



ELSEVIER

Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

Environmental Impact Assessment Review 26 (2006) 287–300

Environmental
Impact
Assessment
Review

www.elsevier.com/locate/eiar

The Water Framework Directive and the Strategic Environmental Assessment Directive: Exploring the linkages

Jeremy Carter ^{*}, Joe Howe

School of Planning and Landscape, University of Manchester, Oxford Road, Manchester M13 9PL, England

Received 1 August 2004; received in revised form 1 April 2005; accepted 1 May 2005

Available online 5 July 2005

Abstract

This paper highlights, explores and reflects on the linkages between the Water Framework Directive (WFD) and the Strategic Environmental Assessment (SEA) Directive. The assessment of river basin management plans (RBMPs), the key procedural linkage between the two Directives, is addressed. The assessment of other actions affecting the water environment, particularly land use plans, could also aid the achievement of the aims of the Water Framework Directive. As water quality is related intimately to the development and use of land, this significant issue is considered. There are numerous potential benefits that could arise from exploring the linkages between these two pieces of EU environmental legislation. These are highlighted, and include encouraging resource savings, generating a holistic approach to water resource management and ultimately the promotion of more sustainable forms of development.

© 2005 Elsevier Inc. All rights reserved.

Keywords: The Water Framework Directive; River basin management plans; The Strategic Environmental Assessment Directive

* Corresponding author. Tel.: +44 161 2756882.

E-mail address: jeremy.carter@manchester.ac.uk (J. Carter).

1. Introduction

This paper explores the linkages between two of the most significant environmental Directives to come from Europe in recent years; the Water Framework Directive (WFD) and the Strategic Environmental Assessment (SEA) Directive. The [European Commission \(2001a\)](#) has stated that the SEA Directive should be taken into account when implementing the WFD. The key procedural requirement of the WFD is the preparation of river basin management plans (RBMPs), an action that will fall under the remit of the SEA Directive, therefore triggering the application of SEA during RBMP preparation.

The WFD advocates the integration of its requirements, which relate to improving water quality, into other EU and domestic policies within the European member states. Land use planning is a key arena where this should take place. There exists an early and important opportunity to integrate the ethos of the WFD within planning systems via assessment procedures undertaken during the preparation of land use plans, which are also covered by the SEA Directive. This would enable significant problem areas concerning water quality to be identified, and for land use plans (and other plans falling within the scope of the SEA Directive that affect water quality) to consider the requirements of the WFD during their preparation. Land use planning policies could subsequently be developed to encourage the protection of the water environment, therefore assisting the achievement of the WFD's key goal; to ensure the 'good status' of most of Europe's waters by 2015. This paper identifies and discusses the points of integration between land use planning, achieving the objectives of the WFD and undertaking SEA procedures.

The following discussion performs several valuable functions. Specifically, the paper will raise awareness of linkages between the WFD and the SEA Directive, helping to reduce the unnecessary waste of resources and duplication of effort that could arise from considering the implementation of the two Directives in isolation. Moreover, if applied in practice, insights contained within this paper should encourage environment improvements to be made, particularly in the water sector. Crucially, the successful integration of the requirements of the WFD and the SEA Directive, and the corresponding achievement of their respective objectives, could assist in the realisation of goals related to sustainable development, which is a key overarching aim of both Directives and European environmental policy more generally.

This paper principally considers river basin planning and the management of water resources. Nevertheless, the discussion is also relevant to environmental planning and management more generally, both within and beyond Europe's borders. It is pertinent to academics concerned with the operation of the two Directives, and also broader issues relating to the problems and synergies related to implementing overlapping pieces of environmental legislation. The potential significance of this study to practitioners responsible for meeting the requirements of the WFD and SEA Directive is also clear.

The discussion begins by introducing the WFD and the SEA Directive. The procedural linkages between the requirements of the Directives are then outlined, concentrating on the preparation and assessment of RBMPs. Requirements common to the WFD and the SEA Directive are highlighted, including the collection of baseline data, monitoring and consultation and public participation. Undertaking SEA during the preparation of other

policies, plans and programmes (PPPs) could potentially contribute to achieving the goals of the WFD. This issue is considered with particular reference to the assessment of land use plans. Finally, key conclusions concerning the benefits of exploring the relationship between the WFD and the SEA Directive are highlighted in the context of encouraging the sustainable use and management of water resources.

