What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making

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The expectations of strategic environmental assessment (SEA) regarding the integration of environmental and sustainability concerns into policy-making are high. Although evidence of its impact up to now is only indirect and, more important, appears to be modest, more attention has to be paid to the fact that the term 'impact' can be interpreted in different ways and to the importance of context in impact analysis. In this paper, we propose an assessment framework in which these aspects are explicitly addressed. To illustrate and verify the practical value of our framework we analyse four Dutch SEA case studies.

Keywords:  SEA, environmental impact assessment, strategic policy-making, policy analysis, impact, utilisation, effectiveness

In THE PROFESSIONAL and scientific environmental literature, strategic environmental assessment (SEA) has been embraced as a new tool to incorporate environmental concerns into the highest levels of decision-making. One of the main arguments is that, by assessing the effects at an early stage of decision-making (at the level of policies, plans, and programmes'), SEA can influence choices that have to be taken for granted in the case of traditional, project-based environmental impact assessment (EIA). In addition, SEA allows for assessing cumulative impacts of projects and is considered as a tool to improve the efficiency of environmental assessment (EA), as it could reduce the number and complexity of project EIAs (Dalal-Clayton and Sadler, 2004; Hildén et al, 2004; Sadler and Verheem, 1996).

In the slipstream of SEA, sustainability impact assessment (SIA) has become popular in predominantly the professional community. SIA differs from SEA as regards its focus (sustainability rather than environment alone, thus incorporating social and economic effects as well) and its field of application (not only policy, but also trade agreements and treaties). SEA aims to enhance the role of the environment and SIA that of sustainable development in the early stages of public decision-making by means of (scientific) knowledge.

The expectations of SEA/SIA regarding the promotion of environmental improvement and the promotion of a sustainable development are high (for instance, Dalal-Clayton and Sadler, 2004; Elwell, 2002; Fischer, T B, 2002; Zerbe and Dedeurwaerdere, 2003). A review of the literature (the results of which will be presented in this paper), however, reveals that the impact of SEA/SIA in this respect seems to be modest. Yet, up to now little systematic and critical research has been conducted in this area (Nitz and Brown, 2001).

Most of the papers dealing with the impact of
SEA/SIA on decision-making are either reflexive or normative in nature. Often they emphasise a need to take explicit account of the nature of political decision-making processes, instead of the assumption that “more information will lead to better decision-making” (for instance, Kørnøv and Thissen, 2000; Nitz and Brown, 2001). More insight is needed into what factors contribute to SEA/SIA impacts on decision-making. In this paper, we elaborate further on this issue and propose an analytical framework for a more systematic assessment of SEA/SIA impacts. Our focus will be on SEA since up to now most experience has been built in this area.

In the next section, we discuss some studies of the impact of SEA on decision-making. Then we suggest an analytical framework that aims to overcome some of the criticisms of SEA impact assessments discussed previously. Our framework is illustrated and tentatively verified by an analysis of four SEA cases in the Netherlands. Finally, we summarise our main conclusions and give a few recommendations to SEA practitioners.

**SEA impacts on decision-making**

*How to measure EA impact on decision-making*

The assessment of impacts and influences of EA on public decision-making has been subject to various studies, both within and outside the EA community (in particular, the policy analysis community has been active in this research area). Both direct and indirect impacts are reported. Direct impacts are elements of an EA that can be identified in decisions made: conformities of formal decisions with the assessment report; changes in decision-makers’ understanding or awareness of environmental and sustainability issues; changes in the extent to which such issues are considered in decision-making; or changes in the material reality as a consequence of the decisions affected by SEAs (Leroy, 1996; Morrison-Saunders and Arts, 2004; Sadler, 2004; ten Heuvelhof and Nauta, 1996; Thérivel and Minas, 2002).

An important indirect impact is anticipation of decision-makers on EA studies, resulting in more environmentally friendly or sustainable decisions than would have been the case otherwise (for instance, Leroy, 1996; VROM/LNV, 1994). We consider anticipation an indirect effect as it does not (or not necessarily) emerge as a consequence of the EA itself (that is, its content) but more because of the fact that an assessment is expected to come (for instance, in the case of (legal) EA requirements). Other indirect impacts include more or new ideas that are used in the next rounds of decision-making and impacts on processes and situations other than those of which the EA forms a part (ten Heuvelhof and Nauta, 1996; Thérivel and Minas, 2002).

Assessing the magnitude of these impacts is another issue. EA impacts can be evaluated against the background of what would have happened without EA, but also against their potential scope for improvement (for instance, Sadler, 2004). For example, EAs that are extreme in terms of ‘most environmentally friendly alternative’ or in proposed mitigating or flanking measures may have a smaller chance of (direct) impact than those that are less extreme by nature. The impact of the former types of EA (in terms of contribution to environmental improvement or sustainability), however, may be more substantial than that of the latter types. Thus, the absolute impact of EA should be compared to the potential impact. The latter depends on the environmental or sustainability performance of the assessed policy, plan or programme, as well as on the often-mentioned ‘openness’ of decision-makers to environmental values (for instance, Fischer, T B, 2002). Figure 1 summarises the preceding discussion about (S)EA impacts.

**Reported impacts of SEA on decision-making**

In the literature we find several studies in which the impact of SEA on decision-making has been studied empirically. Commonly, only direct impacts are assessed: have changes occurred in the proposed plans, programmes, or policies as a result of the assessment? Reported direct impacts of SEA vary. In an analysis of four cases, Aschemann (2004) found that the impact was rather modest; recommendations of SEAs were only partly considered in decision-making or recognisable in the final decision.

An analysis by Fischer (T B, 2002) of 80 SEAs conducted in the Netherlands, UK and Germany in the areas of transport and spatial planning showed that SEA only had a statistically significant impact in transport planning. An analysis of 16 case studies in the Netherlands, UK, the Czech Republic, Slovakia and Estonia (MEGJ/MIRI, 2003) revealed no impact in about a third of the cases, and an impact varying from a bit to a substantial amount in the other two-thirds.

