

Theory versus practice in Strategic Environmental Assessment (SEA)



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ARTICLE INFO

Article history:

Received 14 June 2013

Received in revised form 14 April 2014

Accepted 20 April 2014

Available online xxxx

Keywords:

Strategic Environmental Assessment

Sustainability

Decision-making

Planning process

Policy process

ABSTRACT

Could the theory of Strategic Environmental Assessment (SEA) be ahead of its time and decoupled from its practice? This paper evolved in search for this leading research question. Over the years the discourse on SEA experienced a gradual shift from the technocratic and rationalist thinking that supported its origin to more strategic approaches and integrated concepts, suggested since the mid 1990's. In this paper we share the results of our analysis of international thinking and practical experience with SEA. Results reveal that SEA practice changes very slowly when compared to advanced thinking supporting the noted shift. Current SEA practice shows to be still predominantly rooted in the logic of projects' environmental impact assessment (EIA). It is strongly bound to legal and regulatory requirements, and the motivation for its application persists being the delivery of environmental (or final) reports to meet legal obligations. Even though advanced SEA theoretical thinking claim its potential to help decisions to look forward, change mind-sets and the rationale of decision-making to meet sustainability challenges and enhance societal values, we note a weak relationship between the theoretical development of SEA and its practice. Why is this happening? Which factors explain this apparent inertia, resistance to change, in the SEA practice? Results appear to demonstrate the influence of assumptions, understandings, concepts, and beliefs in the use of SEA, which in turn suggest the political sensitivity of the instrument.

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Introduction

Strategic Environmental Assessment (SEA) has evolved significantly over the past 25 years. SEA started by extending the concepts and practice of project's Environmental Impact Assessment (EIA) to similarly address higher levels of decision-making (Lee and Walsh, 1992; Lee and Wood, 1978; Théritel et al., 1992; Wood and Dejedour, 1992), following what Lynton Caldwell called "the anatomy of rational policy-making: analysis-assessment-decision" (Caldwell, 1991).

Progressively, as SEA evolved, it was recognized that there was a need for more proactive and strategic approaches (Bina, 2007; Nilsson and Dalkmann, 2001). Earlier advocates (Boothroyd, 1995; Clark, 2000; Partidário, 1996, 1999) argued on the need for SEA to address the policy and institutional framework, serve sustainability drivers, and integrate societal values in decision processes, suggesting that SEA must act directly upon the process of formulation and development of policies, plans, and programmes (PPP), in order to increase the capacity

of influencing decision priorities and facilitate environmental and sustainability integration in decision-making (Caratti et al., 2004; Kørnø and Thissen, 2000; Partidário, 2004; Sheate et al., 2001). Such evolution in the SEA discourse was paralleled by the expansion of multiple SEA interpretations, well captured by Silva et al. (2014), multiplying the apparent spectrum of SEA approaches (OECD-DAC, 2006). Those multiple SEA approaches created new challenges, some claiming the need for new practices of SEA beyond the simple analysis and reporting of information on the environmental consequences of decisions being made.

Despite this growing effort towards a distinct conceptual approach in understanding and applying SEA, evidence available suggests that SEA is still largely practised according to a projects' EIA philosophy (Dalal-Clayton and Sadler, 2005; Sadler et al., 2011). Tetlow and Hanusch (2012) quote Verheem and Dusik (2011) to say that "SEA is still practised as a largely 'EIA based' tool" (Tetlow and Hanusch, 2012: 17), and elaborate on the schools of thought that have influence the development of SEA: the modernist, rational planning traditions, dominated by positivism, and the post-modern, post-positivist and collaborative planning theory, that recognize the need for decision-making processes to adapt to environmental, social, economic, cultural and political contextual factors. These schools had been previously recognized in Partidário (2000).

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In this paper we postulate that perhaps the theory of SEA seems to follow a different direction relative to its practice, also as suggested in Partidário and Cashmore (in press)! While it is not unusual that theory is ahead of practice, it seems that, in this case, an unusual gap exists. So we ask: Could the theory of SEA be ahead of its time and decoupled from its practice? This paper is structured in three research goals. The first goal is to empirically recognize that a gap exists and the second goal is to explore why there is a gap. What factors can justify that SEA practice keeps on the track of EIA? Is there a problem of communication, of institutional resistance to change, or of inertia in the adoption of new concepts in the practice of SEA? What may be the prevailing factors in the application of SEA that impede its practice from becoming more adjusted to its theory? Finally a third research goal is to question whether it will be possible to revert the situation, and to bridge this gap. This paper shares the results of an investigation exploring these questions and aims to contribute empirically based reasons to address why there is a gap between the practice of SEA and its theoretical development. Finally the paper suggests forms that may help to bridge the gap.

Table 1
SEA cases analysed by country.

Country	Number of cases analysed
<i>Africa</i>	
Ghana	1
Mauritius	1
Namibia	4
Sierra Leone	1
South Africa	8
Zambia	1
<i>Asia</i>	
Bangladesh	1
China	2
Vietnam	4
<i>Europe</i>	
Austria	2
Bulgaria	1
Cyprus	1
England	10
Georgia	2
Gibraltar	1
Greece	1
Hungary	3
Ireland	6
Maltese Islands	1
Montenegro	2
North Ireland	2
Poland	1
Portugal	6
Romania	1
Scotland	5
Slovenia	2
Spain	4
United Kingdom	3
<i>Latin America</i>	
Bolivia	3
Brazil	4
Chile	1
Colombia	2
Costa Rica	1
El Salvador	2
Dominican Rep.	1
<i>North America</i>	
Canada	5
<i>Oceania</i>	
Australia	4

Table 2
Number of cases analysed by development sector and decision level.

Sectors	Policy/ strategy	Planning	Programme	Total
Energy	12	5	9	26
Spatial planning	2	18	0	20
Transport	1	6	2	9
Cross-border cooperation	0	4	1	5
Natural resources management	1	2	1	4
Watershed management	0	4	0	4
Mining	2	1	0	3
Fisheries	1	2	0	3
Coastal planning	1	2	0	3
Waste management	2	1	0	3
Water treatment and drainage	1	1	1	3
Management of natural areas	0	2	0	2
Agriculture	0	1	1	2
Socio-economy	1	0	1	2
Forest	1	0	1	2
Tourism	1	1	0	2
Climate change adaptation	0	1	0	1
Competitiveness	0	0	1	1
Housing	1	0	0	1
Management of ecological resources	1	0	0	1
Public health	1	0	0	1
Rural development	0	0	1	1
Multisectoral	1	0	0	1
Total	30	51	19	100

Research methodology

The research methodology is structured around three main analytical components:

- I. *Analysis of development trends in SEA*, including the evolving discourse and the role given to SEA in decision processes. This analysis supports the founding premise that a gap exists. A comprehensive and systematic review of scientific articles and other materials published in the last 15 years was conducted for that purpose.
- II. *Empirical analysis of recent SEA practice*, reviewing 100 SEA cases conducted between 2007 and 2012, including cases in Europe (54), Africa (16), Latin America (14), Asia (7), North America (5), and Oceania (4) (Table 1). The purpose with this selection of cases was to ensure practices from across the world were sampled, and not to obtain representative reviews from different regions. In addition we wanted to cover a wide range of decision levels and development sectors in which SEA has been applied (Table 2). The material analysed consisted mainly of environmental reports (available online), in addition to articles published in conference proceedings of the International Association for Impact Assessment (IAIA). Every case was analysed according to a framework of analysis modified from the approach developed by Partidário et al. (2009). A framework of ten assessment criteria, summarized in Table 3, was used in this empirical review to help validate the founding premise that a gap exists.
- III. *Analysis of perceptions of SEA* through the eyes of 73 professionals (specifically consultants (24), decision-makers (21), and environmental technical officers (28)) that participated in a survey conducted between 2010 and 2012. A short questionnaire was sent out including open and closed questions, designed to address five key aspects to help understand how SEA is applied, namely: 1) the purpose and role of SEA, 2) the direct contribution of SEA to PPP formation, 3) the object of assessment¹ in SEA, 4) the scope of assessment in

¹ By "object of assessment" we refer to what Partidário (2003) defined as what SEA is expected to assess, what SEA activities focus on, and that SEA is intended to directly and indirectly influence.

Table 3
Framework for reviewing SEA practice.

Assessment criteria	Key-question	Category
1. SEA concept	• What was the purpose and role of SEA?	1. Delivering sustainable development at a strategic level 2. Validating the environmental quality of PPP proposals 3. Identifying and communicating the potential environmental consequences of PPP proposals
2. Object of assessment	• What was assessed?	1. Strategic objectives 2. Strategic options 3. Proposed model 4. Scenarios 5. Alternatives 6. Measures or actions
3. Entry point	• At what stage of planning did SEA start?	1. Visioning and establishment of strategic objectives 2. Scenario building 3. Choosing of strategic options 4. Specific development proposals
4. Strategic reference framework	• How was the strategic reference framework defined and used?	1. Used in the assessment 2. Only identified 3. Ignored
5. Interactivity	• What was the degree of integration and feedback between assessment and planning activities?	1. High 2. Medium 3. Low
6. Scope of assessment	• What was the scope of assessment?	1. Holistic and integrated 2. Social + biophysical + economic + political 3. Physical and territorial
7. Tools and Techniques	• What kind of tools and techniques were prioritized during diagnosis and assessment?	1. Favoured tools to deal with uncertainty, complexity and value commitment 2. Favoured tools to deal with a deterministic (causal) approach
8. Uncertainty	• Were uncertainties recognized explicitly and dealt with adequately?	1. Integrated into analysis 2. Only identified 3. Ignored
9. Participation	• What was the degree of participation?	1. Enlarged and in an inclusive way 2. Strict legal fulfilment 3. Punctual 4. No participation
10. Follow-up	• What was the focus of guidelines for follow-up?	1. Guidelines for governance, planning, and management 2. Only environmental impact monitoring 3. No follow-up guidelines were designed

Source: Modified from Partidario et al. (2009).

SEA, and 5) the methodological tools used in SEA. The questions are shown in detail in Table 4. The universe of people who were asked to participate in the survey was defined considering the organizations and institutions involved in some of the cases analysed, and participants in recent annual conferences of IAIA. The geographic distribution of the 73 respondents to the survey is available in Table 5.

Results

The conceptual evolution of SEA

The influence of the technical-rational² paradigm

It is recognized that environmental assessment has been strongly influenced by the rationalist school of thought that emerged in the 1940's and dominated development processes in the second half of the twentieth century (Cherp et al., 2007; Kørnøv and Thissen, 2000; Nelson and Serafin, 1995; Nilsson and Dalkmann, 2001; Richardson, 2005; Tetlow and Hanusch, 2012; Weston, 2000). The core of the technical-rational paradigm (Elling, 2009; Owens et al., 2004) is led by a strong focus on identifying and setting objectives, and then developing and implementing appropriate means to achieve them; public decisions should be based on objective data; there is a logical deductive analysis; and a systematic comparison of alternatives drawing upon scientific analysis. EIA was generated in this context, as a technical-scientific analysis instrument, to "objectively" inform the decision processes,

through prediction and analysis of the environmental consequences of different development alternatives.

This environmental assessment thinking has strongly influenced SEA foundations that emerged to expand EIA to apply to programmes, plans and policies, an understanding that still persists in current SEA reports, related literature (see for example De Montis, 2014; Fischer and Onyango, 2012; Li et al., 2014) and in national, regional and sectoral guidance (see for example UK Environment Agency, 2014; APFM, 2014, as well as European Commission, 2005). The sentence "... the term 'strategic environmental assessment' (SEA) has been in use for the environmental assessment of policies, plans and programmes above the project level ..." (Fischer and Onyango, 2012: 253) is still in some recent literature and recurrent in SEA reports and guidances. SEA inherited EIA assumptions, as well as concepts and terminologies (see for example, Lee and Wood, 1978; Thérivel et al., 1992; Wood and Dejedour, 1992). The process model of screening-scoping-reporting-review-decision-follow-up, with some variations, is widely used to express both EIA and SEA processes, revealing the technical-rationalist model and thinking philosophy.

SEA was originally conceived as a technical instrument, its purpose being to provide decision-makers with "reliable information" (i.e. scientifically produced) to formulate decisions in a rational and objective way, as critically analysed by Nilsson and Dalkmann (2001). This would be accomplished mainly through an analysis of the environmental consequences of a proposed action (i.e. policies, plans or programmes – PPP) and the communication of its results through "passive" participatory mechanisms (Bartlett and Kurian, 1999; Glasson et al., 2005; McDonald and Brown, 1995; Weston, 2000). According to this rationalist paradigm EIA and SEA practitioners are expected to be neutral experts (i.e. value-free) in charge of gathering, compiling, and analysing the data which, in turn, and

² By "rational" in this context was meant both a form of deductive logic, and the use of instrumental reason as a form of argument, drawing upon scientific analysis.

Table 4

Questionnaire applied to the analysis of perception of SEA.

1. What do you think should be the ultimate end of SEA (its *raison d'être*)?

2. What do you think should be the contribution of SEA in the formation of policies, plans or programs?

3. Specifically with regard to the object of assessment of SEA, which of the following alternatives is closer to your understanding of the role of SEA?