2. The Water Framework Directive

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (European Commission, 2000) (the WFD) was adopted in October of 2000, and should have been transposed into national legislation by the 22nd of December 2003 (European Commission, 2003). The Directive builds on several other water-related European Directives, including the Nitrates Directive and the Bathing Water Quality Directive, which were termed the ‘first wave’ and ‘second wave’ of European water policy. Whilst these Directives have been successful in some respects, the involvement of a sufficient range of relevant stakeholders during their operationalisation has been limited. Moreover, the various water-related directives collectively represented a disparate approach to water management (Chave, 2001). The WFD was formulated with addressing these weaknesses in mind. The WFD signals the arrival of a new integrated, participatory and spatial approach to water management in Europe. Box 1 summarises the key aims of the WFD.

Box 1

The key aims of the WFD

- To extend the scope of water protection to all surface and groundwater and waters up to one nautical mile from the coast.
- To achieve ‘good status’ (as defined by the Directive) for most of Europe’s waters by 2015.
- To develop a combined approach of emission limit values and quality standards to manage water quality and quantity.
- To facilitate the efficient economic valuation of water resources.
- To enhance levels of consultation and public participation during water management.
- To streamline existing European water legislation.

The WFD requires the establishment of river basin districts (RBD), each of which must produce a RBMP. The production of RBMPs represents a new approach to water resource management based not on political and administrative boundaries but on natural hydrological units. RBMPs will integrate much of the implementation activity of the WFD (Chave, 2001), and represent the principle mechanism for meeting the WFD’s objectives.

3. The Strategic Environmental Assessment Directive

SEA can be defined as: “. . . a process to systematically analyse and document the environmental effects and consequences of proposed strategic actions. . .” (Sadler, 2001: 26). SEA effectively aims to provide decision-makers and affected stakeholders with timely and relevant information on the environmental impacts of a PPP. Undertaken as part of the ongoing development of a PPP, SEA has the potential to make that PPP more environmentally sound.

Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Commission, 2001b) (the SEA Directive) required Member States to introduce laws, regulations and administrative provisions to implement its provisions by 21st July 2004. The Directive sets out a broad assessment framework which is focused on generating certain outputs, principally an environmental report. Specific methods are not described, with the responsibility for developing assessment procedures left to the discretion of Member States. Nevertheless, some of the Directive’s required outputs effectively mean that certain procedures, such as baseline studies, impact identification methods, and the development of monitoring procedures, must be undertaken. Box 2 provides further details of the requirements of the SEA Directive.

4. The WFD and the SEA Directive: procedural linkages

The WFD and the SEA Directive are significant additions to the EU’s growing list of environmental legislation, and will influence the process of preparing numerous PPPs across a range of sectors. In an effort to assist the implementation of the WFD and the SEA Directive, the discussion now turns to highlighting linkages between their requirements. The linkages that will affect the implementation of the Directives in practice concern procedural issues, the most significant of which are considered below.

The key procedural requirement of the WFD is the preparation of RBMPs. RBMPs must address the objectives set out by the WFD, and must include a programme of measures to ensure that good water status will be reached within the RBD inside a timescale set by the Directive. In order to realise this objective, the European Commission (2003) have stated that RBMPs must identify the river basin’s key characteristics, review the impact of human activity on the status of water, and estimate the effects of existing legislation on meeting the Directive’s objectives.

RBMPs constitute a type of plan that is likely to have significant environmental effects. Accordingly, RBMPs will fall within the remit of the SEA Directive, and therefore must be subjected to a systematic environmental assessment process during their preparation. Further, Article 3 of the SEA Directive, which defines its scope, specifically states that plans and programmes in the field of water management should be subject to an assessment.

