Cover sheet

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Title

Evaluating Strategic Environmental Assessments in the Netherlands

Content, process and procedure as indissoluble criteria for effectiveness

Abstract

To assess the effectiveness of a Strategic Environmental Assessment (SEA), we distinguish between its contribution to the quality of the ultimate policy choice (usefulness, applicability), the procedural quality of the planning process (transparency, timeliness) and the quality of the stakeholder participation in the planning process (openness, equity, dialogue). In the context of two case studies involving Dutch planning practice, we argue that when and how an SEA is applied is crucial to understanding its effectiveness and show that the effectiveness of an SEA depends upon its alignment with and embedment within the planning process.

Key words: SEA, effectiveness, controversial planning; decision-making procedures, process, content.

Note: this paper is not in print or submitted elsewhere

1. Introduction

Dutch society can be seen as a typically postmaterialist society (Inglehart, 1990) in which various values are well organized and numerous stakeholders try to influence spatial planning. Within this society, planning is often both highly controversial and time-consuming. Each spatial function has its advocates who are well-equipped to influence planning decisions and to defend their stake. Despite the fact that the Dutch planning culture is strongly consensus-oriented and stakeholders get many opportunities to participate; actors who feel threatened do not hesitate to go to court to defend their interests, especially in the later stages of decision-making. This tendency has the effect of rendering the complex planning processes both unpredictable and time-consuming.

In this context, the knowledge production process often becomes as controversial as the planning process itself. Because impact assessments, cost-benefit analyses and other research exercises heavily influence the choices that made, stakeholders try very hard to influence the research trajectory. They actively question the outcomes of research efforts – especially when the findings are not in line with their own definitions of the problem (Van Buuren & Edelenbos, 2004; Collingridge & Reeve, 1986). Knowledge processes are thus an inherent part of the political struggle surrounding planning decisions. The effectiveness and value of the knowledge production process not only depends on its contribution to the rationalization of political choice. Because this choice is always value-laden, it also depends heavily on its contribution toward establishing inclusiveness and democracy within the planning process (Van Buuren, 2009; Cashmore, 2006).

The same can be said of Strategic Environmental Assessments (SEAs). SEA's are predefined procedures that structure the process of knowledge production within a

spatial planning endeavor. Therivel and Partidario (1992) define an SEA as: "the formalised, systematic and comprehensive process of evaluating the environmental effects of a policy, plan or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and the use of these findings in publicly accountable decision-making". SEAs are meant to ensure that policy options that have significant environmental impacts are weighed dully and deliberately. Often, the effectiveness of an SEA is framed in terms of its contribution to the utilization of information related to the environmental consequences of a proposed project. An effective SEA is used in decision-making, and ultimately leads to the selection of the most environmental-friendly option and/or the adoption of necessary mitigation measures if the most environmentally friendly option is not selected. However, the effectiveness of an SEA depends not only upon the use of the knowledge to enables rational and sustainable policy choices, but also upon its contribution to a collaborative dialogue.

In this article, we discuss the various functions an SEA can serve in order to further the effectiveness of a complex and controversial planning processes. In order to establish several key SEA effectiveness criteria, it is first necessary to understand the fundamental characteristics and requirements of a planning process that will result in legitimate and effectual outcomes (section 2 and 3). Features of an effective SEA are discerned in this paper in the context of two case studies (sections 5 and 6). In section 7, we investigate the conditions that allow for effective SEAs that contribute distinctly to the quality of the planning process. Our findings are discussed in the final section.

2. Characteristics of an effective SEA

What makes an SEA effective? The literature is rich with attempts to answer this question. Cashmore et al (2008) defined four effectiveness criterions that determine the transformative potentialities of environmental assessments: learning outcomes (both social and technical); governance outcomes (e.g. stakeholder participation, network development); development outcomes (design choices; consent decisions) and attitudinal and value changes.

In general, an SEA is meant to safeguard environmental interests and to ensure that they are given serious consideration in any plans and programs. SEAs were initiated also to further the likelihood that more sustainable policy options are developed and selected (e.g. European Union Directive on Environmental Assessment of Plans and Programs; see Wallington et al 2007). As such, the effectiveness of an SEA can be seen as its contribution to the selection of the most sustainable, environmental-friendly planning option. Impact assessments contribute to the body of serviceable knowledge that is considered in making the choice between multiple policy options (Jasanoff, 1990). Apart from adding to available information, they may further contribute by framing the argument and longer-term choices.

Despite these obvious benefits, the impact of the SEA on the content of a policy choice is often unclear, as choices tend to evolve over time and the planning process is influenced by multiple other sources of information as well as views of stakeholders. Because the process is fluid and influenced by multiple factors it is often impossible to pinpoint the exact impact of SEA on the final decision. In general then, impact assessments can be said to contribute to the body of knowledge that is considered in deciding between policy options. They may also augment certain perspectives, legitimize specific choices and provide a rationale for specific spatial functions that are preferred by the authorities.