To assess the strategic drivers and challenges identified through objectives and agenda setting

To assess the proposed policy concept / territorial model / programme agenda

To provide substantive environmental inputs to the policy/planning/programme baseline and assess proposed actions

To assess development proposals based on a detailed environmental baseline and suggest mitigation measures

Other:

4. In your opinion, what should be the focus of assessment in SEA?

To protect and enhance the natural environment (biophysical environment), addressing the *environmental sustainability*

To address the interrelationships of biophysical, social, and economic aspects (i.e. the “triple bottom line” interpretation of sustainable development)

To address the interconnectedness of sustainability through new integrated dimensions

5. Prioritise the most frequent tools/techniques (up to five) that your team typically use for the development of SEA (or that you think should be used)

<input type="checkbox"/> Impact matrix	<input type="checkbox"/> Checklists	<input type="checkbox"/> Cross impact analysis	<input type="checkbox"/> Scenario analysis
<input type="checkbox"/> Multi criteria analysis	<input type="checkbox"/> Sensitivity analysis	<input type="checkbox"/> System modelling	<input type="checkbox"/> Causal-effects analysis
<input type="checkbox"/> SWOT analysis	<input type="checkbox"/> Mind maps	<input type="checkbox"/> Workshops	<input type="checkbox"/> Expert opinions
<input type="checkbox"/> Cost benefit analysis	<input type="checkbox"/> Risk assessment	<input type="checkbox"/> Trend analysis	<input type="checkbox"/> Compatibility appraisal
<input type="checkbox"/> Policy/planning options	<input type="checkbox"/> Economic valuation	Other: _____	
<input type="checkbox"/> Network analysis			

once reported, decision makers should use to make public decisions. This suggests a strict separation of fact from value (Latour, 1993), with values seen as originating from within the political process. Environmental analysis is expected to happen in a defined “action space”, separated from the political and institutional context where broader development goals are established.

Many authors have critically discussed the influence of this model in the practice of environmental assessment, and in particular in the shaping of SEA (Kørnøv and Thissen, 2000; Nilsson and Dalkmann, 2001; Owens et al., 2004; Runhaar and Driessen, 2007). Owens et al. (2004) for example discuss the old technical–rational model of appraisal and its relationship with the deliberative model, suggesting that the “shortcomings of traditional conceptions of appraisal have proved theoretically, politically and practically inadequate” (Owens et al., 2004: 1944).

Despite these alerts, dominant assumptions of the technical–rational model, summarized in Box 1, are still driving practice in development processes and, as it will be shown ahead, can still be observed in the practice of environmental assessment.

Shifting dominant paradigms

A new look into SEA is making its way, calling on new and different challenges, which can be reflected in a wide variety of activities not limited to the simple analysis and information on the environmental consequences of a decision. During the last 10 years we have witnessed a crucial evolution in the theoretical construction of SEA, as a result of a constant debate around the scope and meaning of *strategic assessment* and the need to influence the decision processes (see for example, Bina, 2007; Cherp et al., 2007; Kørnøv and Thissen, 2000; Nilsson and Dalkmann, 2001; Partidário, 1999, 2007; Wallington et al., 2007).³ Tetlow and Hanusch (2012) recognize this evolution when stating that “it can be surmised that SEA has evolved from a largely EIA-based and responsive mechanism to a far more proactive process of

³ Wallington et al. (2007) suggest three levels to understand the discussion in SEA, a suggestion which has triggered the variety of current discourses: (1) the substantive purpose and values associated with SEA, (2) the strategies chosen to achieve that purpose, and (3) the mechanisms for operationalizing SEA.

Table 5
Distribution by respondents' countries for the analysis of perception of SEA.

	Decision-makers	Environmental technical officers (ETO)	Environmental consultants
<i>Africa</i>			
South Africa		2	1
Nigeria	1		
Mozambique	2		
<i>Asia</i>			
China	2	2	
Philippines		1	1
Pakistan			1
Mongolia			1
Lebanon		1	
<i>Europe</i>			
United Kingdom	2		3
Portugal			2
Spain		1	1
Netherlands	1		
Austria	1		
Denmark			1
Italy		1	2
Switzerland	1	1	
Czech Republic		1	
Norway		1	
<i>Latin America</i>			
Colombia	2	3	1
Mexico	1	4	1
Chile	4	4	2
Brazil		2	
Costa Rica		1	
<i>North America</i>			
Canada	3	2	4
United States			1
<i>Oceania</i>			
Australia	1	1	2

developing sustainable solutions as an integral part of strategic planning activities" (Tetlow and Hanusch, 2012:17).

Although there are still major controversies surrounding the assumptions and understandings that underlie the "how SEA should work", there is a notable shift in dominant paradigms that require a different decision culture, showing signs of change from a rationalist to a more deliberative culture of thought. The conceptual understanding of

Box 1

Technical–rational model dominant assumptions in environmental assessment.

- Decisions are made by a single and central agent (decision maker) through an explicit, organized, and structured sequence of stages. There is a clearly defined decision making process.
- It is possible to predict the consequences of decisions with a reasonable degree of certainty and therefore to decide on the best course of action on the basis of those predictions. A linear causal relation between human action and environmental impact is assumed in the analysis of consequences.
- There are two well-separated dimensions in the decision process: a technical dimension and a decisional dimension. To provide information on the analysis of consequences of a decision is enough to make "better" decisions.
- The only useful (legitimate) knowledge to inform the decision is that which has been "scientifically" produced. Careful analysis and systematic evaluation is required, where the environmental analyst is committed to the values of scientifically-based and rationally-deduced policy choices.

the nature of SEA evolved thanks to changes in theory and practice, around four key aspects to its implementation:

- The need for further flexibility and adaptability to deal with complex decision arenas
- The importance of implementing a process-oriented assessment rather than product-oriented assessment
- The potential to strengthen the institutional and governmental capacities that support PPP processes
- The contribution to the collaborative and constructive dialogue in planning processes

The following paragraphs discuss these aspects and allow a critical observation on the evolution of SEA.

Flexibility and adaptability to deal with complex "decision arenas". A vital element in the academic debate has been the recognition of the need to incorporate policy analysis, planning theory, and social learning theory into the conceptual understanding of SEA (e.g. Cherp et al., 2007; Kørnø and Thissen, 2000; Lawrence, 2000; Nitz and Brown, 2001; Richardson, 2005). The *political nature* of decision-making, acknowledged by several authors (for example Feldman and Khademian, 2008; Kørnø and Thissen, 2000; Nilsson and Dalkmann, 2001; Runhaar and Driessen, 2007) parallels the difficulty to proactively describe the decision processes as required by the technical–rational paradigm (Feldman and Khademian, 2008).

The idealized vision of the planning process as an intellectual design activity, structured and carried out in a direct way by a central actor, has been progressively replaced by the idea of an interactive, dynamic, and complex process (Allison, 1971; Cobb and Elder, 1983; Kingdon, 1984; Lindblom, 1965; Lindblom and Cohen, 1979; March and Olsen, 1979; Pressman and Wildavsky, 1984). Complex societal problems (or "wicked problems" in the words of Rittel and Weber, 1973) are not solved in a social vacuum by the autonomous cognitive–analytical exercise of a central actor. Problem solving takes place in a "decision arena" in which mutually dependent actors pursue a solution through negotiation and strife (Kickert et al., 1997; Koppenjan and Klijn, 2004; Sabatier and Jenkins-Smith, 1993). This has reinforced the idea that planning processes are far from being structured, straightforward, and foreseeable processes, as assumed in the rational planning paradigm. By contrast, planning processes are zigzag and erratic. Information, means, and objectives are exchanged between multiple actors within these processes, and collective outcomes are incrementally achieved.