The WFD also contains what effectively constitute assessment requirements in that the impact of human activity on water status must be assessed and reported within RBMPs. Annex 2 of the Directive (European Commission, 2000) provides further details of this requirement. This states that an assessment must be made of the susceptibility of surface waters to a range of pressures including point source and diffuse pollution, abstraction and

Box 2

Details of the EU SEA Directive (adapted from [European Commission, 2001b](#))

Objectives: To provide for a high level of protection for the environment, the promotion of sustainable development and the integration of environmental considerations into plan and programme (PP) preparation and adoption.

Scope: The Directive will apply to PPs and their modifications that are likely to give rise to significant environmental effects. This will include PPs:

- setting the framework for future development consent of projects,
- likely to affect sites covered by the Habitats Directive,
- prepared for several sectors, including town and country planning.

Timing: The assessment shall be carried out during preparation of the PP, and prior to its adoption or submission to legislative procedure.

Implementation: The Directive is to be either integrated into existing procedures, or new procedures must be developed to comply with the Directive.

The environmental report: This should include discussion of the:

- content and objectives of the PP and its relationship with other relevant PP's,
- current state of the environment and its likely evolution without the PP,
- existing relevant environmental problems,
- environmental characteristics likely to be affected by the PP,
- environmental protection objectives relevant to the PP,
- likely significant environmental effects,
- proposed mitigation measures relating to the significant adverse effects,
- reasonable alternatives, and reasons for selecting the chosen alternative,
- assessment methods and any difficulties encountered,
- monitoring measures relating to the PP's implementation,
- information outlined above, in the form of a non-technical summary.

Consultations: The environmental report must be made available to the public and relevant authorities, designated by the member state, through arrangements determined by the member state, before the adoption or submission of the PP.

Transboundary consultations: Potentially affected member states must be sent the environmental report, and be able to enter into consultations.

Decision-making: The environmental report and other relevant consultations must be taken into account during the preparation of and prior to the adoption of the PP. Information must be made available regarding how the environmental report and associated consultations influenced the final PP.

Monitoring: Significant environmental effects relating to the implementation of the PP must be monitored. Details of these measures must be conveyed to consultees.

Review: Member states must ensure that the environmental reports are of a sufficient quality to meet the requirements of the Directive.

land use patterns. The aim of this assessment is to predict the likelihood that surface water bodies within the RBD will meet the environmental quality objectives outlined within the WFD.

It is apparent, therefore, that some form of assessment is required under both Directives. Article 11 of the SEA Directive states that where multiple assessment requirements such as this exist, that coordinated procedures should be developed to avoid unnecessary duplication of effort. The production of a timetable and work programme for the production of RBMPs, a requirement of the WFD, provides an ideal opportunity to align the procedures required by the two Directives. The work programme, prepared with meeting the requirements of the SEA Directive in mind, would ideally identify the key stages of RBMP development at which assessment procedures should be integrated. This exploration could help to facilitate the exploitation of any potential synergies and opportunities that may arise from addressing the requirements of the two Directives in tandem. These could include strengthening assessment procedures, stimulating resource savings, generating a holistic and integrated approach to environmental management and promoting more sustainable forms of development.

Each of the procedures discussed below are requirements of both Directives, and must therefore be addressed in each case. These procedures are now considered in terms of the SEA of RBMPs, which provides an insight into how certain requirements of WFD and SEA Directive could be met simultaneously. They are:

- The collection of baseline data.
- The assessment of alternatives and options.
- The assessment of policies.
- The suggestion of mitigation measures.
- The development of monitoring procedures.
- The development of consultation and public participation procedures.

4.1. The collection of baseline data

The WFD requires competent authorities to collate baseline data regarding issues including the hydromorphological, physio-chemical and biodiversity conditions of RBDs. This requirement relates to Article 5 of the Directive, which compels competent authorities to characterise the river basin that they are responsible for managing. Competent authorities are also required to characterise groundwater bodies, including details of their geological and hydrogeological characteristics. This information should be used to aid the formulation of RBMP programme of measures, and should also assist the assessment of the impact that any pressures identified during the characterisation process will have on the achievement of good water status. Further, the baseline data will provide a basis for developing future monitoring procedures.