However, the outcomes of an impact assessment can be highly controversial because they affect how far stakeholders can realize their own ambitions. Stakeholders have their own views of problems, their own values and normative frames, and they are often capable of mobilizing experts to counter and discredit data collected by planners and policy-makers. Frequently, these controversies result in legal action in which the stakeholders try to convince the court that the impact of spatial development plans have not be sufficiently considered.

It is for this reason that not only the *content* of the SEA is relevant to the planning processes, but also the *process* of executing an SEA (Pischke & Cashmore, 2006). The impact assessment can both magnify the disputes between stakeholders, and minimize it by aiding in the establishment of common ground. Depending on how the SEA is organized, it can certainly contribute to the quality of the collaborative process, and help ensure that stakeholders work together to realize a decision in a consensual manner. By carefully intertwining the process of stakeholder participation and knowledge production, a process of joint fact-finding can be realized in which there occurs a reflexive dialogue and frame reflection between stakeholders with highly diverging perceptions. To fulfill this function, the SEA has to be independent, credible and univocal (Sarewitz, 2004; Twaalfhoven, 1999; Clark & Majone, 1985) and its production process has to be inclusive, democratic and transparent (Van Buuren & Nooteboom, 2009; Woodhouse & Nieusma, 2001; Guston, 2004).

Along with its contributions to the quality of the collaborative process and the ultimate policy choice, an SEA can also contribute to the quality of the decision-making *procedure*. Planning processes surrounding highly controversial public investments are exceptionally difficult to organize and manage. For this and other reasons, the course of planning can be erratic and unpredictable, and the planners

often run out of time and budget (Teisman, 2008). Transparent and unambiguous procedures which structure the decision-making process can contribute to their overall quality. The following are the formal steps involved in establishing an SEA within the Dutch planning process:

1) Public announcement of the start of the procedure;
2) Consultation with administrative bodies likely to be involved in the implementation of the plan about the scope and details of the environmental statement;
3) Writing of the environmental statement (termed 'plan-Environmental Impact Assessment');
4) Public display of the environmental statement and draft plan to elicit public feedback and consultation of the Netherlands Commission on the EIA;
5) Writing of the final plan based on established environmental impacts and consultations;
6) Publication of the final plan;
7) Evaluation of the impacts of the project after implementation (Ministry of VROM, 2006).

All in all, an SEA adds to the decision making process only the requirement that a formal statement be made about the environmental impact of a course of action, and that the decision to go ahead with a planning project is made after fully considering these impacts. Paradoxically however, this requirement tends to render the authorities more vulnerable to criticism that environmental information is omitted or undervalued, and can easily add to the "war of knowledge" which is often fought out in court. Nonetheless, this very risk may instead be viewed as an opportunity to consider more carefully how the detailed planning process is structured within the

prevailing legal framework. Those responsible for doing the SEA may see it as their responsibility to work with the planners so that more key parties agree with the process and final proposal. As such, the SEA can facilitate an ordered, transparent, and timely decision-making process, in which the same questions do not need to be answered again and again and political support does emerge for a well-considered and widely supported final proposal.

3. Criteria for effectiveness of SEA

Summarizing the previous section, we formulate three criteria with which we evaluate the effectiveness of an SEA that is established within the controversial planning processes:

1. The SEA enables decision-making based upon authoritative and undisputed information on the environmental consequences of each alternative choice (content);
2. The SEA contributes to the inclusiveness of the collaborative dialogue, and thus to the realization of support and legitimacy by achieving consensus and frame-reflection (process);
3. As a procedural device, the SEA, contributes to the timeliness, transparency, and quality of the overall decision-making process (procedure).

If these conditions are met, the SEA would likely have a desired effect on the outcomes of the planning processes. With this interpretation of effectiveness, we move beyond the technical, rational interpretation of the impact of SEAs and broaden our understanding of the elements which determine the contribution of SEA to the effectiveness, legitimacy, and overall quality of the decision-making process

(Partidario, 2000). We focus on the direct impact of an SEA on the quality of the decision-making process with regard to the quality of its content and its stakeholder participation and its procedural quality.

Of course, the link between SEA quality and the quality of decision-making is not straightforward. Other factors also influence the quality of decision-making with regard to content, process and procedure.

Nonetheless, the above criteria can be said to bring together elements related to various models of science and impact assessment (Cashmore, 2006; Cashmore et al. 2004; 2007). Departing from a critical realist perspective, they integrate a more analytical approach toward the *content* of the SEA (Thérivel & Minas, 2002) and a participatory approach to the *process* of SEA creation and decision-making (see Kornov & Thissen, 2000), and incorporate a more governance-oriented approach of decision-making in which *procedures* can be used to structure and to stage a complex decision-making process (see Cashmore et al. 2007). These elements interact continuously which each other and we have come to see them as indissoluble elements of any attempt to determine the effectiveness of an SEA. In the next section, we use two case studies involving SEAs as applied in the Dutch planning practice to shed light on the conditions under which SEA can realize these ambitions.