A survey by Thérivel and Minas (2002) with local decision-makers that used sustainability appraisals for development plans revealed a relatively high impact of SEAs. The appraisals led to changes of about 70% of the plans (an impact of about 50% was observed in an earlier survey conducted in 1995). Impact was measured in terms of ‘policies changed’, ‘policies added/removed’, and ‘new approaches taken to the plan’; reported changes were mainly related to the first of these types (Thérivel and Minas, 2002).

The basis of these SEA impact assessments, however, is often mainly tentative in nature; only Fischer (T B, 2002) and Thérivel and Minas (2002) make an explicit comparison with the ‘business-as-usual scenario’, that is, the situation without SEA (Fischer, T B, 2002), or the draft plans (Thérivel and Minas, 2002). In addition, no assessments are made of the ‘relative’ impact of SEA described above.
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In the literature, various factors are mentioned that contribute to the impact of SEA on decision-making. However, a large part of this literature consists of hypotheses or ‘dos and don’ts’ that are based on experiences and analyses that have not been made explicit. Besides, these factors are based on experiences of a selected number of countries only (mainly the Netherlands and the UK) and the validity for other countries can be questioned (Fischer T B, and Gazzola, 2006). Table 1 provides a summary of factors that we found in a sample of 15 papers reporting on factors contributing to (or

Table 1. Factors contributing to SEA impact on decision-making, found in empirical studies

<table>
<thead>
<tr>
<th>Factor</th>
<th>Authors</th>
<th>How often mentioned?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible SEA that fits into the decision-making context</td>
<td>Arbter, 2003; Elwell, 2002; Fischer, T B, 2004; Hildén et al, 2004; Knigge and Leipprand, 2003; Knigge, 2005; MEGJ/MIRI, 2003; NGOs, 2000; Sheate et al, 2003; Thérivel and Minas, 2002; Zerbe and Dedeurvaerdere, 2003</td>
<td>11 out of 15</td>
</tr>
<tr>
<td>Transparency of SEA process</td>
<td>Arbter, 2003; Dalal-Clayton and Sadler, 2004; Elwell, 2002; Fischer, T B, 2004; MEGJ/MIRI, 2003; Sheate et al, 2003</td>
<td>6 out of 15</td>
</tr>
<tr>
<td>Quality of the assessment</td>
<td>Elwell, 2002; Fischer, T B, 1999; 2004; Hildén et al, 2004; MEGJ/MIRI, 2003</td>
<td>5 out of 15</td>
</tr>
<tr>
<td>Values in SEA should reflect values in policy context</td>
<td>Arbter, 2003; Elwell, 2002; MEGJ/MIRI, 2003; Partidário, 2000</td>
<td>4 out of 15</td>
</tr>
<tr>
<td>‘Openness’ of decision-makers to environment/sustainability</td>
<td>Dalal-Clayton and Sadler, 2004; Elwell, 2002; Fischer, T B, 1999; 2004</td>
<td>4 out of 15</td>
</tr>
<tr>
<td>Tiering of SEA with other assessments</td>
<td>Hildén et al, 2004; MEGJ/MIRI, 2003; Sheate et al, 2003</td>
<td>3 out of 15</td>
</tr>
<tr>
<td>Adequate resources</td>
<td>Fischer, T B, 2004; Sheate et al, 2003; Thérivel and Minas, 2002</td>
<td>3 out of 15</td>
</tr>
<tr>
<td>Effective communication</td>
<td>Aschemann, 2004; Fischer, T B, 2004; MEGJ/MIRI, 2003</td>
<td>3 out of 15</td>
</tr>
<tr>
<td>Assessment and mitigation of redistributional effects*</td>
<td>Elwell, 2002</td>
<td>1 out of 15</td>
</tr>
</tbody>
</table>

Note: * Elwell refers to two factors contributing to SEA impact on decision-making: “SIA should assess regulatory capacity effects – the loss of political sovereignty” and “Avoid environmental injustice.”
What makes SEA successful EA?

impeding) this type of impact based on empirical investigation.

The table is mainly indicative, partly because of the lack of unanimity on how SEA impact is defined. Nevertheless, some interesting observations can be made. First, many authors report that a flexible SEA process that fits into the decision-making context is an important factor contributing to the use of SEA studies. SEA processes and the planning process should run in parallel and actors should interact. This allows correct timing of SEA studies and diffusion of results, linked with the information needs of decision-makers and with the timing of decisions (for instance, the SEA process should not take too long because of the inclusion of complicated, quantitative analyses). In addition, timing refers to the moment at which an EA starts in relation to the decision at issue: the initiative should be concrete enough but there should still be room for alternatives (Thérelv and Minas, 2002). This indicates that timing affects the potential impact of SEA as well.

Secondly, many authors conclude that stakeholder participation is an important factor contributing to SEA use by decision-makers. Public participation in the formulation of assumptions and preconditions in SEA is reported to help increase the credibility of end results (and the final decision) and may guarantee that all public concerns are taken into account. In addition, it is a vehicle to acquire relevant information. Participation of politicians is considered important for matching study objectives with political objectives. Other stakeholders include actors involved in implementation of the decision, and civil society (for instance, environmental non-governmental organisations (NGOs)).

A third observation is that, apart from the two factors mentioned above, many others are reported almost incidentally (that is, in part or only a few of the authors). To some extent, factors contributing to SEA impact on decision-making thus seem to be rather heterogeneous. This may suggest a context-specificity of these factors. However, an explicit link with the SEA context is not made, hampering a good understanding of what factors contribute in what conditions to SEA impact on decision-making.