Baseline data is central to the preparation of environmental reports, the key output of the SEA Directive. The SEA Directive states that environmental reports must describe the environmental characteristics of the area likely to be affected by the plan being assessed, and must also outline any existing environmental problems in the area. Information collected during the river basin characterisation process will provide a wealth of data on

water resources to inform this stage of SEA report preparation. Similarly, any baseline data obtained during previous SEAs, for example land use plan SEAs relating to the area covered by the RBD, could be used to inform river basin characterisation procedures. Baseline data gathered could subsequently be used to help predict impacts on the water environment during RBMP SEAs, assessments of water quality required by the WFD, and during SEAs of other relevant PPPs such as a land use or transport plans. If the available baseline data was used effectively in this way, it would help to ensure that other such PPPs were prepared in a way that aided the achievement of the WFD's water quality objectives and requirements. Further, through the availability of more baseline data, planning authorities would be better equipped to refuse development or to attach more stringent planning conditions to developments which were predicted to compromise the achievement of the WFD's objectives. Ultimately, the weight attached to the consideration of water related issues could increase. Moreover, there would be clear resource benefits arising from the sharing of baseline data.

It must be acknowledged that issues concerning the sharing of baseline data in this way may at present be a difficult task. Fragmented environmental policy regimes in which different organisations operate independently are not conducive to gathering baseline data in an integrated fashion. Nevertheless, this should not detract from the goal of developing a more strategic approach to baseline data acquisition, accounting for issues including the varied institutional settings within which the Directives will be implemented and the conflicting timescales influencing the preparation and implementation of different plans.

4.2. The assessment of alternatives and options

The assessment of alternatives is one of the most important stages of the SEA process (Partidario, 1996). As Sadler and Verheem (1996: 111) stated: "Evaluating alternatives is a critical element in facilitating informed choice." The SEA Directive requires that reasonable alternatives to the action are assessed, and that the reasons for selecting the chosen alternative are described within the accompanying environmental report. This requirement is similar to option screening, which must be undertaken during the early stages of RBMP preparation. The assessment of different RBMP options during a SEA would ensure compliance with this requirement of the WFD. Options which did not assist the achievement of the key objectives of the WFD, something which would be established during the SEA process (particularly if it was designed to specifically assess these objectives), could therefore be identified and rejected. This would provide a platform to defend decisions to select particular RBMP options.

The WFD states that derogations to its requirements would be allowed for certain policies, such as those relating to flood protection, navigation, power generation and essential drinking water. In cases such as these, competent authorities may not need to develop strategies to ensure that good water status is achieved. Although SEA procedures provide the opportunity to strengthen RBMPs through identifying sustainable options, political and economic priorities many nevertheless constrain the achievement of good water status through requiring actions, for example the straightening and channelisation of rivers, that compromise the achievement of the WFD's goals. Although SEAs can help to identify sustainable options, they cannot ensure their selection.

4.3. *The assessment of policies*

The assessment of the policies contained within a PPP is a central element of good practice SEA procedures, and has been described by the UK government as constituting the heart of the SEA process (DoE, 1993). Sadler and Verheem (1996: 28) have defined policies as: “A general course of action or proposed direction that a government is, or will be, pursuing and which guides ongoing decision-making.” The SEA Directive requires that the output of the SEA process, the environmental report, includes details of the likely significant effects of the action being appraised on a range of environmental factors (including water resources). In the case of RBMP SEAs, an assessment of the impacts of policies included to deliver good water status in the RBD will therefore be required. The results of the assessment would provide the opportunity to refine and strengthen the contents of the policies contained within the RBMP, which will define the nature of water resource management activities within the RBD over a period of 6 years (after which the RBMP will be reviewed). This represents a key benefit of assessing RBMPs.