4. Methodology

We compare two controversial Dutch planning processes which have received a great deal of political and public attention. The two cases were among the first few planning projects to be conducted in The Netherlands in accordance with the requirements of the SEA Directive. These projects preempted the wide-spread implementation of

specific SEA requirements. However, the Environmental Impact Assessment (EIA) had been applied countless times and can be seen as the main precedent to the current SEA. Since its introduction to The Netherlands in the 1970s, the EIA has been regarded as a supplementary procedure for decisions that require considerable assessment in order to secure an environmental permit or planning document. The EIA was supposed to facilitate a more environmentally-aware analysis of controversial decisions by explicitly developing alternatives to the proposed plan, and comparing their effects with those of the preferred alternative. Such assessments of the most environmentally friendly alternative were made compulsory, along with a formal review of the scoping document and environmental statement by the Netherlands Commission on Environmental Assessment. The SEA has taking over some of the functions of the EIA, and in doing so, has eased the process substantially. However, the number of projects expected to include an SEA annually is expected to increase significantly under the current legislation (see also Runhaar & Driessen, 2007).

Our first case concerns the Southern Sea Line. The Southern Sea is a large bay within The Netherlands that has given its name to a high-speed rail connection (Zuiderzeelijn, abbreviated: ZZL) that aims to connect Western Netherlands with the Northern region. The ZZL proposal came out of negotiations between the northern governments and the national government in the mid nineties in an effort to boost the lagging economy in the North by improving its connection to the economic centre. The national government reserved a significant budget for this high-speed railway connection and much preparatory work was done by the Ministry of Transport. However, at the last moment, a Parliamentary Enquiry Committee had significant doubts about both the railway necessity and added value of the ZZL. In face of serious

time delays and cost overruns, the committee demanded a serious reassessment of the project before they would take a final decision.

In the early 2000s the Cabinet assigned a committee to prepare a draft "structure vision" (a zoning plan), which was a formal strategic spatial assessment that included a Strategic Environmental Assessment, a Spatial Analysis and a Societal Cost-Benefit Analysis (SCBA).

The second case concerns the redevelopment of the IJsseldelta Kampen, a large area near the river IJssel. Two spatial investments were proposed to enhance the river's retention capacity in times of high water flow. After a long process of design and dialogue, a SEA was commissioned because adjustments had to be made to regional and local planning documents.

Looking at the two cases, it can be said that they are comparable in that both relate to very controversial planning efforts with multiple stakeholders from opposing domains. In addition, both dealt with large spatial projects (a railway infrastructure and a river bypass) and were organized with close interaction between authorities from local and regional levels.

Nonetheless, these cases were chosen specifically for the fact that they differ on key factors related to the Dutch SEA practice. First, one project was furthered in relation to a single-issue (ZZL), while the other concerns multiple issues (IJsseldelta Zuid). Second, when considered together, the two projects reflect the application of SEA across a number of domains, namely infrastructure development, regional development, water management, and nature protection. Finally, in the case of the SSL, there was a *national* zoning document, while in the case of the IJsseldelta, two *regional* zoning documents had to be changed.

The information used in our case studies is based on an extensive analysis of the project histories obtained by examining various policy and research documents and by conducting a series of interviews (about 12 per case) with planners, political authorities, stakeholders and SEA experts. In the case of the rail line, interviews were conducted as part of an official evaluation commissioned by the Ministry of Transport. During these interviews, much attention was paid to the planning process and the function of the SEA within this process and we asked respondents what they saw as the key contributions of SEA to creating authoritative content, inclusive collaborative dialogue and functional procedures. Although we acknowledge that the examination of just two cases provides a limited basis for more general conclusions, it is important to note that our cases were strategically selected to represent the varied Dutch SEA practice fairly accurately.

5. Case studies

5.1 Southern Sea Line

The task of drafting a Structure Vision for the Southern Sea Line was given to a project bureau composed of officials from different ministries. Right from the start, all formal SEA steps were intertwined with the procedure used to develop the Structure Vision. This involved multidisciplinary teams of designers, researchers and planners working together to gradually develop the various building blocks that made up the Structure Vision.

Because the SEA was initiated at the start of the planning process, it had the effect of increasing stakeholder expectations about the way environmental impacts would be assessed and integrated into the vision development process. This effect was triggered

by the requirements that the SEA be publicly announced early in the planning process and that a separate report be produced specifically on environmental impacts. Because of their lack of familiarity with these requirements (which were not yet legally mandated), the project bureau decided to ask the Netherlands Commission on Environmental Assessment (NCEA) to advise on the scope of the SEA, as well as to evaluate the quality of the report that was later produced.

A "Starting Document" was circulated among authorities and public, with open invitations for feedback on the desired scope of the SEA report. This included feedback on environmental impacts that had not been considered as well as alternative ways to reach the project's objectives. Dozens of meetings were organized within several provinces, and hundreds of politicians, officials, stakeholders and citizens attended. Based on the feedback received, a scoping document was prepared and circulated before the actual SEA was written. A social cost-benefit analysis and spatial analysis were also prepared along with the official SEA. Investors in the north were asked to participate in the financing of the project since the national contributions would not be sufficient to meet the project's needs. A market consultation effort was also organized to further this goal.

