TOWARDS A FRAMEWORK FOR SEA FOLLOW-UP:
THEORETICAL ISSUES AND LESSONS FROM
POLICY EVALUATION

ÅSA PERSSON* and MÅNS NILSSON
Stockholm Environment Institute
Kräftriket 2B, SE-106 91 Stockholm, Sweden
asa.persson@sei.se

Received 2 February 2007
Revised 23 October 2007
Accepted 25 October 2007

Most SEA practice and research has focused on the pre-decision stages, whereas post-decision follow-up stages such as monitoring, evaluation, and management have been given far less attention. These stages, referred to as SEA follow-up, are integral to making SEA effective and learning-oriented. This paper takes the first step towards a framework for conducting SEA follow-up, by analysing the requirements for ex post activities according to the European SEA Directive (2001/42/EC), reviewing existing experiences and literature on how to perform SEA follow-up, and exploring lessons to be learnt from the adjacent fields of EIA follow-up and policy evaluation. The directive, along with most mainstream applications of SEA, is based on EIA follow-up concepts. However, SEA follow-up displays a number of critical differences, including: an enhanced risk of implementation gaps; a focus on performance rather than compliance; and less direct linkages between decisions and impacts. The paper argues that the SEA Directive is seriously constrained and that a more ambitious interpretation of SEA follow-up is necessary to enable strategic decision making and learning. Lessons from the policy/programme evaluation literature could strengthen SEA follow-up by giving it analytical rigour in relation to establishing causality and providing insights into the use and acceptance of SEA follow-up among decision makers and stakeholders. Further explorations into policy evaluation toolkits, and practical experiences in applying them, are needed to enhance the potential of SEA follow-up in supporting strategic decision making.

Keywords: SEA follow-up; evaluation; monitoring; SEA directive.

*Corresponding author.
Introduction

Most recipes for Strategic Environmental Assessment (SEA) end with monitoring and evaluation (see, e.g., Therivel et al., 1992; Therivel, 1996). Sometimes, management and communication are identified as the very last steps (Partidario and Fischer, 2004) (see Fig. 1). These steps of the process are usually referred to as “post-decision” or “ex post” stages, or SEA follow-up. Undertaking SEA follow-up is widely recognized as important to increase the effectiveness and credibility of SEA as a tool to integrate environmental sustainability into key decisions, also in the ex ante phase. Despite this, it is arguably a neglected part of the SEA process. While ex ante SEA is becoming an institutionalised procedure with best practice developing rapidly, there is little guidance on how to best carry out SEA follow-up in various settings. For instance, Swedish SEA guidance merely mentions follow-up as the last step in the SEA process. The examples of “working methods” are often neither elaborate nor helpful; merely indicating “monitoring plan, EIAs of subsequent decisions, environmental monitoring, and use of indicators” (Naturvårdsverket, 2000, p. 25; see also Boverket and Naturvårdsverket, 2000; Naturvårdsverket, 2001). Furthermore, there are few reports on practice to learn from and (Therivel, 1996; Cherp, 2005). A questionnaire sent out to twelve EU Member States showed that there was very little experience with SEA follow-up (Öko Institut, 2002).

In addition to a general lack of knowledge around SEA follow-up, the literature has identified a range of potential conceptual and practical problems. Most current SEA follow-up thinking is based on experiences from project-level EIA follow-up.

![Fig. 1. SEA follow-up in context.](image-url)
(Cherp, 2005). In the context of EIA, known barriers to effective follow-up include: vague and outdated predicted impacts, difficulties in establishing cause-effect relationships, inadequate data, lack of time and resources, unclear division of responsibility, disincentives to undertake and respond to *ex post* assessment among key stakeholders, and uncertainty about the cost-effectiveness and benefits of engaging in follow-up (Noble and Storey, 2005; Morrison-Saunders and Arts, 2004; Partidario and Arts, 2005). These are likely to be valid concerns also for SEA. However, due to SEA's higher level of uncertainty, greater scope in time and space, and level of political contention many of these difficulties are likely to amplify in SEA follow-up. The current knowledge gaps and problems with SEA follow-up appear as particularly critical to address given the regulatory requirements of the EU SEA Directive.\(^1\)

Article 10 on “Monitoring” states that:

```
1. Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, *inter alia*, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action.

2. In order to comply with paragraph 1, existing monitoring arrangements may be used if appropriate, with a view to avoiding duplication of monitoring.
```

This requirement poses significant challenges for competent authorities in the EU Member States, in relation to, e.g., data collection or coordination functions, increased analytical capacity and resources, and revised planning and programming procedures and cycles.

The purpose of this paper is to review what is known about SEA follow-up, and identify what kind of analytical and organisational issues need to be addressed in order to improve practice, especially considering the requirements in the SEA Directive. The aims of this paper are threefold: first, to analyse the follow-up activities required by the Directive; second, to review recent literature on how to carry out SEA follow-up, drawing also on EIA literature; and third, to draw potential lessons from the policy evaluation literature to explore whether important lessons can be learnt concerning for example tools and procedures. Policy evaluation has been applied more in social science fields such as education and health than in environmental policy, which suggests there is a potential for learning across these fields. Exploring such opportunities for learning is important also considering the recent calls for more *ex post* evaluation of environmental policy at the EU level in general.

Å. Persson & M. Nilsson (EEA, 2001). The need for more ex post evaluation-based policy learning can also be linked to the trends of “evidence-based policy making” and performance measurement in public administration (see, e.g., Sanderson, 2001, 2002). For instance, Herrick and Sarewitz (2000) argue that predictive (or ex ante) scientific assessments of policy proposals are so inherently limited in terms of the level of uncertainty and the assumption of rational and receptive decision-makers, that rigorous ex post policy evaluations can be much more valuable for improving the quality of decisions. We therefore argue that strengthening SEA follow-up procedures is presently one of if not the most important task within SEA research and methods development.