4.4. *The suggestion of mitigation measures*

The SEA Directive requires that mitigation measures are developed to prevent, reduce and ultimately to offset significant environmental effects associated with the action being assessed (European Commission, 2001b). Appropriate mitigation measures designed to strengthen the content of PPPs in environmental terms should therefore be a key output of SEA procedures. As Therivel and Brown (1999: 447) stated: “The real value of SEA is as a creative tool in the design cycle in the formulation and reformulation of PPPs.” This suggests that the development of mitigation measures is an ongoing part of the development of PPPs. Moreover, it emphasises that SEA should be integral to the process of preparing PPPs. In the case of assessing a RBMP, the suggestion of possible changes to the content of the plan to address impacts identified during the SEA, which could assist the achievement of the objectives of the WFD, would represent an example of the assessment process performing this valuable function.

RBMPs must identify problems that exist that could limit the achievement of good status of waters in river basins in the timescale required by the WFD. These problems essentially represent the gap between the current situation in river basins, as identified during the collection of baseline data, preliminary monitoring and river basin characterisation exercises, and achievement of good water status. Programmes of measures must subsequently be developed and included within RBMPs to encourage actions to close this gap. The suggestion of mitigation measures during RBMP SEAs would clearly assist competent authorities in performing this task.

4.5. *The development of monitoring procedures*

Monitoring represents one of the most significant procedural linkages between the requirements of the WFD and the SEA Directive. Article 8 of the WFD includes several monitoring requirements, including the need to monitor surface and groundwater status. Article 10 of the SEA Directive requires that significant environmental effects concerning

the action being assessed are monitored. Monitoring can deliver numerous benefits, including establishing the accuracy of impact predictions made during the SEA, helping to refine assessment techniques, and determining whether the action (in this case RBMPs) performs as intended. Moreover, monitoring can also aid the identification of unforeseen impacts, and can help to ensure that mitigation measures are implemented, an approach that is termed ‘investigative monitoring’ by the WFD.

A consistent framework of indicators and targets concerning water quality would help to encourage the development of monitoring procedures that could assist the implementation of the WFD and the SEA Directive. The SEA Directive notes that existing monitoring arrangements can be used to satisfy its requirements in order to avoid duplication of effort. It is likely, therefore, that as they will be more comprehensive, the development of monitoring procedures to meet the WFD’s requirements will drive the monitoring of water resource issues during SEAs. This could be of real benefit for SEA, which is known for being frequently inadequate in terms of developing and instigating monitoring procedures (Curran et al., 1998). Competent authorities responsible for implementing the WFD would also benefit from exchanges of environmental information arising from developing monitoring procedures. Moreover, the generation of information concerning water quality and quantity could also help to ensure that the WFD’s requirements are met during the development of other PPPs, for example transport plans and biodiversity strategies.

4.6. The development of consultation and public participation procedures

The WFD has placed much importance on consultation and public participation in an effort to integrate the public’s views during RBMP preparation alongside those of knowledgeable environmental groups and well funded developers (Howe and White, 2002). Article 14 of the WFD is dedicated to outlining consultation and public participation requirements, which principally concern RBMP preparation. This addition was partly a response to the Aarhus Convention (UNECE, 1998), which addresses the involvement of stakeholders during the preparation of plans and programmes relating to the environment.

The SEA Directive also encourages consultation and public participation in line with the Aarhus Convention, particularly during the review of environmental reports. Greater and earlier consultation and public participation is widely regarded as good assessment practice (Curran et al., 1998, Partidario, 1996; Sadler and Verheem, 1996). As Sadler and Verheem (1996: 87) noted, public participation during SEA: “...ensures procedural integrity and provides relevant information and input to policy development.” The SEA Directive requires that the draft plan and final plan, and their accompanying environmental reports, be made available for comment at an early and effective opportunity. In practice, therefore, meeting the requirements of the SEA Directive and the WFD could involve simultaneous and integrated consultation and public participation procedures during the preparation and assessment of RBMPs. The SEA Directive also requires transboundary consultation where significant environmental impacts are predicted to cross national boundaries. As rivers often cross borders, transboundary consultation during RBMP preparation and assessment would sometimes be necessary. This could encourage a more collaborative and integrative approach to water management.