These parallel processes were run by both public and private consultancies, and the project bureau coordinated the alternatives and impacts to be assessed. Several alternative technologies and routes for the rail line were developed, assessed, and compared. SEA specialists met with municipalities along all of the railway's routes. A nearly final SEA and draft structure vision were circulated among stakeholders, and the results were taken into consideration (Projectorganisatie Zuiderzeelijn 2005a; 2005b). The SEA was ready a year after the start of the project bureau, and it was submitted to Cabinet (Ministerie van Verkeer en Waterstaat, 2006). However, in April

2006, the Cabinet decided on an alternative course of action called the "transition alternative" to meet the original purpose of boosting the economy of the North. This alternative had not been considered at length: and did not entail any major new infrastructure other than a package of economic investments in the north. The cabinet believed that a high speed rail line was not economically efficient, and were hesitant about its environmental impacts. This draft structure vision was published along with the existing SEA, and stakeholders and the public were again asked for feedback. Public hearings were organized, and hundreds of reactions were received (Ministerie van Verkeer en Waterstaat et al, 2006; Projectorganisatie Zuiderzeelijn, 2006).

Strikingly, millions of Euros had been spent on developing and assessing alternatives for a project that had not been selected. Although seemingly wasteful, such efforts were necessary to decide if the project would solve any problems, or if it would instead create many new problems. Stakeholder respondents indicated that in general, they felt that the money had been well-spent. In their eyes, the SEA had contributed significantly to the learning process, as had the societal cost-benefit analysis.

Analysis

Summarizing the main effects of the SEA, it is clear that it contributed in multiple ways to the content of the decision-making, the procedure as well as the process.

SEA enables decision-making based upon authoritative information on the environmental consequences of a wide range of alternatives (content).

The SEA was instrumental in bringing about the change of heart with regards to the ZZL on its second parliamentary consideration in 2006. The SEA, together with the

SCBA and the spatial analysis, made it clear that the original problem definition was inadequate in that it was based upon the assumption that the distance between the economic centre of the Netherlands and the Northern provinces was the reason for the economic problems of the latter. Through the assessment procedure it became clear that the existing economic structure had to be strengthened. This was controversial because many politicians in the Northern provinces were outspoken protagonists of the ZZL. However, the argument put forth through the SEA was convincing and it strongly influenced the process. Cabinet broadened the official problem definition for the study to include the so-called Transition Alternative.

Respondents of the interviews believed that the SEA assisted in developing alternatives that would have been more acceptable for the residents because it elicited suggestions from residents well before the authorities had made a decision.

SEA contributes to the quality of the collaborative dialogue and thus to the realization of support and legitimacy by achieving consensus (process).

The SEA process was closely linked to the general planning and assessment process, but it also had a separate consultation track. Unlike what is usually done in The Netherlands, a number of routing alternatives were developed in rough detail, and authorities and residents in the crossed areas were consulted at several stages of the plan's development. Making use of feedback, and informing people about dilemmas at higher scales of planning, the SEA functioned as a generator of alternatives which opened new avenues for stakeholders to think about other agendas. Although the rail infrastructure proved to be unfeasible in the first phase of the planning process, the Northern provinces were asked to consider other ambitions. These were incorporated

in the Transition Alternative, which was then subject to both the CBA and the SEA and was assessed as being much more beneficial.

The SEA facilitated a process of learning and frame reflection by delivering undisputed information about the various benefits and disadvantages of different alternatives. The resistance against 'unwelcome facts' was surprisingly moderate, largely because of the transparency and openness of the SEA, the way in which a 'Critical Review Team' safeguarded the quality of the research, and the many opportunities for stakeholders to get involved in the research process.

As a procedural device, the SEA contributes to the timeliness, transparency and quality of the overall decision-making process (procedure).

The railway project was one of the first SEAs in the Netherlands that anticipated the EU Directive. The project organization used the SEA procedure voluntarily to structure stakeholder consultation and to organize the assessment process. Although some ministerial officials were skeptical about this instrument, the project organization proceeded to use it and emerged very positive about this decision. They used it to organize the inherently dynamic information search to answer political questions. Although the official requirements of the SEA procedure were minimal, the fact that the SEA was attempted created among residents and interest groups high expectations of being consulted and considered. Many wondered how seriously their input would be considered by the planners and so participated more actively than they would normally have.

The SEA team leader was frequently in communication with the director of the project bureau about how to deal with the legal ramifications of the alternatives. The

SEA had helped to move the planning process safely away from risks created by environmental laws by seeking information in a timely manner and by looking for alternatives when unexpected impacts emerged in the planning and assessment process.

5.2 IJsseldelta South

High river discharges in 1993 and 1995 caused not only great water damage, but also brought about much societal unrest. In response to this, the Dutch central government decided that the discharge capacity of the main rivers in the Netherlands had to grow such that they could handle Rhine river discharges of 16.000 m^3/sec at Lobith (near the German border).