Towards a more systematic framework

Impact of analysis on decision-making

The impact of analysis and knowledge in policy has been a classical theme of research in the policy analysis community. In this section, we explore what knowledge has been built in this domain regarding the context-specificity of the impact of analysis.

Generally, policy analysts have long learned that classical ‘rationalisation’ of decision-making, that is, improving decision-making by means of scientific information (problem analyses, assessments of policy alternatives and so on), is not self-evident. Outcomes of policy analysis studies often are not accepted by stakeholders or are used strategically (for instance, Bras-Klapwijk, 1999). There are various reasons.

First, policy-making has increasingly become a multi-actor activity, implying that decision-making often encompasses negotiation between public decision-makers and stakeholders (Fischer, F, 2003; Glasbergen, 1998; Rhodes, 1997). This also holds for activities that form part of policy-making processes, such as analysis. If certain values or interests of stakeholders are not (or not enough) reflected in analysis, opposition may be provoked from particular groups of stakeholders (de Jong, 2000; van de Riet, 2003).

Secondly, the authority of policy analysis has become less self-evident because of the many uncertainties dominating several policy areas that cannot be addressed adequately by science alone (Funtowicz and Ravetz, 1993). This particularly holds for complex issues, such as the environmental effects of strategic decisions or the assessment of contributions of human activity to the greenhouse effect and climate change. Scientific knowledge therefore has to be complemented with forms of ‘lay knowledge’ or ‘citizen science’ (for instance, Irwin, 1995).

‘Rationalisation’ of decision-making therefore not only requires scientifically valid knowledge, but also knowledge that is acceptable to stakeholders (van de Riet, 2003). As a consequence, analysts increasingly involve stakeholders in their analysis, either directly by means of participation, or indirectly by paying attention to relevant stakeholders and their characteristics (Bras-Klapwijk, 1999; Fischer, F, 2003; Hajer and Wagenaar, 2003; Kornov and Thissen, 2000; van Eeten, 2001; van de Riet, 2003).²

Policy problems as contextual determinants

The need for finding a balance between classical rationalisation and gaining support for analysis is increasingly recognised by the EA community (for instance, Dalal-Clayton and Sadler, 2004). This is reflected in the importance attached to stakeholder involvement in EA (see Table 1). The reasons for stakeholder involvement — support and access to relevant information — usually are not made explicit, however. Yet, although the trend described above is ongoing, there are many situations in which ‘interactive’ or ‘deliberative’ policy analysis is not employed or where it is not required.

Much depends on the characteristics of the policy problem addressed by the plan, programme, or policy. Interactions and negotiations with, and input from, stakeholders are required when the stakes of the various actors involved are high, norms and values diverge, and there is high uncertainty about the causes of the policy problem or the impacts of alternative policy programmes — that is, when ‘unstructured’ policy problems are at issue (Hoppe, 2002; see Figure 2). In these situations stakeholder involvement is required in all stages of policy-making, including...
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- Consent on norms and values
  + Certainty about knowledge base
- Structured problems
eg road maintenance
- Moderately structured/means problems
eg traffic safety
- Moderately structured/goals problems
eg abortion
- Unstructured problems
eg car mobility

Figure 2. Types of policy problems (with examples)
Source: Hoppe (2002) adapted

analysis, both to gain access to relevant information and to create support for policy-making.

‘Structured’ policy problems, on the other hand, can be solved in a more traditional way. Here, policy can be left to public policy-makers; involvement of stakeholders is not needed for analysis or successful problem solving.

In the case of moderately structured, ‘means’ problems, stakeholder involvement is not required for recognition of the problem at issue, but mainly for the selection of the means by which the goal is to be reached. Since there is high uncertainty about the effectiveness of, and stakeholder preferences for, various solutions, policy-makers together with stakeholders search for adequate problem-solving activities.

Finally, in the case of moderately structured, ‘goals’ problems there is substantial agreement on certain knowledge but sometimes intense disagreement about the norms and values at stake and about the goals that should be set. Interaction with stakeholders is required in order to identify and streamline stakeholder preferences.

**Contextual determinants in decision-making**

Although in theory the ‘structuredness’ of a policy problem affects the way it is solved, in practice decision-makers may decide differently. Much depends on the extent to which decision-makers are open to other values and willing to share decision-making powers. Even if a problem is characterised as ‘unstructured’ and calls for an interactive policy-making process, politicians may be hesitant to do so and decide in a classical and ‘closed’ way. In these situations, stakeholder participation in policy analysis could be a factor contributing to a low impact of analysis on decision-making.

Experiences in policy-making in the Netherlands have shown that such incompatibilities may be problematic: not only may decision-makers be hesitant to share decision-making power, but also participating stakeholders may become frustrated when they find out that their input is not used in formal decision-making (Pröpper and Steenbeek, 2001). The SEA process therefore should be matched with the decision-making process. This also applies to other aspects: SEA studies will obviously have a greater impact when they are flexible and tailored to the actual evolvement of policy processes, rather than adhering to strict, standardised and detailed procedures.

**Analysing impact of SEA: a framework**

The main lesson that can be learned from the preceding discussion as regards the analysis of SEA impact on decision-making is that impact as well as factors contributing to this impact will depend on three contextual determinants: (a) degree of consensus about norms and values regarding the policy issue; (b) certainty about the knowledge base; (c) characteristics of the decision-making process (in particular the ‘openness’ of decision-makers to outsiders or other norms and values).

We may expect that ‘lists’ of factors that are favourable for SEA impact on decision-making will vary along these dimensions. For instance the transparency of the SEA process, mentioned in Table 1, is expected to be relevant in the case of unstructured and moderately structured policy problems and open decision-making cultures. In these situations, stakeholder participation functions as a means to create support by giving them some room to co-decide on the assessment. In that case the process should be transparent: what can stakeholders expect and what will be done with their input?