An opportunity would appear to exist to explore the linkages between this common requirement of the two Directives, which could encourage significant benefits. The involvement of stakeholders in a coordinated and integrated manner during the preparation and assessment of RBMPs would allow them to express their preferences and values concerning the management of water resources. This could help to minimise conflicts and generate consensus, allowing the various interests of stakeholder groups to be considered. Moreover, resource savings could result from the development of integrated and synergistic consultation and participation procedures. An integrated approach could also help to prevent ‘consultation fatigue.’ Crucially, by bringing stakeholders together during consultations to meet the requirements of the SEA Directive and the WFD, a more holistic approach to water resource management could result.

5. The SEA of land use plans: linkages to the WFD

The majority of this discussion has concentrated on how the SEA of RBMPs might contribute towards the achievement of the objectives of the WFD, and has highlighted the procedural linkages between RBMP preparation and the SEA Directive’s requirements. The assessment of other PPPs falling within the scope of the SEA Directive could also make a significant contribution to realising the WFD’s objectives. This is particularly true of the assessment of land use plans. The [European Commission \(2001a\)](#) has highlighted the role of planning systems in this respect, recommending that land use and water planning processes are designed to support each other. Moreover, the regulation of the quality of water is ultimately inseparable from land use planning activities ([White and Howe, 2003](#)). In the case of the UK, the planning system is a key forum to implement the growing number of domestic and European environmental protection policies ([European Commission, 1997, 2001b; DoE, 1991](#)). This is recognised to be true of the WFD in the UK ([EFRA, 2003, European Commission, 2001b](#)).

Across Europe, land use planning procedures will be key to delivering the WFD’s requirements. The assessment of land use plans, which is a requirement of the SEA Directive, could aid the preparation of planning policies that support the WFD’s objectives. However, changes to land use plan SEA procedures will be necessary to perform this role. For example, in the UK, current land use plan SEAs often consider water resources (and other environmental issues) from a general perspective ([Carter et al., 2003](#)). It is likely that land use plan SEAs will need to be adapted to look specifically at ground and surface water, and chemical and ecological status, as required by the WFD.

Despite the need for procedural modifications, SEA has significant potential to contribute to the development and refinement of land use plan alternatives and policies to encourage development decisions to be taken that support planning practices that would assist the achievement of the WFD’s goals. Raising awareness of the role of land use planning in this respect will be required. In the UK, for example, it may be necessary for the government to modify planning policy statements (PPS), which provide guidance to planning authorities on the operation of the planning system, to ensure that the requirements of the WFD are addressed in future planning activities. It may ultimately

be beneficial for the UK government to produce a PPS dedicated to the water environment to help to achieve this goal. Moreover, it would also be useful to develop guidance to clarify how SEA could be used to determine the impact of land use plans, and other relevant PPPs, on issues central to the WFD.

6. Conclusion: towards the sustainable use of water resources

The WFD is one of the most significant pieces of EU environmental legislation to date and considers, for the first time, the management of water within the context of the natural river basin as opposed to within traditional political and administrative boundaries. The SEA Directive has a similar potential to positively influence the way that environmental issues are addressed during the development of strategic actions throughout the EU. Viewed from a collective, integrated and synergistic perspective, the WFD and the SEA Directive represent a real opportunity to secure tangible improvements in the quality of Europe's water resources, and beyond that, environmental issues more generally.

The WFD is an ambitious piece of legislation. Consequently, the key objective of the Directive, to achieve good water status in most of Europe's waters, is not expected to be achieved in the short term (by 2015). This paper has suggested that SEA can assist the achievement of this goal through assessing RBMPs and other relevant PPPs such as land use plans. More specifically, the following benefits could arise from the integrated implementation of the WFD and the SEA Directive, each of which could aid the realisation of the WFD's objectives and ultimately could encourage the sustainable use of water resources:

- Strengthening the content of RBMPs.
- Improving the quality and availability of baseline data.
- The advancement of integrated consultation and public participation procedures.
- The development of monitoring procedures.
- Encouraging the sustainable management of water resources.