In this context, different researchers have underlined the importance of addressing the *context* within which SEA takes place (e.g. Audouin and Lochner, 2000; Bina, 2003; Hildén et al., 2004; Hilding-Rydevik, 2002; Hilding-Rydevik and Bjarnadóttir, 2007; Partidário, 1999) and, consequently, the need to adopt flexible and adaptable processes as fundamental conditions for an effective integration and influence of SEA in the "*real decision-making*". It has been suggested that the administrative and institutional dimension of the planning processes (in the context of the cultural and political characteristics of the setting) should significantly influence the purpose, the method, and the effectiveness of every SEA. According to Bina (2008), those who want to propose an SEA must develop the ability to adapt the components of an SEA to the planning, formulation, and decision-making activities that already exist, these being important requirements for understanding the dynamics, tools, and the protocol of each planning process. Partidário (2007) advanced a strategic-based concept and model for SEA which assumes the need to adapt, flexibly, to the realities of decision-making.

Process-oriented assessment instead of product-oriented assessment. The recognition of the complex nature of the PPP formulation processes, as well as the inherent problems and challenges, may question the

pertinence of the “information-provision” model of SEA and, conversely, may have increased the value of its “transformative” potentialities (Cashmore et al., 2008). In the last few years we have witnessed a slow but gradual agreement on the need to take advantage of SEA and its capacity to operate as a positive constructive force in policy formation, contributing to efficiency, legitimacy, and general quality in decision-making (Partidário, 2000).

The need to redirect SEA towards a process-oriented assessment, instead of product-oriented assessment is evident for almost two decades (Nilsson and Dalkmann, 2001; Partidário, 1996). Subsequently, various scholars have called on the need to change focus in SEA, moving from environmental impact assessment to direct attention into the strategic decision processes as the *object* of analysis and reflection (e.g. Bina, 2003; Dalkmann et al., 2004; Jiliberto, 2004; McDonald and Brown, 1995; Partidário, 1999).

According to the strategic thinking approach advanced by Partidário (2000, 2007), the SEA process can be structured around key activities that operate throughout the planning process. These activities include working with the planning process to establish a clear vision of what the desired future is, and the associated policy and planning development objectives to be met. A key role of SEA is to integrate environment and sustainability issues with these development objectives, generating what Partidário (2007) named the Critical Decision Factors, a strategic assessment framework to help enhance sustainable decisions.

Governance and learning processes. Similarly, there seems to be some agreement as to the relationship between SEA and context factors (such as institutional, administrative, cultural, and political factors) being “bi-directional”. SEA must not only adapt itself to its context, but must also affect the way decisions are taken, contributing to long-term changes in values, worldviews, conducts, and behaviours of actors and institutions (Bina, 2003; Caratti et al., 2004; Cashmore et al., 2008; Jiliberto, 2002; Partidário, 1999, 2007; Stoeglehner et al., 2009). In that sense, there has recently been a significant recognition of the potential of SEA in strengthening the institutional and governmental capacities that support decision processes, emphasizing the learning and continuous improvement in the design and implementation of public policies (Ahmed and Sánchez-Triana, 2008; Bina, 2003; Jha-Thakur et al., 2009; OECD, 2006; Owens et al., 2004; Partidário and Sheate, 2013; World Bank, 2005, 2011). This means that SEA may facilitate organizational learning, and may possibly change dominant values within an organization, influencing what lies behind the formulation and adoption of more environmental and sustainable policies and plans. This is an important part of what we understand as the strategic role of SEA in increasing attention to environmental priorities, by strengthening stakeholder constituencies, contributing to enhancing the capacities of institutions to respond to environmental priorities and improving overall trajectories for sustainability.

Socio-political collaborative and constructive approaches. The recognition that planning processes are socially interactive processes, dealing with decision problems of high uncertainty and conflict in relation to content, causes, effects, and solutions (Teisman et al., 2009), has gradually pushed SEA potential to contribute to collaborative dialogues in planning processes (Connelly and Richardson, 2005; Fitzpatrick, 2006; Sinclair et al., 2008; van Buuren and Nooteboom, 2009). As such, in the context of the usual fragmentation of planning responsibilities and lack of communication across different sectors, it is believed that the dialogues enabled by SEA could contribute to improve the quality of decision processes, leading stakeholders to work together collaboratively when taking decisions (Partidário and Sheate, 2013).

From this point of view, SEA can be seen as an instrument with the capacity of promoting dialogues among actors that are participating in decision processes, enabling not only information sharing, but also the contribution of multiple perspectives and wisdoms to the establishment of inclusiveness and the promotion of democratic values, what Sheate

and Partidário (2010) refer as the knowledge brokerage potential of SEA (see also Partidário et al., 2009 for concrete applications).

Current practice in reported SEA

The analysis of recent practice in SEA involved the review of 100 cases developed worldwide over the last 6 years. The purpose of the analysis was to understand whether SEA had been applied in line with recent theoretical trends, as discussed earlier, or whether it had been applied in accordance with the EIA projects' principles and philosophy. Consequently, it was not our aim to analyse each case in detail, but to generally analyse the use of SEA according to the review framework and criteria designed for this purpose (see Table 3). Results achieved with this analysis are shown in Fig. 1. The following sections provide insight into each criteria analysed.

SEA concept

Key to understand the role that SEA plays in a strategic assessment process is the concept practitioners attach to SEA. In most cases analysed the definition of SEA is clearly explained in the reports, with references to scientific literature or particular policies. In 67% of the cases it is directly or indirectly explained that the SEA role is to identify and communicate (to planners) the potential environmental consequences of the courses of action to be found within the PPP proposals. This point of view stresses the informative role of SEA based on expected changes predicted in the behaviour of certain socio-environmental factors, which will support suggestions to decision-makers for modifications to the final PPP report. This point of view on the informative role of SEA underestimates the role SEA can play throughout the formulation process to shape the PPP design and final proposal, which is impossible to happen at the end of the pipeline unless major effort and costs are undertaken to enable the required changes.

Object of assessment (OA)

The object of assessment (OA) is what is going to be assessed.⁴ The more strategic the OA will be, the greater the potential to strategically influence the decision-making process. One of the underlying assumptions in strategic approaches in SEA is that options should be the key object of strategic assessment (Partidário, 2007). In 53% of the analysed cases the OA of SEA consisted basically of measures (actions) of the PPP to be implemented, ignoring any previous strategic dialogues. In 30% of the cases SEA assessed objectives and strategic options, however SEA was still not part of the strategic dialogues, there was no direct involvement of SEA in the formulation of the options. SEA was used to technically evaluate the environmental consequences of decisions which had been previously taken, in order to make the PPP environmentally sounder. This suggests that SEA is missing to take full advantage of its capacity to strategically influence the strategic direction of PPPs, or the decision-making process itself. This probably results from the late integration of SEA into the planning process, once the planning objectives and strategic options have already been defined.