The next section clarifies terminology and discusses purposes and objectives of SEA follow-up. An analysis of the EU regulatory framework then follows, setting the scene for the review of existing SEA follow-up guidance regarding methods and approaches. Subsequent sections highlight key challenges and problems, including a discussion of relevant lessons and principles from the policy evaluation literature. In the final part, we outline key issues for the further advancement and development of SEA follow-up.

SEA follow-up: Definitions and objectives

Among the four activities within SEA follow-up (Fig. 1), we focus on monitoring and evaluation, rather than management and communication. Monitoring and evaluation are generic terms and can be undertaken at different levels, focused on different objects, and with different objectives. Therefore, it is useful to clarify the terminology in this field. First, evaluation is sometimes used as a synonym for ex ante assessment, i.e., “ex ante evaluation”. This should not be confused with ex post evaluation using empirically observed data. Second, to review the environmental report or Environmental Impact Statement (EIS) according to some criteria is normally included as a SEA/EIA process step. This is a kind of a retrospective activity, but it does not consider actual post-decision stages that are the concern here. Third, there is an established literature on evaluation of SEA/EIA as a tool, i.e., how effective an SEA/EIA process and document (or system) is according to some criteria, including the extent to which it influences the policy, plan, programme or project decision (see, e.g., Thissen, 2000; Marsden, 1998; Baker and McLelland, 2003). However, such work is evaluation of SEA rather than within SEA. In other words, the evaluation object is the SEA process (e.g., inputs, techniques, participation) or document, rather than the environmental parameters it identifies as important.

2This paper represents the first step of a “MiSt” research project on SEA follow-up at the regional level in Sweden, aiming to construct a framework of potential analytical and participative tools for SEA follow-up. Empirical applications are made within regional transport planning and regional growth strategies.
To further understand what SEA follow-up is, including how it compares with EIA follow-up, it can be helpful to consider three different questions.

First, what is the **purpose** and what kind of **analytic outputs** can be expected from **ex post** activities? SEA follow-up can consist of a range of different analytic activities. These activities range from information gathering (in monitoring) to making explicit value judgements (in evaluation). This suggests that their respective use in planning and policy making may similarly range from simply recording an environmental effect, to proposing an adjustment to a plan or programme, and to fundamentally questioning strategic choices made. However, it is unhelpful to view monitoring and evaluation as very distinct and mutually exclusive activities, since some monitoring systems provide highly processed information of an evaluative kind whereas some evaluations may add little analytical value to raw data. For example, Verheem and Tonk (2000, p. 179) suggest that the principle for monitoring in SEA should be that “sufficient information on the actual impacts of implementing the decision is gained to judge whether the decision should be amended”, clearly a more ambitious role than just tracking a set of parameters. Instead, monitoring and evaluation can be viewed along a continuum of activities involving less or more judgement against criteria and less or more assessment of underlying assumptions and rationale of a plan or programme. In practical terms, the two activities may also be separated by their periodicity (monitoring takes place on a regular basis and evaluation is more infrequent) and scope (evaluation considering a wider and deeper scope of aspects).

The different outputs of monitoring and evaluation can also be seen in light of purposes identified from a more practical perspective (Arts et al., 2001):

- provide information about consequences and check compliance with the decisions based on the EIS;
- enhance scientific knowledge on environmental issues, cause-effect relationships and effective mitigation measures;
- improve the quality of methods and techniques in EIA;
- improve public awareness about actual effects; and
- afford explicit opportunities to intervene in, revise, or terminate a project.

It has also been suggested that if SEA is to set directions upstream rather than detailed design then “the focus of SEA follow-up is more on tracking subsequent decision-making (i.e., tiering) about locations and/or operational projects” (Arts and Morrison-Saunders, 2004, p. 296). One purpose of SEA follow-up would thus be to ensure that downstream plans and projects are designed in accordance with the conditions and objectives set in an SEA. However, one cannot assume *a priori* that a clear hierarchical relationship between PPPs exist (Arts et al., 2005). Partidario and Arts (2005, p. 252) argue that strategic initiatives and SEA can have “splash
effects” in all directions; to operational projects, lower-order initiatives, same-order initiatives, and even higher-order initiatives.

Conspicuously missing from most of the SEA/EIA follow-up literature is holding the responsible decision makers accountable for plans and programmes and their possible environmental effects. In the policy-evaluation literature, on the other hand, accountability is a key issue. For example, Rossi et al. (2004) identify four different purposes of evaluations; programme improvement, accountability, knowledge generation, and political/public relations use. In SEA follow-up to date, the main focus has been on the first and third purpose. However, as policies, plans and programmes are commonly perceived to be more politically contentious than projects, democratic accountability should, in addition to more instrumental purposes, also figure in SEA follow-up.