6.1. Strengthening the content of RBMPs

The consideration of the potential environmental impacts of different RBMP alternatives and options, ideally with the benefit of extensive consultation and public participation, provides a valuable early opportunity to influence positively the plan's strategic approach to water resource management. In doing so, SEA has the potential to aid the achievement of the WFDs goals. Further, SEA presents the opportunity to highlight the strengths and weaknesses of specific RBMP policies in terms of their potential contribution to the Directive. Mitigation measures suggested as a result of undertaking SEA could also help to strengthen objectives and policies contained within RBMPs. Equally, for these reasons, SEA presents the opportunity to strengthen the content of other PPPs, such as land use plans, in terms of their approach to water resource management.

6.2. Improving the quality and availability of baseline data

Successfully meeting the requirements of the WFD and SEA Directive will involve the collection of a considerable amount of baseline data concerning surface and groundwater resources. This information could be employed productively in various ways, for example during the preparation of land use plans and the monitoring of RBMP implementation. The greater availability of baseline data, ideally through a publicly accessible database, would help to improve the management of water resources in line with the goals of the WFD.

6.3. The advancement of integrated consultation and public participation procedures

Taking an integrated approach to preparing and assessing RBMPs raises the prospect of a range of government departments, stakeholder groups and other interested parties engaging collectively in the consultation and participation procedures that are a requirement of both the WFD and the SEA Directive. This could help to break down traditional barriers between disciplines and interest groups, particularly during the process of generating solutions to complex water resource problems. A ‘water-centric’ approach to river basin planning and management is unlikely to lead to the sustainable management of water resources in the long term. Integrated consultation and participation procedures would be more conducive to addressing the social, environmental and economic issues that form the basis of sustainable water management procedures. A further benefit of integrated stakeholder involvement procedures is that networks between stakeholders could be developed, potentially leading to benefits beyond the sphere of water resource management. It is also possible that stakeholder’s awareness of issues including the WFD and sustainable water resource management would increase. Further, the logistics of undertaking stakeholder participation procedures in a more integrated manner could lead to resources being used more efficiently, and ‘consultation fatigue’ being avoided.

6.4. The development of monitoring procedures

The SEA Directive and the WFD both require the development of monitoring procedures. Exploiting the potential synergies that could arise from taking an integrated approach to meeting this requirement would lead to resource savings, and ultimately the more efficient implementation of RBMPs and other PPPs influencing water quality. Monitoring procedures also allow competent authorities to determine whether they are on course to meet the WFD’s objectives, enabling remedial action to be taken where necessary. Further, the development of monitoring procedures would suggest that competent authorities responsible for the implementation of the WFD see their responsibility as a long-term commitment to the improvement of water resources in their river basin.

6.5. Encouraging the sustainable management of water resources

The integrated preparation and assessment of RBMPs, simultaneously meeting the requirements of the WFD and the SEA Directive, could help to encourage a

sustainable approach to water resource management. By cementing water resource issues as a key consideration during the preparation of other relevant PPPs, SEA could help to realise sustainable development goals. This is significant as sustainable development is now promoted as a cornerstone of EU environmental policy within the 6th Environmental Action Programme (European Commission, 2002). More specifically, EU water policy requires Member States to see water as a key contributor to a sustainable economy, and now encourages the integration of water considerations within activities undertaken in other sectors including transport, land use planning and agriculture (Chave, 2001).

If the political and economic priorities that drive decision-making procedures in the environmental planning sector are acknowledged, it is likely that some of the benefits of taking an integrated approach to delivering the WFD and the SEA Directive may currently be largely aspirational. It is possible that, at present, ideas such as developing integrated participation procedures and encouraging organisations to take a collaborative approach to monitoring water resources do not reflect the reality of the fragmented approach to environmental planning evident in countries such as the UK.

Nevertheless, there are several potential benefits associated with exploiting the linkages between the WFD and the SEA Directive that are achievable in the short term. Central amongst these is the more efficient use of resources that could be achieved through avoiding the need to undertake parallel assessment procedures as required by the SEA Directive and the WFD. The Directives will clearly add to the workload of the competent authorities responsible for their implementation. Exploring the possibilities for integrating the delivery of the Directives would lead to benefits such as exploiting synergies and economies of scale, and reducing the impact of the implementation of the legislation on tightly constrained resource budgets.