This decision had a number of serious implications. A program was set up called ‘Space for the river’ which had to result in a concrete program of measures to be realized before 2015. The capacity of the main rivers in the Netherlands had to be substantially enlarged by this time by measures such as groin lowering, dike movements and the realization of inundation areas. To strengthen support, these measures had to be realized in close interaction with the regional and local authorities and had to take into account the agendas of these officials.

In 2003, the decentralized authorities of the two main river regions sent their preferred proposal to the State Secretary of Water Management. Because of a serious bottleneck in the river IJssel near the city of Kampen, expansion measures were seen as necessary and the widening of the riverbed was seen as a sufficient short term solution (2025) to the problem. At the same time, a bypass of the river south of the Vossemeer was seen as a necessary long term measure because it was believed that climate

change would result in even higher river discharge rates. A spatial reservation was proposed to forestall other spatial developments in this area and to keep the option of an eventual bypass open. In 2003, a parliamentary decision was made on the program level in favor of the river widening and the creation of a spatial reservation.

However, such a spatial reservation was highly undesirable to officials of the municipality of Kampen and the province of Overijssel as this area was required to meet growing housing needs. They tried to push forward the bypass as the most effective measure for the short term, and pointed out that other spatial investments were already intended for this area. One of them was a railway called the the Hanzeline. Any possible bypass of the river had to cross this Hanzeline twice, and would only be possible if a flyover would be part of the route, and if the dimensions of a tunnel under the Vossemeer could be adjusted to the bypass.

The Ministry of Housing and Spatial Planning decided in the spring of 2005 that the province of Overijssel had to develop an integral ‘area development plan’ which included the bypass.

At this juncture, a very intensive process was begun in which two possible scenarios were developed by a small intergovernmental project team with minimal interaction with the wider public. This lack of consultation was deemed necessary because it had to be cleared and approved by the central government before the end of 2005, or the line would be build without these adjustments and the bypass would have become prohibitively expensive, if not impossible in the short term.

The process of scenario building was supplemented by a ‘voluntary environmental assessment’ in which the project team investigated whether their ideas were compatible with the most critical of the environmental objectives formulated by

European and national directives. Due to the time pressure, the project director opted for a limited assessment of several key regulations and the SEA was indefinitely postponed.

The project organization presented five scenarios to its stakeholders and citizens. Loud criticism was heard at several informational meetings. To counter the criticism, the provincial Deputy invited the citizens to develop their own scenario. Ultimately, this grassroots-led scenario was taken up as the Masterplan.

The Masterplan was elaborated into a formal Intention Agreement between the participating authorities before the formal planning process was begun and involved the amendment of the provincial and local zoning plans. An SEA was conducted at this stage and important questions had to be answered in the SEA in relation to the necessity and value of additional housing, the sustainability of the bypass, and the viability of alternative development options for the area (Projectorganisatie IJsseldelta-Zuid, 2007; 2008).

The SEA was necessary to fine-tune the details of development plan for the area, and to underpin the adjustment of the Provincial Zoning Document. However, as always the SEA also fueled a number of new discussions, especially in relation to the way the bypass was to be realized. The SEA writers concluded that a 'blue bypass' with a direct connection between river and Vossemeer had the most beneficial consequences and the fewest negative external effects (Provincie Overijssel, 2008a; 2008b). However, an open, blue bypass was difficult for the Water Board to accept. They were anxious about the negative hydrological impacts of the bypass and started contra research to support their opinion. In addition, inhabitants and environmental interest groups were anxious about the recreational attraction of a blue bypass and the negative consequences of this for the environment.

The results of the SEA with regard to future population growth were also subject to much debate. Some environmental stakeholders and inhabitant associations criticized the assumptions behind these scenarios. Although the governments involved adjusted their plans for the number and location of the houses to be built, much discontent remained because the contrary views and expert opinions gathered by the stakeholder groups were not authoritatively refuted.

Analysis

The SEA enables decision-making based upon authoritative knowledge of the environmental consequences of a wide range of possible alternatives (content).

The SEA for the amendment of the Provincial Zoning Plan to enable project IJsseldelta South was very helpful in framing the reconsideration of the Masterplan which was initially seen as the preferred alternative. The question on the table was whether a green or a blue bypass would be the better option and key insights from the SEA caused both the provincial and the municipal governments to rethink the value of a blue bypass. The assessment of different variants allowed for the selection of the option with the most beneficial consequences that added the greatest value to the development of the area as a whole.

Another important insight arising out of the SEA pertained to the unwanted environmental effects of housing beyond the dikes of the bypass. However this factor was neglected because of strong political pressure to realize an attractive housing environment.

Although indeed beneficial, the timing of the SEA did not allow it to contribute meaningfully to the quality of the overall decision to reallocate the whole area. In the eyes of the involved local and regional government, it helped only to optimize the final planning decision.

SEA contributes to the quality of the collaborative dialogue and achieves consensus in the support and legitimacy of the final option (process).