Second, what kind of parameters should be monitored and evaluated? Of course, several objects can be monitored and evaluated together, but the choice of primary focus is likely to have implications for the design of the SEA follow-up system and process; should it focus on impact evaluation or “ticking off” policy measures? Were objectives for various parameters set ex ante or do reference values or criteria need to be specified ex post? Below, possible parameter types are listed together with examples from a transport plan context. This list also suggests that some flexibility is needed when designing SEA follow-up procedures, to accommodate for different kinds of SEAs:

- Predicted significant environmental impacts of the PP — e.g., increased CO2 emissions from car transports due to higher accessibility
- Unanticipated environmental impacts of the PP — e.g., more out-of-town shopping centres leading to further increased transports
- Performance on environmental objectives set in the PP — e.g., an increase in the use of public transports in a city region by 20%.
- Environmental prevention and mitigation actions included in the PP — e.g., no new road projects located in protected areas
- Design and implementation of subsequent/downstream PPs — e.g., if EIAs are conducted for road projects
- Environmental baseline/state of the environment — e.g., level of particulate matter in a given area

Third, in what way do the decision levels (policies, plans and programmes, PPP) matter for SEA follow-up? The main differences between the PPP levels are normally seen as (from policy to programme): decreasing level of abstraction with regards to the activities/development/project plans; increasing site-specificity; and responsibility moving from central to local/lower administrative or political levels. The impacts monitored and evaluated are therefore likely to be: less site-specific;
played out on a longer timescale; broader in terms of environmental, economic and social aspects covered; and have larger uncertainty margins. These differences mean that programme-level SEA follow-up may have more in common with EIA follow-up, than with policy-level SEA follow-up. Consequently, this makes it difficult to generalise approaches and methods appropriate for SEA follow-up. However, in reality these levels are not necessarily clear-cut or mutually exclusive. Furthermore, sometimes a policy instrument can be more concrete and therefore easier to assess and evaluate for environmental effects (although perhaps not site-dependent impacts), than a vague plan or programme setting out broader intentions for an area. Therefore, the formal PPP level may not be an important determinant when choosing approaches and methods for SEA follow-up.

In summary, it is important to be clear on what kind of analytical activity is referred to when discussing SEA follow-up, i.e., providing “objective” information on some operational aspects of a PP, and/or measuring the performance of a PP against some criteria and questioning strategic choices made. Furthermore, there is a range of different “objects” to monitor and evaluate in SEA, beside the predicted significant environmental effects. Finally, differences between the decision-making levels are relevant to consider in the ex post context. A key issue is whether to evaluate the tiering aspects or the operational decisions.

Follow-up requirements in the EU Directive

The “SEA Directive” (European Council, 2001) represents an important milestone for SEA in EU Member States, in terms of introducing a legal requirement and harmonising the procedure. If we wish to make methodological development of SEA follow-up practically relevant and useful, it is important to understand the Directive’s monitoring and evaluation requirements. Apart from the actual monitoring activities required by Article 10 (see Section 1), the pre-decision environmental report required under Article 5 of the Directive shall describe both prevention and mitigation measures envisaged, and planned monitoring measures. When the PP has been adopted, information on the monitoring measures decided shall also be made available, according to Article 9. In summary, the Directive’s requirements relevant to SEA follow-up are thus to:

- make plans for monitoring during the ex ante assessment and include these plans in the environmental report;
- provide information on the monitoring measures decided after the PP has been adopted; and

See points (g) and (i) in Annex I to the Directive.
• monitor the significant environmental effects identified in the environmental assessment.\(^4\)

In line with the subsidiarity principle, the SEA Directive thus leaves considerable flexibility for the Member States to implement the provision for monitoring. In the case of Sweden, the legislators have chosen to pass this flexibility on to the authorities conducting SEAs (Box 1). However, the European Commission has issued guidance on monitoring within SEA to complement the “minimalist” approach of the Directive (European Commission, 2003). In this guidance, the “implementation” of the PP, i.e., the object of monitoring, is interpreted as not only subsequent projects but also “behavioural measures” and “management schemes” that may be part of the PP (p. 45). Monitoring is defined as “an activity following the development of the parameters of concern in magnitude, time and space” (p. 43). Since the Directive does not specify bodies responsible, or the duration, frequency and methods of monitoring, it is recommended that Member States consider whether legal or administrative measures be taken to regulate this. The purposes of monitoring are identified as determining whether unforeseen adverse effects have taken place, to take appropriate remedial action, and to verify information and assumptions in the \textit{ex ante} environmental report.

Although the inclusion of a monitoring requirement in the SEA Directive is an important contribution towards institutionalising SEA follow-up, its “minimalist” formulation and limited guidance raises several issues:

First, Article 10 does not require an \textit{evaluation} to be made (in addition to \textit{monitoring}). Although the guidance states that “monitoring does not end with the collection of environmental information but includes also their evaluation” (European Commission, 2003, p. 60), this is not a binding task and it is not elaborated upon. As described above, a comprehensive evaluation produces complementary information to a monitoring system, by allowing underlying assumptions to be questioned and a broader set of criteria to be used. Furthermore, effects of a cumulative or synergistic character may be easier to identify and analyse in a comprehensive evaluation than in a narrower monitoring scheme.

Second, it leaves open the question of how best to organise follow-up activities and who should be responsible for them. Should the plan-making authority undertake the work itself or should an independent body be responsible? To what extent should stakeholders be involved? The issue of responsibility and roles is important in terms of awareness of possible bias, ownership of the results and incentives to take action, and communication of the results.

\(^4\)The SEA Protocol under the UNECE Espoo Convention makes a similar requirement to undertake monitoring (Article 12), but also that the monitoring results should be made publicly available (UNECE, 2003).
Box 1. The regulatory framework for SEA follow-up in Sweden

In Sweden, the EU SEA Directive was transposed through changes in chapter 6 of the Environment Code, on Environmental Impact Assessment (11–18 §§ and 22 §), as well as minor changes of the Planning and Building Act (1987, p. 10) and the law on municipal energy planning (1977, p. 439). The SEA requirements are further elaborated in the Regulation on Environmental Impact Assessment (1998, p. 905). These revisions entered into force on 21 July 2004.