Entry point

In most cases (72%) SEA is brought into the decision-making process once the PPP has been drafted. In other words, once a number of important (strategic) decisions related to the PPP have already been made. In these cases SEA generally evaluates specific development proposals (e.g. development alternatives, implementation mechanisms, territorial models, etc.) and prepares a document (report) which is subject to approval by a specific public body. On 12% of the cases SEA is introduced at a very early stage of the decision-making process, taking part of the discussion associated to the definition of strategic aims, and more able to influence the development alternatives to be formulated. Many of these cases correspond however to studies carried out before the initiation of the formal drafting of PPP, often to diagnose and establish a strategic reference framework for planning.

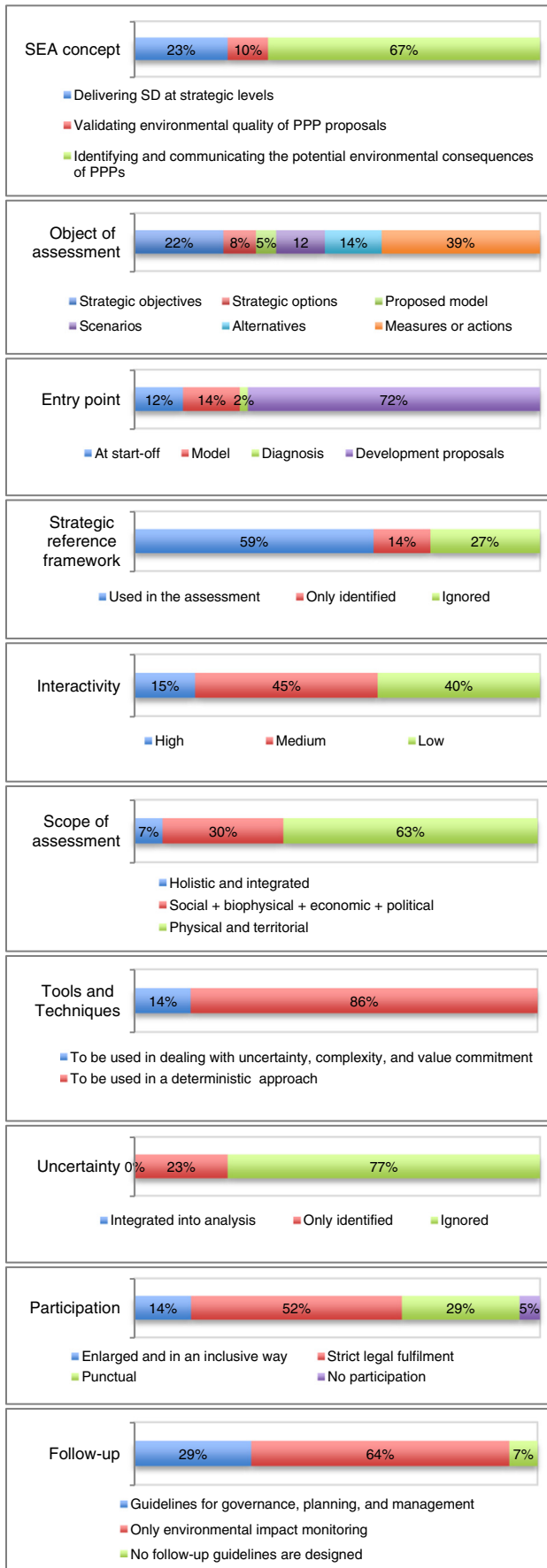


Fig. 1. Results of case analysis.

Strategic reference framework (SRF)

Defined by Partidário (2007) the SRF is a key activity in strategic thinking SEA for setting the policy context, or the referential for the strategic assessment in PPP processes, through the recognition of long-term macro-policies objectives and targets that set strategic direction for SEA. In Europe the European Directive requires plans and programmes environmental assessment to consider all environmental protection objectives, established at international, community or member state level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation". Most of the analysed cases (59%), while not naming it, use some form of SRF within their assessments, mainly on the basis of a PPP review which establishes relevant political orientations for the assessed object, or which are legally required. However, there is a significant number of cases (27%) without any type of SRF. This happens mostly in countries where SEA is not legally required.

Interactivity

The interconnectedness between SEA and planning is crucial for the success of both processes. Practice reveals that the tendency is for both processes to run partially, or even completely, separated from one another. But in terms of teamwork and report preparation the connection and degree of interactivity between the two processes can make a substantial difference to the extent SEA will influence the PPP. This is a very difficult aspect to evaluate through simple review of environmental reports to ensure trustworthy evidence on the degree of interactivity between planning and assessment processes. Because of difficulty in creating such evidence 37 cases were considered to be simply "without enough evidence" in this research. On the other hand, among the cases in which evidence was found, and amenable to qualification of the interactivity, 40% of the cases showed low interconnection. This suggests that SEA was carried out in parallel to the decision-making process with very little, if any, integration. In most of these cases SEA interacted with the planning process through the preparation of partial reports (e.g. scoping reports) at particular points during the process. However, no evidence was found of an effective communication or coordination between processes. It is important to point out that in a minority of the cases (15%) there was evidence of a strong interaction between the planning and assessment tasks through a systematic and effective link, showing that SEA has the potential to accompany the decision-making processes from the beginning. Such evidence is manifested in two ways in the reports: alluding to concrete joint activities between the assessment and planning teams, and/or through signs that show the influence of the assessment at specific stages of the planning process.

Scope of assessment

As argued in recent SEA literature, the scope of SEA is expected to include biophysical, social, economic and institutional aspects in an integrated and holistic way. However, the prevailing practice in SEA shows that whenever the assessment is focused on the identification/valuation of impacts on environment, the scope of the assessment is significantly restricted to the biophysical aspects of the environment. This happens in 63% of the studied cases. This shows noticeable concern with tangible and observable issues, associated to symptoms, what is usually referred to as "environmental problems". This situation is more evident in territorial SEA planning instruments, particularly in Europe. When SEA is used to assess initiatives which do not have direct territorial materialization (e.g. strategies related to public health, international commerce, etc.) and/or aim at the assessment of development conditions, the use of broader and more systemic approaches in relation to environmental and sustainability issues is more frequent. However, in these cases (30%), there is an important deficit in the integration of biophysical, social, institutional, and economic aspects. It has been argued that SEA should be concerned with the strategic issues that underline the origin of problems (Partidário, 2007), however that practice is still quite reduced.

