Guidelines for land use planning and legal frameworks offer opportunities to define restrictions to land and water use, in particular through detailed development plans and area regulations.

A synchronisation of municipal land use planning and the process of the water planning cycle according to the WFD would facilitate coordination and thus strengthen the links between these policy instruments. The fit of time scales, efficient forms for public participation and the ability to make the processes adaptable are crucial factors for the coordination process to succeed. Another aspect for successful coordination is the handling of information and data within the water district. In Sweden, in general, there is much data available that is relevant for various aspects of water management. Furthermore, data from various sectors is likely to become highly relevant in decision-making processes for the management of water bodies. However, to achieve the aims of the WFD, it is important to ensure that such data can be made readily available in well-devised processes that encourage the active participation of local actors (Hammer et al. 2011) and the development of measures to meet the goals in the programme of measures.

As part of the preparation of the programme of measures an SEA is carried out. A core function of the SEA is to assess the impacts of alternative management strategies for the programme of measures. However, SEA also provides a framework for public participation and exchange of information between the stakeholders. A synchronisation of the processes for drawing up the WFD programme of measures and carrying out SEA can contribute to a better dissemination of knowledge and integration of outcomes. Moreover, to facilitate a spatial fit between ecological and administrative boundaries and cross-scale institutional interaction, SEA should be used to strengthen the link between the steps in the water planning cycle and municipal land use planning. This will enhance understanding of the impacts of land use planning on water resources and increase awareness of the role of land use planning on achieving WFD goals.

Conclusions

The WFD requires a coordinated process for water management which involves an active participation of municipalities and local stakeholders. Experiences from the case study in Sweden indicate a mismatch in the organizational settings in the North Baltic RBD. As a consequence, municipal land use planning and water management strategies are not linked. In order to ensure coordination SEA should be strengthened to enable the exchange of information and improve public participation. Additionally, synchronisation of the processes for preparing the programme of measures and the SEA can contribute to a stronger link between municipal land use planning and the WFD programme of measures.

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