Also significant in the short term is that competent authorities and stakeholders involved during the process of implementing the WFD and the SEA Directive would become more aware of issue central to sustainable water resource management. As the SEA Directive requires the assessment of impacts of RBMPs on a range of issues as diverse as human health, climatic factors and biodiversity, a more holistic perspective of water management will be encouraged. The requirement of the SEA Directive to consider the interrelationship between these issues should further enhance the awareness of stakeholders and competent authorities of sustainable water management issues. Looking towards the future, this could stimulate the development of the integrated stakeholder involvement procedures and monitoring approaches that will ultimately be necessary to encourage a sustainable approach to water resource management. The application of SEA during the preparation of RBMPs, and other PPPs that influence the water environment, could therefore make a significant contribution to the achievement of the aims of the WFD and EU environmental policy more generally.

Acknowledgements

The support of the Economic and Social Research Council, who provided funding to undertake this research (RES-000-22-0601), is greatly appreciated.

References

- Carter J, Wood C, Baker M. Structure plan appraisal and the SEA Directive. *Town Plan Rev* 2003;74:395–422.
- Chave P. The EU Water Framework Directive: an introduction. London, UK: IWA Publishing; 2001.
- Curran J, Wood C, Hilton M. Environmental appraisal of UK development plans: current practice and future directions. *Environ Plann B Plann Des* 1998;25:411–33.
- Department of the Environment. Secretary of the State's Guidance: introduction to Part 1 of the act. London, UK: HMSO; 1991.
- Department of the Environment. Environmental Appraisal of Development Plans: a good practice guide. London, UK: HMSO; 1993.
- Environment and Rural Affairs Select Committee (EFRA). 4th report, The Water Framework Directive [HC 130-I], 2003.
- European Commission. Council Directive 97/11/EC of 3 March amending Directive 85/337/EC on the assessment of certain public and private projects on the environment. *Off J Eur Communities L Legis* 1997;73:5–15.
- European Commission. Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy. *Off J Eur Communities L Legis* 2000;327:1–73.
- European Commission. The Common Strategy on the Implementation of the Water Framework Directive. <http://www.europa.eu.int/comm/environment/water/water-framework/strategy.pdf>, 2001a.
- European Commission. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001. *Off J Eur Comm* 2001b;L197:30–7.
- European Commission. Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002: laying down the sixth community environmental action programme. *Off J Eur Communities L Legis* 2002;242/1.
- European Commission. The EU Water Framework Directive – integrated river basin management for Europe. http://www.europa.eu.int/comm/environment/water/water-framework/index_en.html, 2003.
- Howe J, White I. The potential implications of the European union water framework directive on domestic planning systems: a UK study. *Eur Plan Stud* 2002;10:1027–38.
- Partidario M. Strategic environmental assessment: key issues emerging from recent practice. *Environ Impact Asses Rev* 1996;16:38–49.
- Sadler B. Strategic environmental assessment: an aide memoire to drafting a SEA protocol to the Espoo Convention. In: Dusik J, editor. *Proceedings of International Workshop on Public Participation and Health Aspects in Strategic Environmental Assessment*. Szentendre, Hungary: The Regional Environmental Center for Central and Eastern Europe; 2001.
- Sadler B, Verheem R. *Strategic Environmental Assessment: Status, Challenges and Future Direction*. The Hague, The Netherlands: Ministry of Housing, Spatial Planning and the Environment; 1996.
- Therivel R, Brown A. Methods of strategic environmental assessment. In: Petts J, editor. *The Handbook of Environmental Impact Assessment*, vol. 1. Oxford, UK: Blackwell Science; 1999. p. 441–64.
- United Nations Economic Commission For Europe (UNECE). *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*. <http://www.unece.org/env/pp>, 1998.
- White I, Howe J. Planning and the European Union Water Framework Directive. *J Environ Plan Manag* 2003;46: 621–31.