The SEA did not serve to create an inclusive collaborative process. On the contrary, the SEA functioned as a source of controversy in that it both fueled the existing debate and initiated new ones. Stakeholders were not satisfied with the way they were involved in the knowledge production process, and some outcomes, for example, about the shape of the bypass and housing development outside the dikes only encouraged further polarized debate.

The way in which the SEA was carried out (with close cooperation between the project organization and the research institute DHV) can be blamed for much of this failure. The amount of interaction and reflection that was facilitated within the project group (which included the various public stakeholders), and within the soundboard group (in which other stakeholder groups came together) was insufficient to facilitate a process of frame reflection and joint learning.

A serious discussion about the added value of the bypass was never held, and this constituted an important omission in the planning process was. The spatial reservation of the area of South Kampen caused the provincial government to decide to speed-up a decision about a bypass without securing enough evidence for its necessity. Its value was explained with reference to the extreme river discharges warned of by Dutch

water management authority. The SEA failed to convince all actors because a debate about the added value was lacking.

SEA as a procedural device contributes to the timeliness, transparency and quality of the overall decision-making process (procedure).

The formal procedure of the SEA was used as an argument to postpone environmental assessment to a latter phase of the process. Another argument for this decision was the formal status of the Masterplan. This was no formal plan, and therefore no formal SEA was required. Only the next step in the process which was to make a regional planning decision required an official SEA.

Whether the SEA was helpful in organizing the provincial planning procedure is ambiguous. The formulation of the SEA was mainly an internal matter involving the researchers and the project team. The project manager was highly involved in coupling the outcomes of the SEA to the planning process. The process of adjusting the regional planning document led the progress, and the SEA procedure followed the planning procedure in this regard. The same was true of stakeholder involvement which was organized within the framework of changing the planning document. This arrangement was also used to discuss the research questions, preliminary results and the final SEA report.

Nevertheless, the SEA was certainly helpful in investigating the negative environmental impacts of the bypass and in designing the adjustments necessary to mitigate these consequences. The SEA revealed that some important habitat types were significantly influenced by the bypass and thus helped to prevent future delays in the form of legal action on the part of environmental groups.

6. Case comparison

In both cases, the SEA had an important role in the decision-making process. However, there also are clear differences. Table 1 compares the case studies on a number of crucial factors.

	Southern Sea Line	**Kampen IJsseldelta**
Timing of SEA	Parallel to the discussion about necessity and added value of the ZZL	In the phase from Intention Agreement to Provincial zoning plan
Scope	Fundamental discussion about ZZL, yes or no	Applied discussion about how to shape the bypass
Organization of SEA	In a very open consultation process with stakeholders	Mainly between experts and project group
Quality checks	NCEA, Critical Review Team	NCEA, contra expertise Water Board
Coupling with other tracks	Strong coupling with the CBA, spatial analysis and the Zoning Plan	Strong coupling with the development of the Preferred Alternative and the adjustment of the regional and local planning document
Flexibility of scope	Used to incorporate new ideas. The political decision-makers adjusted their assignment of the project	Not used: SEA was meant to fill in the necessary knowledge requirements
Contribution to process	Guiding for intensive consultation process with stakeholders and citizens	One of items that fueled the debate in the stakeholder process
Contribution to procedure	Guiding in structuring the whole process with regard to the Structure Plan	Servant in structuring one specific phase in the process, the provincial zoning plan
Contribution to content	Building block for abandoning ZZL and raising alternatives	Building block for political preference for blue bypass

The most important differences between the cases lie in the way in which the SEA was embedded in the decision-making process and when it was executed. Compared to the SEA of the Southern Sea Line, the SEA of the IJsseldelta project was executed during a more leisurely phase. The most crucial period of this project was when the Masterplan was drawn, and this had already passed by the time the SEA was initiated. The SEA in this case was carried out purely to support the formal planning procedure, and to change the provincial zoning plan. This made this SEA much less exciting compared to the SEA in the ZZL, which was carried out in parallel with the discussion on the necessity of the whole project.

The ZZL case shows us that an SEA can be used to structure stakeholder involvement in such a way that it also contributes to a process of frame reflection and learning. The formal steps of the SEA were combined with the formal steps necessary to design a Structure Vision. In the case of the IJseeldelta project, perhaps unsurprisingly, the timing of the SEA's implementation caused some earlier debates to be repeated and new debates to be started. The individuals overseeing the SEA process found it difficult to handle this situation, as several crucial decisions had already been made by the time they were involved and they lacked the authority to offer stakeholders a real say.

An interesting similarity between the cases was the interweaving of the development of the planning document (zoning plan) and the execution of the SEA. Although the planning phases differed, the ways in which the SEA helped to optimize the final planning decisions were highly comparable. We can say that both SEAs helped to improve the search for the most feasible and valuable alternative since both the planning process and the research process were intertwined and carried out simultaneously.