The PPs subject to the SEA requirements are those that have significant environmental effect, are adopted by a government authority or a municipality, and are required by law or regulation. Furthermore, they apply to plans and programmes that comprise activities that (i) require a permit or (ii) give premises for subsequent permitting, and are a land use plan (översiktsplan), municipal energy plan, waste plan, environmental action program, regional transport infrastructure plan, or another type of plan or programme in a number of specified sectors. Exempted PPs are those for defence and civil emergency, financial or budget plans, and plans and programmes co-financed through the EU Structural Funds or Rural Development Programme. In comparison with other countries, there are relatively few plans and programmes that are subject to SEA requirements in practice.

Post-decision aspects are addressed at three different places in the SEA legislation (ch. 6, Environment Code):
planned prevention and mitigation measures shall be described in the (pre-decision) SEA report (12 §);
planned measures for follow-up and monitoring of the significant environmental effects identified shall be described in the post-decision report (särskild sammanställning) (16 §); and
when a PP has been adopted the deciding authority or municipality shall “gain knowledge” (skaffa sig kunskap) of the significant environmental effect that the implementation actually result in (18 §).

The follow-up activities required by 18 § are not further elaborated upon, neither in terms of reporting and responses, nor appropriate methods and organisation. The Government Bill (2003/04, 116, p. 68) preceding the SEA legislation merely stated that it can be appropriate to integrate this follow-up in existing monitoring programmes and planning cycles. The purpose of follow-up stated in 18 § is that the authority or municipality shall gain knowledge of significant environmental effects previously not identified so that appropriate mitigation measures can be taken. The level of knowledge and how it should be gained is not specified, suggesting that rather minimalistic interpretations of this requirement are possible. However, to gain knowledge about previously unidentified effects requires follow-up that is relatively broad and deep in its scope, thus requiring a considerable planning and organisation effort by the responsible authority or municipality. In contrast, the existing guidance on SEA available today in Sweden is very weak on how to plan and conduct follow-up (see Naturvårdsverket, 2000; Boverket and Naturvårdsverket, 2000).
Third, requirements and guidance regarding the scope of the monitoring are ambiguous. The previously significant environmental effects should be monitored, but also “unforeseen adverse effects”. The latter seem to necessitate a rather broad arrangement. On the other hand, it is proposed that existing monitoring should be used as far as possible and that the level of detail should be adapted to the level of detail in the PP.

Fourth, the guidance suggests that monitoring of environmental effects could be integrated into regular revisions of the PP, where the focus may primarily be on economic and/or social objectives and effects. However, as experienced with the EC’s Impact Assessment procedure there is a real risk that environmental effects and issues lose out when environmental, economic and social results are dealt with in an integrated fashion.

Fifth, the guidance recognises that since plans and programmes involve many indirect effects, causality chains are likely to be more complicated at the SEA level than EIA level. However, guidance on how to go about establishing causality is poor. This is an issue where established evaluation know-how can contribute with more sophisticated advice and tools.

Sixth, a useful working process is proposed in the Commission’s guidance but no practical methods, indicators, checklists, analytical tools, or existing datasets are referred to or described. An important question is what general guidance could be provided centrally to support authorities and municipalities undertaking SEA follow-up.

Seventh, taking remedial action in response to monitoring results is not mandatory. While a general rule for remedial action may be difficult to formulate, the lack of such a requirement severely limits the purpose and rationale of monitoring — i.e., ensuring that environmental effects do not deviate significantly from the intended effects. Article 10 risks resulting in just a paper exercise. In fact, the Directive and the guidance do not even require reporting of the monitoring results. This means that mechanisms for accountability, positive and negative sanctions for the responsible authority, and opportunities for learning are constrained.

Towards a Set of Principles for SEA Follow-Up

This section will address the above-mentioned seven issues in turn. It draws out lessons from the adjacent fields of EIA follow up and policy evaluation, and discusses implications for how to resolve the issues within SEA follow-up.

Monitoring vs. evaluation

Should both monitoring and evaluation take place, or just the former (as specified in the SEA Directive)? As described earlier, the main differences between these
two activities are: a) evaluations are undertaken less frequently, but are potentially broader and deeper in scope, b) evaluations involve measuring performance against criteria and making a value judgement, rather than just measuring; and c) evaluations may question underlying intervention rationales and strategies to deal with a problem, rather than focusing on operational aspects.

The first point is not controversial, and a monitoring scheme can also be ambitious in scope and depth. The second point, on the other hand, highlights the value judgment aspect. In the SEA follow-up literature, it has been argued that evaluation involves assessing performance on stated objectives in the PP (as opposed to merely checking conformance with provisions and conditions typical for EIA follow up). However, the evaluation literature entails more criteria than just goal-achievement to determine the success of a policy or plan. It shows how it can be relevant to evaluate not just if the objectives were achieved, but how well they were achieved (e.g., how cost-effectively or equitably objectives were achieved). The set of generic evaluation criteria identified by Mickwitz (2003) is a useful inspiration (Table 1).

The third point relates to the key difference between EIA and SEA alluded to before. An SEA is about strategic decisions, and therefore SEA follow-up is concerned with the result of a strategic decision. Again, the evaluation literature provides a useful tool. For example, a monitoring scheme for a transport plan may examine whether the environmental guidelines for locating and designing roads are followed. An evaluation can revisit the assumptions regarding the need and demand for mobility as well as the choice of road transport as the best option to meet this demand.