**Test of the framework in the Netherlands**

**Research design**

For a first verification of the discriminatory function of the three contextual determinants elaborated upon, we analysed four SEA case studies in the
Table 2. Characterisation of the four case studies

<table>
<thead>
<tr>
<th>Case</th>
<th>Year</th>
<th>Name/object</th>
<th>Type of problem</th>
<th>Decision-making: openness*</th>
<th>Direct impact of SEA*</th>
<th>Indirect impact of SEA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1999–2002</td>
<td>Second national plan on mineral resources</td>
<td>Structured</td>
<td>Open</td>
<td>Potential impact: moderate/high</td>
<td>Other impacts: moderate/high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Absolute impact: high</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>of North-Holland</td>
<td></td>
<td></td>
<td>Absolute impact: moderate</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1996–1999</td>
<td>Update national plan for new urbanisation</td>
<td>Moderate/‘goals’</td>
<td>Open</td>
<td>Potential impact: low/moderate</td>
<td>Other impacts: moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Absolute impact: low</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2001–2006</td>
<td>Safety against floods/spatial quality</td>
<td>Unstructured</td>
<td>Open</td>
<td>Potential impact: moderate/high</td>
<td>Other impacts: moderate(up to now)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>improvement near rivers</td>
<td></td>
<td></td>
<td>Absolute impact: moderate</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Openness and SEA impact measured on a three-item scale (open–not open/not closed–closed; high–moderate–low)

Netherlands (see Table 2). They represent the four types of policy problem discussed earlier. In all these cases, the decision-making cultures could be characterised as open (see below). In all but one case, voluntary SEAs were conducted. This mainly followed from our decision to focus on SEAs that were conducted prior to the implementation of the EU SEA Directive in 2004, since the number of SEAs conducted after that on issues on which final decision-making had been made appeared to be rather small (about ten). This reduced the chance of finding a set of cases that met our selection criteria and for which we obtained sufficient response from our requests for interviews.

We assessed both direct and indirect impacts of SEAs on decision-making, but ignored changes in decision-makers’ understanding or awareness of environmental and sustainability issues, since the cases already represented decision-making cultures relatively open to environmental values. The basis of our assessment was the draft plan that was assessed; this was compared to the eventual plan. Data were collected by means of an analysis of relevant documents (draft plans, SEA reports, final plans, analyses of the cases by other organisations and so on) and semi-structured interviews (see Annex 1 for the questionnaire).4

Interviews were held with representatives of both the initiator and the Netherlands Commission for Environmental Impact Assessment (NCEIA). The latter plays an important role in EA in the Netherlands as it (legally) advises on the SEA guidelines and assesses the quality and comprehensiveness of the SEA. In all four cases, the NCEIA fulfilled these roles. To guarantee the validity and reliability of the case studies, we have tried to base our conclusions on multiple sources of evidence, where possible, and asked our interviewees to verify our case study analyses (which was done by seven out of eight interviewees, resulting in some minor changes).

Case 1: second national plan on mineral resources

This plan set the general principles for the extraction of minerals (sand, gravel, clay, shells and the like) in terms of maximum amounts and zones where extraction would be allowed. The plan addressed a structured policy problem: there was consensus about the need to fulfil the demand for these minerals for construction and the like, and also in the light of an increasing desire to become less dependent on foreign suppliers. The aim of the plan was formulated in a way that comprised multiple values: a sustainable provision of minerals to fulfil the need of the public, companies and the Government. The abstract character of the plan contributed to a lack of conflict about its aim. Deep uncertainties about extraction (potential problems in extraction, expectations regarding market demand, or side-effects) were absent. Part of the missing information was provided by the departments that were involved with the original initiator, the Department of Transport, Public Works and Water Management (DTPW); these were the Departments of Agriculture, Nature and Food Quality (DANF), and Housing, Spatial Planning and the Environment (DHSE).

An open approach was taken that not only became clear from the broad aim of the plan, but also from the involvement of stakeholders (environmental NGOs, the NCEIA, regional authorities, market parties and knowledge institutes) in an early stage of planning. Goals of this participatory approach were access to relevant information and, to a lesser extent, support for extraction (the DTPW anticipated some debate with environmental NGOs).

However, the plan never reached the stage of final decision-making because of a cabinet decision in 2002 to abandon the top-down planning approach in order to decentralise and liberalise decision-making on mineral extraction. This policy change was
caused by a new philosophy on the role of central Government in that period in combination with growing problems in the extraction of minerals resulting from NIMBY (not in my backyard) reactions of the public and civil society. The latter was not foreseen at the start of the plan.

Before this event, the initiator had decided to conduct a voluntary SEA, since some decisions in the implementation would be subject to EIA requirements. In addition, the DANF wanted an SEA for the environmental effects of extraction in protected nature areas. The SEA assessed a draft of the plan, in a relatively early stage of decision-making. The NCEIA judged positively about this draft plan as environmental issues were already incorporated, although there was still some scope for improvement.

Two main elements of the SEA were: a comparative analysis of the environmental effects of extraction of, in particular, sand, in the North Sea, inland waters and on land; and an analysis of the (environmental) effects of extraction in nature areas as well as a framework for balancing these effects (basically targeting a restrictive approach to extraction in nature areas). The SEA showed that deep extractions of sand in the North Sea yielded the lowest environmental pressure.

Overall the NCEIA was positive about the SEA, but criticised the targets formulated regarding extraction in the 12 provinces. These targets largely were the result of negotiations between central and provincial governments, but the resulting allocation was not assessed on, nor adapted to, environmental effects.

The two outcomes of the SEA described above were completely incorporated in the draft plan, resulting in a priority for deep sand extractions in the North Sea and a restrictive approach to extractions in nature areas. Factors that have contributed to this impact included:

- the early start of the SEA;
- the nature conservation interests of DANF;
- the increasing problems with sand extraction on land;
- the broad acceptance of the SEA results (partly as a result of the involvement of stakeholders during the process).