Methods, tools and techniques (M,T&T)

SEA is not carried out on the basis of a single method or tool. According to the reviewed cases, combinations of various methods, tools, and methodologies are used to carry out assessment activities and assist decision makers. Techniques used in SEA analysis depend on the practice and experience of the assessment and planning teams. However, they are also a good indicator of the professional background and ideological focus of the SEA practitioners. According to the cases observed in this study, 86% predominantly use deterministic analysis M,T&T strongly based on the detailed description of environmental factors and on the prediction of environmental effects based on the establishment of cause and effect relationships. Most of the used M,T&T are founded in the traditional systems' analytic approach which emphasize the importance of formal (quantitative) modelling, rational planning, and cost-benefit analysis (in other words, the traditional dominance of "hard facts"). Only in 14% of the cases M,T&T are used for strategy making in complex, dynamic, and uncertain settings. The use of the participatory type of policy/planning analysis is evident in situations where PPP are the product of complex interactions between government and non-governmental actors, each seeking to influence the collectively binding decisions that have consequences for their interests. Methods used in these cases stimulate and improve cooperation, communication, collective learning, and viewing the problem from many perspectives (e.g. multi-stakeholder deliberation, consensus conferences, agent based modelling, gaming/simulations).

Uncertainty

Uncertainty associated to assessments and predictions underlining policies and planning have been widely recognized as critical. A central notion is that the available knowledge base for decision-making on environmental risks, in the context of sustainable development, is characterized by an imperfect understanding of the complex systems involved. In this context, it becomes essential that both planners and decision analysts explicitly take into account the uncertainties and dynamics of the problem being addressed, by creating PPP that respond to changes over time and that make explicit provisions for learning. The cases analysed in this study show that uncertainty is generally ignored. In 77% of the analysed cases issues related to uncertainty were not even mentioned as important. On the other hand, in 23% of the cases uncertainty is recognized as an issue that could affect the result of assessments, however this aspect is not integrated in the analysis. In other words, none of the cases analytically address uncertainty in the assessment.

Participation

Recognizing that drafting and implementing PPPs is the result of the interaction between actors who usually have divergent interests, aims, and strategies, is to recognize the importance of the collaborative processes during SEA and the development of PPP in order to reduce conflicts and facilitate win-win results. Through this analysis it was noticed that participation is generally limited to a strict consultative character. Conformity to legal compliance is common in countries where there is a SEA legal framework (e.g. European Union), with participation often restricted to public institutions responsible for the legal quality-verification process of SEA, to various public and private interested organizations, as well as non-governmental organizations. The general public is usually indirectly consulted at specific points of the process (e.g. through scoping reports and environmental reports). In countries where no legal framework for SEA exists the situation is heterogeneous. There are cases with no participation at all (5% of the cases) and others where participation is wide and inclusive, fulfilling an important role in integrating environmental and sustainability issues (14% of the cases). In these cases the participative processes goes beyond communication and consultation, generating effective discussion between agents and interested public.

Follow-up

In contexts of high complexity, dynamism and uncertainty, which characterize development planning and implementation, the follow-up to decisions becomes crucial. Following-up does not necessarily mean verifying predictions made during the planning/evaluation process. Instead in following-up strategies the purpose is to find out what changes happened both in the implementation of strategies and also in its context (political-institutional, values, priorities, etc.). The timely detection of these changes enables quick reactions, allowing in turn the SEA facilitating role to continue. In this sense, follow-up in SEA is based not only on monitoring environmental and sustainability indicators, but also on analysing the governance and processes of action. In the analysed cases follow-up is poorly developed. Often there are prescriptions for follow-up in countries with legal requirements for SEA. However these requirements are limited to the need to prepare monitoring reports, similarly to EIA. In 64% of the analysed cases follow-up refers only to the monitoring of the impacts considered during the assessment. But in 29% of the cases the follow-up of strategic aspects takes place through guidelines regarding governance, planning, and management issues. Curiously enough, most of these cases (with one exception) are found in SEA carried out in countries where there is no legal requirement for SEA, or for SEA carried out in the context of cooperation programmes for developing countries.

Perception of SEA

The 73 respondents participating in this study make up a highly heterogeneous group, as they come from countries with differing realities and varying experiences in relation to the use of SEA. Respondents from Europe, Canada and Australia reveal a common practice in the use of SEA for more than a decade, based on a legal framework or mandatory requirements of some kind. On the other hand, respondents from Latin America, Asia and Africa see SEA as a relatively new instrument, both within the political and the technical spheres. Most of these countries do not have a legal framework to regulate its use, which is either voluntary or imposed by international cooperation obligations (e.g. World Bank, IDB, bi-lateral organizations, etc.).

We are aware that these results are limited to offer statistic representativeness of universal value. To that purpose we would need to widen the sample and focus questions to particular target groups. However considering many other published studies use smaller samples, we believe that our results can be considered more robust. The intention with the analysis of perception in this paper is simply to allow us an elaboration, in this paper, on what is the current thinking of SEA practitioners regarding the role SEA should play, and how it should be used. Below a synthesis of the results achieved (See Figs. 2-6).

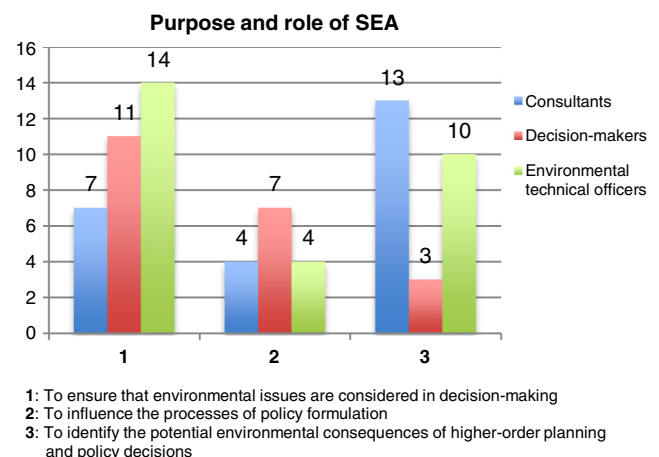


Fig. 2. Perception of SEA – purpose and role.

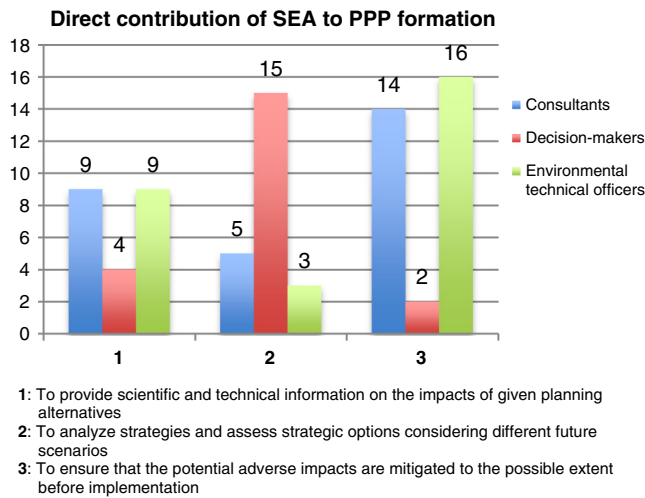


Fig. 3. Perception of SEA – direct contribution to PPP formation.

Purpose of SEA and its contribution to PPP formation

For most of the respondents the fundamental purpose of SEA is to place greater importance on environmental issues in political and planning decisions within the public sector, proactively dealing with environmental problems. This interpretation is coherent with the “promotional” discourse which has partially dominated the literature on SEA.