Using our definition of effectiveness, we can conclude that the SEA for the ZZL was more effective than the SEA for the IJsseldelta project. First, it was used to organize a serious debate about the necessity and value of the entire project, instead of merely fine-tuning a pre-selected alternative (as was the case in the IJsseldelta). Second, because large investments were made in combining the stakeholder participation process with the research process, the SEA contributed heavily to frame reflection. It did not simply serve as added fuel for existing controversies not directly addressed by the SEA. Third, in the case of the ZZL, the SEA procedure was used to organize the entire exploration process. In contrast, the SEA in the IJsseldelta case was merely a small player in the procedures put in place to adjust the provincial zoning plan. Because it was introduced very late in the decision making process, this SEA could not be used to generate viable alternatives or introduce radically new perspectives into the decision process.

Further, the difference in the way in which the SEA was organized in the two cases was critical. In the ZZL case, the production of the SEA was intertwined with other project organization activities. The SEA experts belonged to the core of the project bureau, and were important for developing an explicit strategy for organizing the collaborative process and linking it to larger political decision-making processes. The SEA focused on the groups that were affected because of their location near the possible railway routes, and included the impact on them both in the general cost benefit analysis, and the generation of alternative proposals. As doubts grew about the feasibility of the line, the SEA focused increasingly on other alternatives. It co-created the alternatives, while respecting and following the main process. In the case of IJsseldelta Zuid, the SEA team was far more distant from the main project team, and the link between the project and the SEA was restricted mainly to the relationship

between the project director and the SEA project leader. For these reasons, the SEA in this case could be seen more as a passive information provision tool, with far less influence on the decision-making process.

7. Conclusion and discussion

We have analyzed two cases involving the application of SEAs to strategic decisions about highly controversial infrastructure projects. These findings are not entirely novel, and reflect many of the findings in previous works related to assessment effectiveness (Thérivel & Minas, 2002; Sheate et al. 2003). In both cases, the effectiveness of the SEA was highly dependent on the time of its commissioning, the degree to which it was intertwined with the decision-making process, and the openness of its application. The most visible beneficial effects of the SEA were observed in the ZZL case, where the SEA was instrumental in activating affected groups. Their input was subsequently used to adjust the planning process. The SEA team worked closely with the general planning team and this close cooperation allowed environmental information to influence the general planning process. As a result, different alternatives emerged which then were also subject to other assessments. This case demonstrates that the process of conducting an SEA can play a much greater role in determining its ultimate impact than the specific content it generates. The potential of the SEA to create collaborative dialogue and to establish a functional procedure is immense and can exert a strong influence on the quality of the final decision.

The fact that the SEA was initiated early in the discussion on necessity and added value made it far more effective than it was in the IJsseldelta case. The role of timing

is indicative of the value of the SEA establishment procedure in structuring and framing the overall planning process and the collaborative dialogue that surrounds it. When the SEA process is adopted midstream (as was the case in IJsseldelta) it cannot serve this structuring function. The project would have developed its own structure and process arrangements, and would not be amenable to the introduction of new procedures. In the ZZL case, the project had to be organized from scratch, and the SEA procedure was gratefully embraced as a means of framing the process. This served to embed the SEA far more deeply into the decision-making process, which served as an important factor in its ultimate success. This finding mirrors that of Runhaar & Driessen (2007) who similarly argued that the 'synchronization' of SEA and the planning process are critical factors that determine the impact of an SEA.

In conclusion, the contribution of an SEA to the procedural quality of the urban planning decision-making process can differ dramatically from case to case. The SEA procedure can be used to structure the larger process, but it can also function as a subordinate procedure with minimal visible structuring impact. More detailed research is necessary to investigate the mechanisms by which SEA makes its procedural contribution to the decision-making processes (see Fischer, 2002).

References

Buuren, M.W. van (2009) Knowledge for governance, governance of knowledge; inclusive knowledge management in collaborative governance processes, *International Public Management Journal*, in press.

Buuren, M.W. van and J. Edelenbos (2004) Conflicting knowledge; why is knowledge production such a problem, *Science and Public Policy*, (31(4): 289-299.

Buuren, M.W. van & Nooteboom, S. 2009. The success of SEA in the Dutch planning practice. How formal assessments can contribute to collaborative governance. *Environmental Impact Assessment Review (accepted with minor revisions).*

Cashmore, M. (2004) The role of science in environmental impact assessment; process and procedure versus purpose in the development theory, *Environmental Impact Assessment Review*, 24(4): 403-426.

Cashmore, M., R. Gwilliam, R. Morgan, D. Cobb and A. Bond (2004) Effectiveness of EIA, the interminable issue of effectiveness; substantive purposes, outcomes and research challenges in the advancement of environmental impact assessment theory, *Impact Assessment and Project Appraisal*, 22(4): 295-310.

Cashmore, M., A. Bond and D. Cobb (2007) The contribution of environmental assessment to sustainable development; toward a richer empirical understanding, *Environmental Management*, 40(3): 516-530.

Cashmore, M., A. Bond and D. Cobb (2008) The role of functioning of environmental assessment; theoretical reflections upon an empirical investigation of causation, *Journal of Environmental Management*, 88(4): 1233-1248.

Clark, W.C. and G. Majone (1985) The critical appraisal of scientific inquiries with policy implications, *Science, Technology & Human Values*, 10(3): 6-19.