**Organisation and ownership**

How should SEA follow-up be organised? The standard recommendation is to prepare the plan for this during the *ex ante* process. This plan should set out what

<table>
<thead>
<tr>
<th>General criteria</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Impact</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
</tr>
<tr>
<td></td>
<td>Persistence</td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
</tr>
<tr>
<td></td>
<td>Predictability</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic criteria</th>
<th>Efficiency (cost-benefit)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Efficiency (cost-effectiveness)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Democracy-related criteria</th>
<th>Legitimacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transparency</td>
</tr>
<tr>
<td></td>
<td>Equity</td>
</tr>
</tbody>
</table>

Table 1. General evaluation criteria (Mickwitz, 2003).
should be monitored and evaluated, through what indicators and data, with what frequency, how, when and to whom reporting should take place, and who should be consulted. If SEA follow-up also involves monitoring of downstream activities (tiering) the plan also needs to identify which those downstream PPs are and make explicit the limits or conditions set for them. A similar approach is proposed also in the evaluation literature, but the information required is slightly different. Rossi et al. (1999) identified three basic issues to be included in an evaluation plan: the questions the evaluation should answer, the methods and procedures used to answer the questions, and the nature of the evaluator-stakeholder relationship.

The key organisational issue for implementing SEA follow-up is who should do it? This involves both the formal responsibility and accountability, and who is best suited to carry out the work. Important in this regard is the configuration of interests in relation to the follow up. In the context of EIA follow-up, Morrison-Saunders et al. (2001) identified different driving forces for undertaking follow-up of three key actors respectively:

- proponent — better project management, protection from liability, green profile;
- regulator — controlling compliance, reducing uncertainty, better predictions, better decisions, improvement of EIA process; and
- community — communication about concerns, enhancement of local knowledge.

In SEA, however, the roles of the actors involved may not be this clear. The “proponents” are often public bodies, probably with few commercial gains. Furthermore, the regulator and proponent roles are typically held within the same organisation. Finally, although the community’s interest may be large considering that strategic decisions are at stake, direct impacts may also be less tangible and visible than those arising from a project.

The discussion of actor roles in the EIA/SEA follow-up literature focuses largely on the problem of ensuring that follow-up is at all undertaken. As for the quality and use of evaluations, further lessons can be learned from the evaluation literature. A key issue is whether the evaluation is done internally or externally, regardless of stakeholder consultation and participation. Vedung (1997, p. 115ff) argues that this must depend on the purpose; internal is usually better for improving a programme and general learning within an organisation, while external is better for accountability and improving basic knowledge around a problem. The SEA Directive does not explicitly specify a purpose in this way, but could be interpreted as emphasising programme improvement, thus suggesting internal evaluation.

Therefore, the organisation responsible for adopting the PPP is the natural choice for who should be formally responsible for ex post activities. At the same time, a PPP may address a wide range of stakeholders (public bodies, private sector, communities) and this has led to calls for “multi-stakeholder approaches” to SEA
follow-up (Partidario and Fischer, 2004; Partidario and Arts, 2005). In EIA/SEA practice, a few such models have been documented. In the follow-up of a Viennese waste plan, the SEA team and politicians were responsible for the plan’s operation but an external monitoring team was set up (Öko-Institut, 2002). In a controversial Australian mining project, an independent monitoring and evaluation organisation was set up by, and was accountable to, seven major stakeholders (Arts et al., 2001).

Scope of activities

The definition of monitoring in the EU guidance was to follow parameters in magnitude, time and space (European Commission, 2003). Thus, the scoping must consider how many and what kind of parameters to follow, over what time period and with what frequency, and over what geographical space. Unsurprisingly, principles for EIA follow-up stress that the scope needs to be adapted after the project, and that general rules are difficult to formulate (see Marshall et al., 2005). Providing a standard model at the SEA level is even more difficult, given the diversity of PPs and SEAs (Partidario and Arts, 2005).

Regarding the temporal scope, follow-up should be sustained over the entire life of the intervention (Marshall et al., 2005, p. 180). Appropriate frequency depends on the kind of parameter. If the follow-up is concerned with the design of lower-level PPs, data could be collected quite frequently. Some environmental outcome parameters, on the other hand, may change very slowly (e.g., biodiversity impacts), justifying less frequent monitoring. Regarding the geographical scope, this too may depend on the parameter in question. For example, landscape impacts arising from a new municipal energy plan may be local (e.g., grid extension) while air pollution impacts may be transboundary (e.g., import of electricity from foreign coal-based production). Alternatively, an “area-oriented” approach could be taken (Partidario and Arts, 2005). Then, the area subject to the PP is delimited and a range of environmental parameters within this area are monitored, using existing or new data.

The evaluation literature helps us address the question of which parameters to include. For example, Vedung (1997) identifies six different effectiveness models. First, the “goal-attainment model” defines the scope based on the predefined goals. In the SEA follow-up context, this would correspond with the significant environmental effects or environmental objectives listed in the SEA report and/or included

Note that the two models “stakeholder model” and “policy commissions” have been collapsed into one here.

Annex I (f) of the SEA Directive states that possible significant environmental effects should be considered on “issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors”.

---

TAKEAWAY:

- Follow-up in EIA/SEA practice has seen some documented models, especially in Viennese waste plans and controversial Australian mining projects.
- The scope of monitoring needs to be flexible and adapted post-project,
- Principles for EIA follow-ups require individual adaptation, given the diversity of plans.
- Temporal scope requires follow-up over the entire life of the intervention, with frequency depending on parameter.
- Geographical scope can vary, from local to transboundary.
- Evaluation literature provides models for defining scope based on predefined goals.