For nearly half of decision-makers (11 out of 21) and environmental technical officers (14 out of 28), the aim of SEA consists in assessing and validating the environmental quality of political and planning proposals (See Fig. 2). Generally, environmental consultants are seen as the doers of SEA, responsible for applying structured techniques and capable of offering enough answers to allow decision-makers and ETOs informed decisions. From this point of view, the SEA mission is to reduce the complexities and uncertainties to which planners are exposed. This represents a very high expectation given the complexity that embraces SEA.

Regarding how SEA should contribute to the PPP formation process, an important number of decision-makers (15 out of 21) argue that SEA should support decision-making by analysing strategies and assessing strategic alternatives. They point out the importance of identifying, and assessing, development scenarios, by predicting the behaviour of certain environmental factors. For the ETOs (16 out of 28) however, SEA is responsible for mitigating the potentially negative effects of the plans before these have been implemented, assuming individual projects will then be implemented under a sustainability framework. Environmental consultants point of view is similar to decision-makers and most (13 out of 24) perceive SEA as a technical tool designed to assess strategic decision-making alternatives. Environmental consultants (14 out of 24) point out that SEA should offer relevant information in a timely manner in order to analyse the alternatives in view of the prediction of environmental effects. From this point of view, environmental

Box 2

Dominant perception on the purpose of SEA.

To evaluate and validate the environmental quality of political and planning proposals.
To apply a systematic and structured procedure.
To evaluate development scenarios based on the prediction of the environmental factors' behaviour.
To make sure that the potentially negative effects of the planning process are mitigated.
To evaluate strategic decision-making alternatives.
To support the decisions made with scientific evidence.

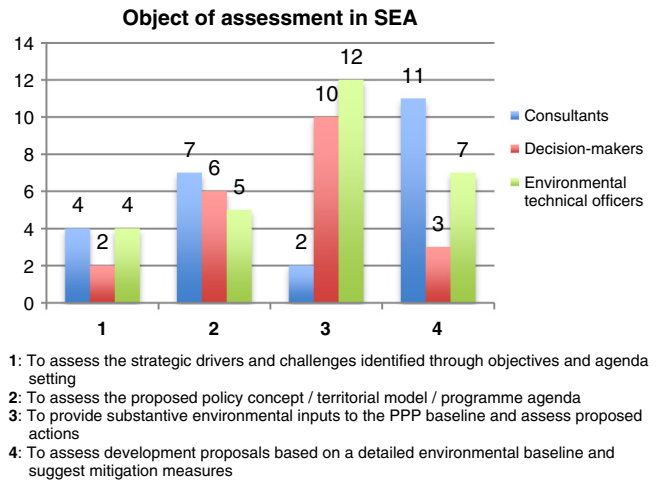


Fig. 4. Perception of SEA – object of assessment.

consultants see their role as offering advice to the decision-makers in the form of scientific evidence. Mitigation and compensation are broadly considered (See Fig.3).

This interpretation on the role of SEA reveals the dominance of EIA paradigms amongst SEA practitioners, as well as the use of new concepts and tools framed by old paradigms (such as for example the assessment of scenarios, which at the same time are seen as predictions), resulting in fundamental flaws. Many practitioners working ideas and protocols seem to be strongly consolidated around predicting environmental impacts and advancing mitigation measures (Box 2). This perception strongly drives the use of methodologies and tools in SEA.

Object of assessment

In relation to what should be the Object of Assessment (OA) in SEA, all three groups seem consistent in their position. There is significant concern in relation to the role of SEA in improving the quality of PPPs through SEA, whereby SEA should assess concrete proposals resulting from the decision-making process (See Fig. 4). This position shows that the assessment is considered strongly oriented towards informing PPP and assessing its results. It seems that for decision-makers, as well as for ETOs and consultants, it is normal to assume that SEA is applied once the PPP is designed and the course of concrete action for implementation is known. As a result, it is not strange that for many respondents SEA is a validation procedure on the environmental aspects of PPPs.

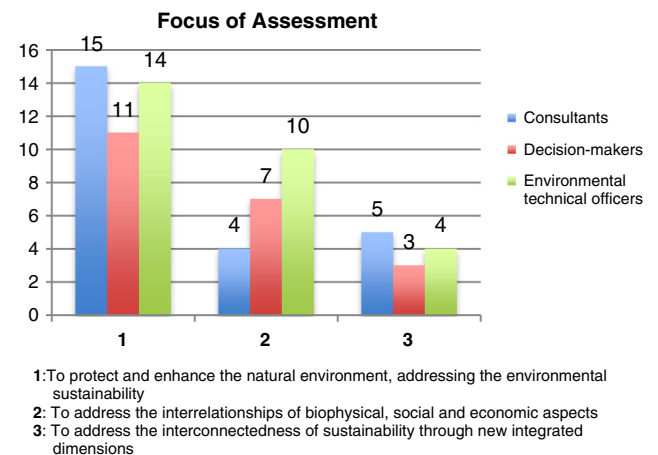


Fig. 5. Perception of SEA – focus of assessment.

Scope of assessment

Generally the perception on the scope of assessment in SEA oscillates between the primacy of protecting and enhancing the natural environment versus the need for SEA to simultaneously address social, economic, and environmental values (See Fig. 5).

Although for the three groups interviewed SEA is often seen as inherently having sustainability goals, they consider that the biophysical issues to be assessed should be at its centre. It is argued that this would allow to (re)balance the decision-making process from the economic and social towards the environmental considerations, especially in relation to the protection of ecological systems. It is maintained that one of SEA main aims within the sustainability context is to encourage the consideration of environmental issues at an early stage within the policy planning and drafting process. The predominant idea is therefore that by identifying environmental consequences SEA contributes to the sustainability of the PPP process. Additionally, they emphasize that SEA should promote environmental issues as a political focus of attention. Consistent with this idea, they claim that the focus on the environment allows SEA to be distinguished from other forms of strategic assessment, and therefore gives SEA a clear purpose.

On the other hand, there are a significant number of interviewees (21 out of 73) who claim that SEA should directly address the interrelation between the biophysical, economic, and social aspects of development. They argue that this point of view is politically advantageous as it allows for the influence of the environmental assessment to be extended towards all areas of development. When asked about their understanding of the concept of sustainability, the conventional discourse around the ‘triple bottom line’ interpretation of sustainable development emerges, revealing a very weak notion of integration. Only 16% (12 of 73) of the interviewees claim that SEA should address the interconnectedness of sustainability through new integrated dimensions.

Methods, tools and techniques (MT&T)

MT&T elected as preferred by SEA practitioners include scenario analysis, impact matrix, risk assessment, cross impact analysis and multi-criteria analysis (See Fig. 6). With the exception of scenario analysis, the remaining MT&T identified as more appropriate reflect an evidence-based and predictive approach. Cross-impact analysis for example “is mainly used in prospective and technological forecasting studies rather than in Foresight exercises per se” (JRC, 2014).