As stated before, final decision-making has not taken place. Yet the SEA has had an impact on later policy decisions. The priority given to deep sand extractions in the North Sea was maintained. In line with the SEA outcomes and advice of the NCEIA, extraction in the ‘Klaverbank’ area in the North Sea, containing coarse minerals but also unique ecological elements, was allowed only under strict conditions. These conditions made extraction economically unfeasible. In concrete decisions on extractions the SEA results are often considered as well.

Case 2: North-Holland South spatial strategy plan

This plan preceded the revision of the provincial spatial plan and resulted in a vision of how the region should develop until 2020. The aim was a further economic development under conditions of liveability, accessibility and water management. The main choices related to locations for 150,000 new houses, 1,000 hectares of industrial areas, improved water management, and nature development.

The policy problem addressed can be characterised as of a moderately structured, ‘means’ type: the goal was broad and abstract enough not to cause much disagreement among stakeholders and most of them agreed that new strategies were required to solve problems of deteriorating environmental quality and increasing congestion levels. Yet knowledge was uncertain: how will future demand for houses, industrial areas, infrastructure and the like develop under the influences of economic growth, demographic trends and so on, and what will be the consequences of the alternative policy options?

The strategy plan was developed in an open way, involving stakeholders such as environmental NGOs and providing room for public consultation. The same held for the voluntary SEA; not so much for strategic purposes (avoiding debates) but to strengthen the justification of decisions. The SEA process, however, started too late, as already quite detailed alternatives were developed. This reduced opportunities to influence some of the main choices, leaving the potential contribution to the SEA mainly as the environmental consequences of the alternatives examined (the SEA also assessed economic, social and cultural effects).

The most environmental alternative differed from the preferred (and finally chosen) alternative, which, however, had the best overall score (on all assessed aspects). The NCEIA judged positively on the SEA, but was critical about the way the alternatives were developed and the lack of concrete spatial reservations for water storage.

At a certain stage in the decision-making, the strategy plan was ‘overtaken’ by the revision of the provincial spatial plan, which started earlier than envisaged (that is, before the strategy plan was finalised). The strategy plan nevertheless influenced the spatial plan, mainly through some locations for new houses and industrial areas and attention to water management and infrastructure. The SEA had an impact on the spatial plan as well: it influenced attention paid to water management, the combination of water storage and nature development, and accessibility. This influence, however, was mainly supportive: it stressed the importance of factors of which decision-makers had already become more aware during the process.

The SEA also contributed to an increased awareness of dilemmas, relating to, for instance, building in open areas: this option was positive when the quality of living conditions is considered important,
What makes SEA successful EA? but negative in the case of a focus on nature. Factors that contributed to these influences were: the growing awareness of these issues in spatial planning in general; timely delivery of the SEA results; support for, and acceptance of, these results; the fact that the SEA results basically did not diverge much from the decision-makers’ values.

The initiator considered the SEA useful, except for the public consultation, which took too much time and yielded a limited response. In addition, it was felt that too many aspects were assessed quantitatively, taking too much time and creating a false sense of certainty. The insight that, under particular conditions, building in open areas could lead to only limited environmental impacts, was used in decision-making in a new housing area.

The SEA tool as well as some of the lessons learned (start in time; integrate the SEA with the development of alternatives; start earlier with participation but with a limited number of organised stakeholders) were applied in a strategy plan for the northern part of the province. The new SEA was conducted anticipating the EU SEA Directive, but also because of the positive experiences with the SEA and a desire to use the method to create a solid basis for decision-making. What helped was that in both SEAs the same policy-maker was in charge.

Case 3: revision of an urbanisation plan

This plan (called the VINEX plan) determined zones in two specific regions where urbanisation and the construction of new industrial areas would be allowed between 2005 and 2010. The decision for specific locations within these zones was left to local authorities. The plan addressed a moderately structured, ‘goals’ problem. Stakeholders (in particular national and regional authorities) disagreed about the need for, and locations of, new houses and industrial areas. There were no deep uncertainties. The SEA provided insight into the consequences of alternative options.

The initiator, the DHSE, involved other departments and regional authorities from the start of the planning process. This also applied to the SEA process, in which stakeholders had a fairly influential role as they were allowed to co-decide about the alternatives assessed and the evaluation criteria. There were severe problems in agreeing on the most environmental alternative in the two areas studied, because, once the alternatives that were assessed were negotiated, no party wanted to add a new alternative.

The NCEIA, nevertheless, was of the opinion that the SEA contained sufficient information to safeguard a full role for the environment in the decision-making process. The participatory process only partly resulted in commitment to the SEA outcomes. In particular, local authorities with interests that conflicted with the SEA recommendations did not accept the SEA. Some of these authorities had tried to manipulate the assessment results by suggesting leaving out certain effects or including others. The initiator, however, did not accept this.

The SEA was not voluntary; the NCEIA compelled the DHSE to conduct it. The DHSE was of the opinion that no EA was required, since the plan only indicated zones where urbanisation was allowed, instead of making concrete decisions on locations (which were formally subject to EA), and stated that it, by definition, had included environmental values, in the light of the multi-value character of spatial planning. The potential contribution of the SEA was at most moderate, not so much because of this reluctance, but rather the unwillingness of participants to add or adapt alternatives.

When an SEA turned out to be required, the Department decided to conduct an ‘integral’ SEA, covering environmental and also other values (for instance, economic ones). The SEA assessed the first official draft of the plan, which was adapted after public consultation and the SEA study. For the one region, the SEA clearly revealed that the alternative area that was preferred by the local authority had the most negative score on environmental aspects. The Minister of DHSE strongly objected to this alternative, since it would mean building in the ‘Green Heart’ (an open area in the metropolitan area in the western part of the Netherlands). This alternative was therefore not chosen. The SEA supported this decision.