---

For more details, refer to the original sources listed in the text.
in the final PP. Predefined indicators are often used. In some SEA applications, a great effort is put on defining indicators already in the \emph{ex ante} phase and they effectively become environmental objectives for the PP. Second, the “side-effects model” extends the scope to include unanticipated positive and negative effects. This is in line with the need to address “unforeseen adverse effects”, as recognized in the EU guidance on the SEA Directive (European Commission, 2003). However, how to limit the scope of side-effects remains an issue, as there could potentially be a large number (although of a primary, secondary and tertiary kind). In a way, this problem is both aggravated and mitigated in the third model, “goal-free evaluation”. This model challenged the view that predefined goals or indicators of an intervention are interesting. Instead, the evaluation should be organised after results, whether planned or unplanned (Weiss, 1998). This bears some resemblance to the “area-oriented” approach suggested by Partidario and Arts (see above), where the scope of parameters is in effect data-driven.

Fourth, the “comprehensive evaluation model”, examines not only the fit between intentions and results but also the input and conversion phase. In the SEA context, this means evaluating the inputs to the PP, how it was prepared and implemented (including the SEA process), and its outcomes. Considering the tiering aspect in SEA and the fact that most of the “outcomes” of a PP may be new PPs rather than direct environmental impacts, this seems to be a relevant model to describe SEA follow-up. Fifth, the “client-oriented model” is concerned with the satisfaction, concerns and needs of the program’s target groups. The scope of parameters thus consists of measures of client attitudes. This model is clearly more tailored to social policy programs than environmental policy programs. Finally, the “stakeholder model” specifies that the scope should be defined by stakeholders, regardless of pre-defined program goals. Stakeholders include citizens, the private sector, decision-makers, program managers, implementing staff, neighbouring agencies, and the research community. Such a “multi-stakeholder” approach has been suggested for EIA follow-up (Arts and Morrison-Saunders, 2004). While there is broad agreement on the benefits of involving stakeholders, the current literature has not outlined in detail how such a monitoring and evaluation process should be conducted.

To sum up, factors influencing the scope and depth of follow-up in practice include the type of plan, sensitivity of the area, human and financial resources, and whether the SEA and/or PP is tiered to lower-level planning processes (Öko-Institut, 2002). Developing lists of relevant parameters for different types of PPs (e.g., a municipal energy plan, a regional transport plan) could be useful as guidance, but it remains important to recognise that SEA follow-up is context-specific. Perhaps more helpful is guidance on how the scope can be arrived at, and for this it was shown above that standard evaluation models could inform such principles and processes.
Integration with other processes

An issue related to scoping is whether economic and social effects should be considered, jointly with environmental effects. The key question is whether SEA follow-up should be integrated with any other monitoring and evaluation activities in relation to the PP. According to Therivel (2004, p. 180), “[w]here it makes sense to do so, SEA monitoring can be linked to monitoring of the strategic action or other monitoring systems, but such monitoring often focuses on inputs, not outcomes, and could thus be inappropriate for SEA”. In most other literature, however, integration is seen positively. Considering that SEA has evolved from a narrow focus on environmental impacts to more proactive and holistic sustainability inputs, this seems to be a natural development. “Sustainability assurance”, whereby economic, social and environmental effects are followed-up jointly, is the final new direction for ex post EIA identified by Arts and Morrison-Saunders (2004), in addition to area- and sector-oriented follow-up. Recent EIA follow-up studies have emphasised the need to consider also socio-economic effects in addition to biophysical (Morrison-Saunders and Arts, 2005, p. 172). Integrated ex post activities also make sense considering that an SEA may not identify specific environmental effects or define specific environmental objectives but instead introduce environmental conditions or limits on economic and social objectives and activities set out in subsequent activities (tiering).

An important issue related to integrated follow-up is the need to clarify and discuss possible goal conflicts inherent in the PP. These may be intra-environmental conflicts, or conflicts between environmental, economic and social objectives. If conflicting goals were set in a PP, a transparent SEA follow-up process should acknowledge them and examine how they have been dealt de facto with during implementation.

Establishing causal relationships

Perhaps the most difficult issue with SEA follow-up, as indeed with evaluation in general, is to establish causality. This involves both mapping out the causal chain and measuring the strength of causality. In an ideal world, this should be done both to ensure that intended (positive) effects were achieved, and to examine if the PP was the cause of unintended or negative effects. Common sources of causal complexity are: vague objectives, driving forces other than the PP on the relevant environmental parameters, changes and revisions to the PP after its adoption, overlapping PPs, and, of course, long and complicated environmental impact chains.

One approach is to simply not aim for establishing causality in the first place. Cherp (2005, p. 3) argues that “[i]t is reasonable to suggest that finding such causal links in most cases is both unfeasible and unnecessary. Moreover, looking for such
causal links is somewhat at odds with the increasingly widespread notion of SEA as focusing on objectives rather than impacts”. However, this is arguably counter to the whole purpose of follow-up, if it is to be something more than just a paper exercise of checking downstream documents for inclusion of environmental objectives. Even if the role of an ex ante SEA is primarily to set objectives rather than predict impacts, it is still relevant and desirable to examine whether measures in line with the objectives have been implemented and if they have had the desired effects.

An alternative approach to establishing cause-effect relationships is the two-track strategy (Arts and Morrison-Saunders, 2004). This involves measuring parameters early in the causal chain (e.g., emissions) and changes in the state of the environment (e.g., area-wide monitoring or complaint registration). If significant changes are observed, they could trigger more careful causal analysis. This suggestion was made for EIA follow-up, but the same principle could apply to SEA follow-up, i.e., starting at the two “ends” of the causal chains, working towards the “middle”, and looking for associations in parameter development. Partidario and Fischer (2004) suggest that a key task is also to decide on the boundaries of accepted evidence beforehand. Possibly, this could range from qualitatively mapping out the relationship, to measuring association in changes of the PP-related intervention variable (e.g., number of roads) and the impact variable (e.g., ground-level ozone damage on vegetation), to establishing and measuring the strength of causality (i.e., quantifying the partial effects of the PP and extraneous confounding factors) (see Rossi et al., 1999; Riksrevisionsverket, 1996; Gysen et al., 2002). As suggested above, for many PPs one may only reach the first of these levels, i.e., establish a “reasonable causal chain” in an analytical-narrative way, while for some policy measures it may be possible to quantify the causal effect.