Collingridge, D. and C. Reeve (1986) *Science speaks to power; the role of experts in policy-making*, London: Frances Pinter Publications.

Cross, M., R. Henke, P. Oberknezev and K. Pouliasi (2000) *Building bridges, towards effective means of linking scientific research and public policy; migrants in European cities*, Research Papers, Netherlands School for Social and Economic Policy Research.

Guston, D.H. (2004) Forget politicizing science; let's democratize science, *Issues in Science & Technology*, Fall 2004: 25-28.

Inglehart, R. (1990) *Culture Shift in Advanced Industrial Society*. Princeton, NJ: Princeton University Press.

Jasanoff, S. (1990) *The fifth branch; advisers as policy makers*, Harvard: Harvard University Press.

Kørnøv, L. and W.A.H. Thissen (2000) Rationality in decision- and policy-making; implications for strategic environmental assessment, *Impact Assessment and Project Appraisal*, 18(3): 191-200.

Mills, T.J. and R.N. Clark (2001) Roles of research scientists in natural resource decision-making, *Forest Ecology and Management*, 153: 189-198.

Ministry of VROM (2006) *Handreiking milieueffectrapportage van plannen (planmer); Europese richtlijn milieubeoordeling van plannen Implementatie in Wet Milieubeheer & Besluit m.e.r. (1994)*, online.

Ministerie van Verkeer en Waterstaat 2006. *Strategische Milieubeoordeling Structuurvisie Zuiderzeelijn*, 13 april 2006.

Ministerie van Verkeer en Waterstaat, Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer en Economische Zaken. 2006. *Aanvulling op de Structuurvisie Zuiderzeelijn. Onderzoek naar nut en noodzaak.* Oktober 2006.

Partidário, M.R. (2000) Elements of an SEA framework; improving the added-value of SEA, *Environmental Impact Assessment Review*, 20(6): 647-663.

Pischke, F. and M. Cashmore (2006) Decision-oriented environmental assessment; an empirical study of its theory and methods, *Environmental Impact Assessment Review*, 26(7): 643-662.

Projectorganisatie IJsseldelta-Zuid (2007) *Notitie reikwijdte en detailniveau partiële provinciale planherzieningen IJsseldelta-Zuid*, Provincie Overijssel.

Projectorganisatie IJsseldelta-Zuid (2008) *Ontwerp partiële herziening IJsseldelta-Zuid voor de integrale gebiedsontwikkeling, Streekplan Overijssel 2000+*, Provincie Overijssel.

Projectorganisatie Zuiderzeelijn 2005a. *Document raadpleging Strategische Milieu Beoordeling*. 30 september 2005.

Projectorganisatie Zuiderzeelijn 2005b. *Resultaten raadpleging in het kader van de Strategische Milieu Beoordeling (SMB) Zuiderzeelijn*. 17 november 2005.

Projectorganisatie Zuiderzeelijn (2006) *Aanvulling op de Structuurvisie Zuiderzeelijn*. 13 oktober 2006.

Provincie Overijssel (2008a) *IJsseldelta-Zuid PlanMER partiële provinciale planherzieningen*, Provincie Overijssel.

Provincie Overijssel (2008b) *Reactienota; ingediende adviezen en zienswijzen op de Ontwerp-Partiële Herziening Streekplan Overijssel 2000+ (incl. planMER); IJsseldelta-Zuid*, Provincie Overijssel.

Runhaar, H. and P.J. Driessen (2007) What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making, *Impact Assessment and Project Appraisal*, 25 (1): 2-14.

Sarewitz, D. (2004) How science makes environmental controversies worse, *Environmental Science & Policy*, 7: 385-403.

Sheate, W.R., S. Dagg, J. Richardson, R. Aschemann, J. Palerm and U. Steen (2003) Integrating the environment into strategic decision-making; conceptualizing policy SEA, *European Environment*, 13(1): 1-18.

Teisman, G.R. (2008). Complexity and management of improvement programmes: an evolutionary approach. *Public Management Review, 10*(3), 341-359.

Thérivel, R. and P. Minas (2002) Measuring SEA effectiveness; ensuring effective sustainability appraisal, *Impact Assessment and Project Appraisal*, 20(2): 81-91.

Therivel R. and M.R. Partidario (1992). *The Practice of Strategic Environmental Assessment*. Earthscan. London, U.K.

Twaalfhoven, P. (1999) *The success of policy analysis studies; an actor perspective*, Delft: Eburon.

Wallington, T., O. Bina and W. Thissen (2007) Theorising strategic environmental assessment fresh perspectives and future challenges, *Environmental Impact Assessment Review*, 27(7): 569-584.

Woodhouse, E.J. and D.A. Nieusma (2001) Democratic expertise; integrating knowledge, power, and participation, M. Hisschemöller, R. Hoppe, W.N. Dunn and J.R. Ravetz (eds) *Knowledge, power, and participation in environmental policy analysis*, Policy Studies Annual Volume 12, New Brunswick: Transaction Publishers: 73-96.