The SEA for the other region did not result in a clear prioritisation of alternatives on environmental aspects. There were two alternatives that had a good score on some but not all environmental considerations. Another alternative was chosen that had the highest score on generating employment, which was considered important both by the two regional authorities and central Government.

The SEA took place in a decision-making process that was characterised by conflicting interests and high stakes. We assume that the low impact that it had was all that could be achieved under these conditions. The tool was used in later SEAs, among which the revision of the provincial spatial plan in one of the areas involved in the revision of the VINEX plan.

Case 4: ‘room for the river’

The national ‘Room for the river’ plan (2001–2015) aimed to guarantee safety against extreme floods of the rivers Rhine and Meuse, in the light of expected rising water levels until 2015. The plan built on an earlier choice of the Dutch cabinet for larger flood areas near rivers rather than strengthening dikes, and specified measures for all sections of the rivers Rhine and Meuse.

The plan dealt with an unstructured policy problem: although safety against floods was not challenged, the measures were, as they potentially had large (financial) implications for stakeholders such as inhabitants of farms near rivers. In addition, in

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...the NCEIA and the Dutch Central Planning Bureau (which conducted a cost–benefit analysis of the plan) criticised the choice for river-based expansion rather than strengthening dikes. Finally, there was disagreement about the necessity of the stricter norms for water discharge after 2015 (which was incorporated in the plan) because of the many uncertainties surrounding estimates of future water levels.

The initiator of the plan was the DTPW. In an early planning stage DANF and DHSE were involved because of the (potential) nature and environmental implications of the plan. As a consequence, the goal of the plan was broadened: safety should be combined with an improvement of spatial quality in river areas. This pointed to an open decision-making process. Both goals had to be financed from the DTPW budget. Regional authorities were involved as well to create support for implementation of the plan and to negotiate about the financing of spatial quality improvement (the DTPW budget was almost completely spent on safety measures, because of the earlier cabinet decision). The measures decided upon were largely the result of negotiations.

The SEA was only partly voluntary as some elements were legally subject to an EIA (dikes, quarries). The SEA ran parallel with the planning and negotiation processes, which were both guided by the project organisation and in which some of the same people participated, resulting in continuous information exchanges and a streamlining of both processes. The potential contribution of the SEA notably related to spatial quality and environmental effects related to quarries and contaminated mud. The SEA showed that the preferred alternative had the lowest environmental impact. The SEA results were accepted by the decision-makers and stakeholders involved. The NCEIA criticised the SEA, however, for not having included the option of strengthening dikes and, despite the original intentions, the plan having not resulted in a substantial improvement of spatial quality.

The SEA directly influenced various choices on measures, but no statements can be made about the magnitude in terms of percentage of decisions changed. Factors that have contributed to this impact are: the parallel and interacting SEA and planning processes; the open attitude of DTPW (which facilitated the streamlining of the planning and SEA process; the preferred alternative turned out to be the one with the best environmental performance; for stakeholders, the link between the SEA and decision-making was clear; stakeholder involvement during the SEA process, contributing to support for its results; the clear and systematic SEA itself; the presence of institutionalised support for environmental values (the two other departments next to DTPW).

The NCEIA’s comments regarding dikes and spatial quality were not incorporated in the decision-making because of: a budget deficit; combined with an earlier cabinet decision (which was not reconsidered because it would endanger implementation of safety measures and because of a desire to be clear to the public, in particular those who would suffer financially from the plan); the project organisation thought that higher or larger dikes would reduce spatial quality: although, in theory, the project organisation could have set aside money for spatial quality if it had chosen the cheaper option of more dike strengthening, this option was not only contradictory to earlier decisions but could give other departments the opportunity to claim part of the budget saved.

The SEA has already had some influence on the implementation stage where new negotiations with regional authorities are needed, among other things on mitigation and compensation of environmental effects. Based on the SEA, the project organisation has made calculations of the costs of these measures, but has not made them public because it may weaken its negotiating position.

Analysis of the four case studies

What can we learn from the four cases in the light of the analytical framework we developed earlier in this paper? They underline the importance of the decision-making context for understanding how and why an SEA has any impact. In particular, the extent to which interests are synchronised and in line with the SEA outcomes (especially the most environmentally friendly alternative and mitigation and compensation measures) and the openness of the decision-making context are important for understanding the potential and the absolute impact an SEA has. Uncertainties seem to be of importance as well, but to a lesser extent.

The revision of the VINEX plan suggests that, when the SEA outcomes do not point to large differences between alternatives, the impact of an SEA is (understandably) lower than when there is one evidently most environmentally friendly alternative. Our hypothesis is that the same will occur when an SEA does not succeed in reducing uncertainties about environmental consequences of alternatives examined, that is, when it does not result in unambiguous information about environmental performances of alternatives. This needs further examination, however.

Respondents pointed to the role of SEA in improving the ‘structuredness’ of policy problems: by filling knowledge gaps about the consequences of alternatives, it focused the debate on political choices. This is only true when (the main) stakeholders accept the SEA outcomes. Only in the case of the revision of the VINEX plan was this not the case, at least for stakeholders whose interests were not served by the SEA results.

The cases did not reveal many anticipation effects, mainly because of the voluntary character of three out of the four cases. However, we found some evidence of decision-makers anticipating on public debates on environmental issues and ‘using’ an SEA.
to reduce these debates or incorporate them during the decision-making process.

The cases did not provide any evidence of SEAs making project EIAs redundant in subsequent decision-making. In all cases, the struggle with stakeholders will start or continue in the implementation stage of the plan. New environmental ‘protectors’ will probably be needed; EIAs can fulfil the role the SEA played in preceding decisions.