Recognising these difficulties, what tools can assist in mapping out causal relationships? A useful tool extensively used in the environmental context is the DPSIR model. This model shows how a causal chain can be logically divided into elements and also implies that one DPSIR category can be used as a proxy for impacts (Maltais et al., 2002). Unsurprisingly, in practice, most often “Pressure” and “Response” indicators are monitored in environmental follow-up (Öko-Institut, 2002). In the policy evaluation literature, the “intervention theory” (or “programme theory”, “programme logic”) is used for the same purpose. A comprehensive theory should include an outcomes hierarchy, and for each output, impact and outcome in this hierarchy there should be (Funnell, 1997, in Rossi et al., 1999):

- success criteria and definitions of terms;
- factors that are within the control or influence of the program and are likely to affect the extent to which the outcome is achieved;

---

7DPSIR stands for Driving force, Pressure, State, Impact, and Response.
• factors that are outside the control or influence of the program and are likely to affect the extent to which the outcome is achieved;
• program activities and resources used to control or influence both types of factors;
• performance information required to measure the success of the program in achieving desired outcomes; and
• comparisons required to judge and interpret performance indicators.

A simpler version can be found in Vedung (1997, p. 140). Another useful guide to the logic of analysis in evaluation is the set of fourteen questions formulated by Weiss (1998, p. 273, Figure 12.1), or the model of the causal chain by the EEA (2001, p. 20, Figure 6).

Evaluation designs and statistical methods for establishing causal inference is of course an important part of the evaluation literature, but are not reviewed here. It has been noted that within environmental policy, experimental designs are not feasible (Bennear and Coglianese, 2005). Still, even quasi-experimental approaches will probably be difficult or infeasible in the PP context due to small populations (low n) and many variables.

Data collection

Whether formal statistical analysis of causality is conducted or not, all follow-up activities need to consider how to collect data matching the scope and what existing datasets can be used. The most straightforward case is when the monitoring and evaluation is limited to checking conformance of lower-level PPs with environmental provisions and objectives, when the data then consist of documents. However, in most cases data should be collected on parameters further down the chain of outcomes.

Existing data should be made use of, as emphasised both in the SEA Directive, EIA/SEA follow-up literature and in the few empirical case studies that exist. The “area-oriented” approach (see Arts and Morrison-Saunders, 2004) even suggests that existing data at a given scale should be the organising principle and determine the scope. Generally, preparing an inventory of appropriate existing national, regional and local datasets to assist evaluators would be a helpful first step. In the UK, the Environment Agency has in regards to the SEA Directive produced a list of existing national datasets relevant to the topics specified in Annex I (f) of the SEA Directive (e.g., biodiversity, population, water quality, landscape) (Environment Agency, 2005). The EEA has argued that environmental policy evaluation in Europe should also make use of the mandatory reporting to certain environmental Directives, and has compiled a list of these reporting mechanisms (EEA, 2001, p. 17).

Primary data are also likely to be required or useful in some monitoring and evaluation processes. Again, the evaluation literature is rich on advice for such data collection. Generic methods include document review, interviewing, focus
groups, questionnaires, direct observation, participant observation (Vedung, 1997; Weiss, 1998; Swedish National Audit Office, 1999). In the SEA follow-up context, longitudinal datasets are valuable. The evaluation literature also shows that use of several data sources is beneficial, by increasing the coverage of the outcomes hierarchy and possibly contributing to triangulation. For example, in their evaluation of policy instruments for pollution control in the Finnish pulp and paper industry, Hildén et al. (2002) used quantitative monitoring data on water quality, quantitative emissions data from permit records, qualitative interviews with policy-makers and industry representatives, and qualitative document analysis of historical emissions permits records for a sample of plants. However, evaluation practice is different from the literature: reviewing 21 policy evaluations, the Swedish EPA found that most of them used interview data, and only to a lesser extent were quantitative statistics used (Naturvårdsverket, 2004).

**Reporting, responding to and learning from SEA follow-up results**

A major weakness of the follow up aspects of the Directive is that it does not require any reporting. Revisiting the potential benefits of SEA follow-up (see above), it is obvious that they are not limited to simply collecting and presenting data and conclusions on the environmental effects of PP. Results also need to be effectively reported to relevant target groups and decision makers for some kind of reaction: continuation, modification, or termination of the PP.

There is extensive guidance in the evaluation literature on how evaluation reports can be prepared and formatted. Weiss (1998, p. 298) explains that it is important to shape the report after the main target group’s needs, but this needs to be compromised when there are different target groups involved and resources limited. Other lessons about effective reporting are that confidence levels of results should be communicated, generalisability should be addressed, and views of different stakeholders (not part of the evaluating team) can be included. There are also valuable lessons on dissemination of results. Different strategies can be used; intensive interpersonal interaction with practitioners, presentations to conferences, or use of intermediaries (e.g., the media, consultants and trainers, interest groups) (Weiss, 1998). The need for, and benefits of, dissemination within SEA follow-up depend on the character of the PP; community interest, potential for new knowledge and insight, and its scale, comprehensiveness and status. However, dissemination will typically be more effective the more stakeholders are involved in the follow up activities.