What can we learn about the factors that contribute to, or impede, the contribution of an SEA to decision-making (summarised in Table 3)? Our list is as heterogeneous as those found in the literature (see Table 1). Yet, the ‘structuredness’ of the policy problem seems to have a discriminatory function with regard to factors affecting SEA impact. Where many different and partly conflicting interests were at stake (cases 3 and 4), both the potential and the absolute impact of the SEA were relatively low. Important impedying factors were related to the conflicts of interests (see Table 3). Although in the other two cases a synchronicity between SEA recommendations and the interests of important stakeholders was a stimulating factor for SEA impact, there were ‘value-free’ factors as well: timing of the SEA and an emerging awareness of particular issues.

Acceptance of the SEA by (most) stakeholders was an important factor in all four cases. A broad focus of the SEA and a participatory approach contributed to that. The theory discussed above suggests that stakeholder involvement is not required for creating support for the analysis. However, it may have been useful in the light of the implementation of the plans, where interests will diverge and problems addressed will become less structured. Both in the second national plan on mineral resources and in the North-Holland South spatial strategy plan, implementing regional authorities will have to negotiate with people who potentially face negative consequences. The interactive SEA process at least allowed these authorities to express their concerns.

Public consultation was not mentioned as a factor contributing to SEA impact (in the North-Holland South spatial strategy plan it was even found to have a negative impact). This is surprising bearing in mind the SEA literature discussed earlier, but not when looking at the context in which this statement was made.

**Conclusions and recommendations**

The starting point of this paper was our observation that much has been written about how SEA may impact on decision-making, but that, up to now, little empirical evidence is available. In addition, impacts that have been observed in practice are not always clearly defined, and are often difficult to understand because of under-exposure of the decision-making context. This explains why different researchers often come to different lists of factors that contribute to, or impede, SEA impact.

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**Table 3. Factors that contributed to or impeded impact of the SEA in the four case studies**

<table>
<thead>
<tr>
<th>2nd national plan on mineral resources</th>
<th>North-Holland South spatial strategy plan</th>
<th>Revision of the VINEX plan</th>
<th>‘Room for the river’</th>
</tr>
</thead>
<tbody>
<tr>
<td>- norms, values: agreement</td>
<td>- norms, values: agreement</td>
<td>- norms, values: agreement</td>
<td>norms, values: agreement</td>
</tr>
<tr>
<td>- knowledge: certain</td>
<td>- knowledge: uncertain</td>
<td>- knowledge: uncertain</td>
<td>- knowledge: uncertain</td>
</tr>
<tr>
<td>Decision-making:</td>
<td>Decision-making:</td>
<td>Decision-making:</td>
<td>Decision-making:</td>
</tr>
<tr>
<td>- open</td>
<td>- open</td>
<td>- open</td>
<td>- open</td>
</tr>
<tr>
<td>Potential impact:</td>
<td>Potential impact:</td>
<td>Potential impact:</td>
<td>Potential impact:</td>
</tr>
<tr>
<td>moderate/high</td>
<td>moderate</td>
<td>low/moderate</td>
<td>moderate</td>
</tr>
<tr>
<td>Absolute impact:</td>
<td>Absolute impact:</td>
<td>Absolute impact:</td>
<td>Absolute impact:</td>
</tr>
<tr>
<td>high</td>
<td>moderate</td>
<td>moderate</td>
<td>moderate</td>
</tr>
<tr>
<td>Contributing factors:</td>
<td>Contributing factors:</td>
<td>Contributing factors:</td>
<td>Contributing factors:</td>
</tr>
<tr>
<td>• early start SEA</td>
<td>• growing awareness of water-management issues</td>
<td>• Minister already objected to</td>
<td>• clear link between SEA and</td>
</tr>
<tr>
<td>• DANF supportive of environmental values</td>
<td>• not much difference between values of decision-makers and</td>
<td>least environmental alternative</td>
<td>decision-making</td>
</tr>
<tr>
<td>• extraction on land increasingly difficult</td>
<td>SEA recommendations</td>
<td>• clear difference</td>
<td>preferred alternative best</td>
</tr>
<tr>
<td>• acceptance of the SEA</td>
<td>• acceptance of the SEA</td>
<td>in environmental performance of</td>
<td>environmental performance</td>
</tr>
<tr>
<td>• synchronisation of the SEA process and the planning process</td>
<td>• synchronisation of the SEA process and the planning process</td>
<td>the alternatives</td>
<td></td>
</tr>
<tr>
<td>Impeding factors:</td>
<td>Impeding factors:</td>
<td>Impeding factors:</td>
<td>Impeding factors:</td>
</tr>
<tr>
<td>• none</td>
<td>• SEA started too late</td>
<td>• employment more important</td>
<td>• budget deficit</td>
</tr>
<tr>
<td></td>
<td>• public consultation (delay, low yield)</td>
<td>• initiator and stakeholders did not</td>
<td>• earlier decision difference of</td>
</tr>
<tr>
<td></td>
<td>• quantification in SEA (time pressure, false certainty)</td>
<td>want to add alternatives</td>
<td>opinion between initiator and</td>
</tr>
<tr>
<td></td>
<td>• lack of SEA experience</td>
<td></td>
<td>the NCEIA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• negotiation position</td>
</tr>
</tbody>
</table>
Drawing on insights from policy analysis, we developed a framework for a more systematic analysis of SEA impact and the mechanisms that precede it. This was applied to four illustrative Dutch SEA cases. The results provide indicative evidence of the importance of the three context variables of interest to SEA impact: degree to which interests involved coincide; certainty about knowledge base; and characteristics of the decision-making process. We realise, however, that the framework requires more testing for more robust statements. This should include varying some variables that were constant in our analysis (for instance, the openness of decision-makers and the willingness of stakeholders to participate in SEA or decision-making).

The cases revealed a moderate impact of SEAs on decision-making. Impact was notably related to the extent to which SEA recommendations were in line with the values and interests of the main decision-makers. This may be disappointing from one perspective, but leads us to two other conclusions. First, instead of focusing on SEA impact, it may be better to consider the more general contribution of SEA to decision-making. The four SEAs often influenced decision-making in other ways (for instance, adding to an increased ‘structuredness’ of policy problems and providing tools for later SEAs). Second, some modesty regarding the expectations of SEA is required. An SEA is only one of the inputs in decision-making, representing only one of the interests at stake.

How can SEA practitioners (researchers, EIA commissions) increase their chances of delivering successful SEAs, that is, ones with a maximum contribution to decision-making? The context-specificity of (factors affecting) SEA impact and the exploratory nature of our study requires us to be modest in our recommendations.

Our main advice is to make good preparation by assessing the ‘structuredness’ of the problem at issue and the openness of the main decision-makers to other (environmental) values. For this purpose, a simple stakeholder analysis is a good start (indicating which stakeholders (potentially) are involved, what their interests and stakes are, and how important they are in the decision-making process).

Based on this analysis, SEA practitioners are advised to make an ex ante assessment of the contribution that can realistically be made and how they should act to realise this potential. This may avoid too much time and effort being put into activities that are of little interest to decision-makers; at the same time it allows for realistic expectations.

### Annex 1. Questionnaire

1. **Characterisation of the policy problem and decision-making context**
   - Who were the main stakeholders and how were they involved? What were their interests and problem perceptions? How important were they in terms of formal competences, resources, potential to block (environmentally friendly) decision-making and so on?
   - To what extent did stakeholders agree on the need for, and aim of, the plan and the alternative means of realising this aim? Did the SEA change this situation and why (not)?
   - What uncertainties existed regarding the problem (causes of the problem, consequences of alternatives, scientific robustness of knowledge available and so on)? Were they an issue in the decision-making process? To what extent did the SEA reduce or increase these uncertainties?
   - How open were decision-makers to values other than those directly related to the policy aim, and to environmental values? Did they involve stakeholders (if yes, why, how and when)?

2. **Characterisation of the SEA in light of the assessed plan**
   - Was the decision to conduct the SEA voluntarily taken by the initiator? Who took the initiative and why? To what extent did decision-makers anticipate an SEA or other issues (resistance from environmental NGOs, the SEA Directive)? How did this become apparent?
   - What was the potential contribution of the SEA, ie, what was the environmental performance of the draft plan and to what extent were decisions open for discussion or adjustment?
   - Were stakeholders involved in the SEA? If yes, were they the same as those who participated in the decision-making process? How, when, and why were they involved?
   - How did stakeholders perceive the SEA outcomes? Did they accept the outcomes? What was the NCEIA’s judgement about the SEA?

3. **Impacts of the SEA**
   - (After having showed Figure 1 and explained the different types of direct and indirect effects): what types of impact of the SEA do you recognise?
   - Regarding direct impacts: what role did the SEA outcomes (the report or the advice of the NCEIA) play in the (formal) decision-making process? What changes have occurred in the assessed plan? What were the main (formal) arguments? Would these changes have occurred if no SEA was conducted or if the SEA had had other outcomes?
   - What had a larger impact: the SEA report or the advice of the NCEIA and why?
   - Did the SEA have any other influences, eg on later decisions or on other SEAs?
   - What do you think was the most important contribution of the SEA?
   - How do you evaluate the impact of the SEA in the light of its potential contribution?

4. **Factors affecting SEA impact**
   - What were the main reasons for the SEA impact discussed above? What were the main reasons not to adopt other elements from the SEA (most environmental alternative, mitigation or compensation and so on)?
   - (After answers were given, respondents were asked to reflect on the importance of factors mentioned in Table 1 of this paper)
   - How important were the roles of (the absence of) conflicts of interests; (the absence of) uncertainties; the openness of the decision-making culture; quality and acceptance of the SEA results; the voluntary character of the SEA; the roles of particular stakeholders or events?
   - How were factors affecting SEA impact(s) related to each other (conflicting, reinforcing, determining, other)?

(continued)
Annex 1 (continued)

5. Generalisation
- How unique were the (lack of) impact(s) of the SEA and factors that affected it? To what extent have you recognised them in other SEAs? What are the main differences and similarities with these plans and SEAs?
- Do you think that the EU SEA Directive has changed the impact(s) of SEAs? Why (not)?

6. Other
- Has there been a follow-up of the SEA? What were its outcomes?
- Is there any other relevant information?
- Do you agree to verify the case study? (seven out of eight respondents did, resulting in some minor changes)

Notes

1. There is no commonly accepted definition of what policies, plans and programmes are, either. Commonly employed definitions resemble those of Sadler and Verheem (1986). They define policies as broad statements of intent that reflect and focus the political agenda of a government. Plans and programmes give substance and effect to policies, involving identifying options and specifying how, when and where specific actions will be carried out. In the policy analysis literature, however, the term ‘policy’ is often used in a much broader meaning, encompassing plans and programmes as well. An example is the definition by Fischer: policy is “political agreement on a course of action (or inaction) designed to resolve or mitigate problems on the political agenda — economic, social, environmental and so on” (Fischer, F, 1997: 2). We will employ this definition as well.

2. For a discussion of how decision-making and stakeholder dependency and participation relate to the tiering concept, see Fischer, T B (2003).

3. In the policy analysis literature, we find many empirical studies that focus on identifying (contextual) factors that contribute to knowledge utilisation in decision-making (for instance, de Jong, 2000; van de Riet, 2003; see also Shulha and Cousins, 1997) as well as theoretical reflections related to this topic (for instance, Johnson, 1998). In our view, the strength of the model by Hoppe (2002) on which our framework is built, is that it establishes a direct and coherent link among policy issues, policy processes and participants, and factors that stimulate or prevent the use of analysis in these processes.

4. Here we only provide summaries of the case studies; more detailed analyses (in Dutch) including references to relevant documents and the interviews can be obtained via the corresponding author, Hens Runhaar. As we have promised confidentiality to our respondents, we do not provide their names or positions.

References