The EU guidance on SEA specified taking “remedial action”, while there is not corresponding requirement in the Directive. Such a rule would probably be difficult to define, but mandatory reporting in a more or less standardised format should increase the pressure and incentives for acting upon the results. However, taking
remedial action is only one aspect of utilisation of evaluation results. Other forms of utilisation include various learning uses, reconfirming existing beliefs, mobilising support, enlightenment (conceptual utilisation), and interaction utilisation (Vedung, 1997; Weiss, 1998). In a transport SEA follow-up context, one could imagine remedial action as re-routing a planned road project due to changed landscape features, and enlightenment as learning about general mobility patterns in the region.

According to Weiss (1998, pp. 310–314) there are two reasons why evaluation results may not be used or stimulate learning. First, organisational resistance can stem from the organisation’s survival imperative overriding program objectives, hostility towards new practices that do not fit with prevailing values, and a non-instrumental commitment to the program. Second, political constraints to giving attention to (in particular negative) evaluations can result from a competitive climate with other agencies, re-election motives of higher-level decision-makers, and general support of status quo. These non-utilisation and learning factors are deeply embedded in political and organisational structures, and are unlikely to be removed (Nilsson, 2006). In the SEA follow-up context, it is possible that the political sensitivity depends much on the PPP decision level and associated scrutiny, tangibility and visibility of impacts. A few general “remedies” have been suggested: presenting more cogent studies, increasing dissemination, and changing the expectations for utilisation (from instrumental use to enlightenment) (Weiss, 1998). Rossi et al. (1999, p. 436) suggest five guidelines for maximising utilisation;

- evaluators must understand the cognitive style of decision makers;
- evaluation results must be timely and available when needed;
- evaluations must respect stakeholders’ program commitments;
- utilisation and dissemination plans should be part of the evaluation design; and
- evaluations should include an assessment of utilisation.

In addition, stakeholder involvement throughout the process will increase transparency and decrease opportunities to ignore results.

**Conclusions**

There is a “post-decision impasse” in the world of environmental assessment, in that there is a lack of perceived reward from good follow-up by all parties, according to Morrison-Saunders and Arts (2004). However, the practice of SEA follow-up should have great potential to improve and spread in the near future, given the general benefits of monitoring and evaluation that include opportunities for knowledge generation and learning, higher public awareness, accountability, and closure of implementation gaps. The main challenges in comparison with EIA follow-up are
the level of abstraction and long impact chains. However, these are inherent features of strategic decision making. Another problem is that strategic decisions are (sometimes) less binding and may be symbolic rather than instrumental in nature, implying that follow-up may be perceived as less relevant and worthwhile. This might be a “chicken-and-egg” issue, though, as institutionalised follow-up procedures could be an incentive to implement and apply the PP to a greater extent and in a better way.

Given the barriers to effective SEA follow-up, an important way to enhance practice is to develop more guidance and systematic learning-from-doing. The SEA Directive is a starting point by introducing a requirement to monitor (Article 10) and providing some guidance on how it can be organised (European Commission, 2003), but it leaves several issues unresolved. A significant weakness of the SEA Directive is that it does not stipulate any remedial action to be taken in response to monitoring, and even reporting of the results is not required. A standardised format and procedure for reporting could thus be a key element to add in national guidance on SEA follow-up. Related to reporting, valuable lessons can be learnt from evaluation research on dissemination and utilisation of results. If not solving problems of organisational resistance and political constraints to learning from evaluation, increasing awareness about them could help the achievement of appropriate and effective follow-up designs.

Based on a theoretical exploration, a number of other key conclusions can be drawn for a future framework of methods and tools for SEA follow-up. First, national competent authorities need to resolve which organisations should be responsible for monitoring and evaluation. There are benefits of both internal and external evaluation, and the approach should be selected with the purpose of the evaluation in mind. Second, there is an important difference between monitoring and evaluation, in that the latter may call into question assumptions of an intervention and can more freely choose criteria for judging the outcomes. We argue that the strategic element of *ex ante* SEA should be reflected also in the follow-up stages, by allowing such scrutiny of underlying assumption in light of the plan or programme outcomes. Third, the appropriate scope for monitoring and evaluation activities cannot be generally determined, given the diversity of interventions subject to SEA. However, the evaluation literature provides useful models for how decisions on scope, or evaluation questions, can be made, such as the goal-achievement model, stakeholder model, etc. Fourth, and related to the scope of the evaluation, integration with evaluations of economic and social aspects of a PP is useful, but possible goal conflicts need to be elucidated in such an integrated approach. Fifth, establishing causality is a particular problem in SEA follow-up. This is also a core concern in evaluation research, where the “intervention theory” has been developed as a heuristic to qualitatively or quantitatively analyse the causal chain. Sixth, an important piece of
guidance for data collection in SEA follow-up would be to compile inventories of existing environmental monitoring and other relevant datasets at the national level.

As noted by several authors, the next step in SEA follow-up is now to learn from practice. The infeasibility of a “one-size-fits-all” approach, in terms of purpose, procedure and methodology, has been clearly established. An important contribution would now be to find out which particular monitoring and evaluation approaches and tools are useful in which particular settings, for instance with respect to the nature of the PP, the institutional context, and resources available.

Acknowledgements

This paper is based upon research undertaken within the MiST research programme (see www.sea-mist.se), funded by the Swedish EPA. An earlier version of this paper has been published in a MiST anthology of papers: Emmelin, L. (ed) (2006). Effective environmental assessment tools: Critical reflections on concepts and practice. Blekinge Institute of Technology, Research report No 2006:03. The authors are grateful for comments on the paper by other programme participants.

References


Swedish Government Regulations


Plan- och bygglagen (1987:10) (*Planning and Building Act*).