MT&T for description, diagnosis, characterization and prognosis prevail within this ranking, in line with the philosophy of informing the decision-making process about the environmental consequences of certain courses of action. For most respondents the role of SEA is to underpin the (scientific) evidence base of public policy. To fulfil this role, the environmental consultant intervenes by doing systematic analyses, providing information, and enclosing the scientific insights needed to

make informed decisions and to go through the various steps of the policy cycle. This logic in decision analysis has been strongly influenced by the expert approach and the distinction between science and policy. The main assumption is that the policy analyst produces the scientifically valid knowledge that policy makers need in order to solve policy problems.

Furthermore, decision-makers implicitly value the classical concept of objective and value-free knowledge. For them, knowledge and information used in SEA must be an objective representation of reality, so that one must be able to distinguish “facts” from the subjective aspects and rules of the decision process. As a result, they understand that developing a policy or a plan is a matter of being informed by science, and in a second step, establishing the values and preference ratings. This approach recognizes a process in which scientific guidance (based on positive epistemology) acts by informing the decision process and producing, supposedly, objective, valid, and reliable knowledge.

Discussion

In this paper we started by raising the question: could the theory of SEA be ahead of its time and decoupled from its practice? In order to demonstrate this question we established three research goals: first to empirically recognize that a gap exists, second to explore why there is a gap and third to tentatively discuss if it is possible to bridge this gap.

The Results section presented extensive empirical evidence on the existence of an unusual gap, and also on the reasons why we think there is a gap.

Results of the SEA reports and of the interviews presented ahead are in line with the assumptions of the dominant technical-rational model of environmental assessment presented in the section “The conceptual evolution of SEA” (see Box 1). They are also quite divergent from the four key aspects of the theoretical development of SEA that, we argue in Current practice in reported SEA section, should drive SEA practice. Despite the rising signs delivered by several scholars in the SEA literature towards a different approach to understand and conduct SEA in more strategic ways, the analysis of recent practical experience with SEA seems to indicate a largely technocratic interpretation of environmental assessment. Results achieved reveal that many SEAs being conducted today are still largely focused on assessing impacts following an EIA-based SEA approach.

Although it is not strange for theory to be ahead of practice, it seems evident that while theory is moving ahead towards more post-modern and constructivist approaches, there is an evident resistance among most practitioners, and some scholars, to move away from the comfort zone established by EIA and the underlying technical-rationalist model. We therefore recognize that there is a gap between theory and practice of SEA. Why is this happening? How can we explain this gap? The

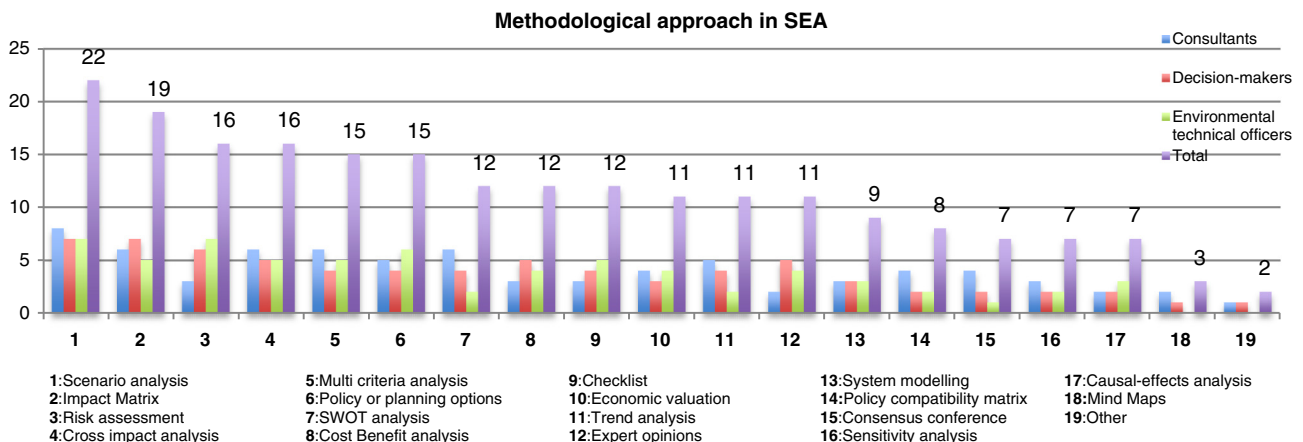


Fig. 6. Perception of SEA – tools and techniques.

following two sections address two main reasons that may contribute to justify this gap.

SEA practitioners claim to rationality and objectivity

It is our view that one of the most powerful reasons behind the gap between the observed SEA practice and its theoretical development concerns the difficulty of SEA practitioners (i.e. the environmental consultants, decision-makers, and the ETOs) to accept change in relation to a modern view of SEA, and move away from a traditional, “old technical-rational” (in the words of Owens et al., 2004), way of practicing environmental assessment. SEA inherited EIA process routines and tool boxes and extended the environmental assessment concept to upper levels of decision making, confusing “strategic” with “other non-project” levels of decision-making (Bina, 2003; Partidário, 2000, 2001). The perception of most practitioners seem to reveal an expectation that SEA will do for plans and programmes what EIA does for projects.

Planners, just as much as SEA professionals, claim (either implicitly or explicitly) an “informative” role of SEA in relation to the environmental consequences of a decision. The predominant idea is that identifying the environmental effects/impacts will be sufficient to change the PPP and place it on the route of sustainability. This strong technocratic view helps to explain why SEA was initially shaped to assist the control and validation of the environmental constituent of decisions, instead of a decision oriented process to ensure the integration of an environmental perspective.

Despite all the critical views in the academic literature, perhaps there has been insufficient consolidated discussion around the fundamental theoretical pillars that should support the understanding, and shape the practice of SEA. The literature refers often to a theory of SEA, but where is that theory? A lot of current literature is more “promotional” of practices and views of leading national, regional or international organizations and experts. What we face today is a mix-up of different interpretations with the use of SEA which have no relationship, and support, in processes of learning with the practice of SEA.

The challenge of dealing with a complex world

As a rational instrument the environmental assessment process is understood as a technical discipline through which science provides objective, value-free information to the decision-makers. This perspective, based on a technical-scientific guidance model, assumes the existence of two dimensions in the decision process: a technical dimension (environmental) and a decisional dimension (political) (Vicente and Partidário, 2006). Some (technical consultants) have the responsibility of evaluating environmental matters in a meticulous and systematic way, and others (politicians) have to “respond” to that evaluation through their decisions. Using this model, the environmental assessment is oversimplified, ignoring the multiple challenges associated to the complex world within which strategic decision take place.

This paradigm problem in environmental assessment stands on a set of assumptions presented earlier in Box 1. The great majority of empirical studies (e.g. Allison, 1971; Byrne, 1998; Cobb and Elder, 1983; Hanf and Scharpf, 1978; Scharpf, 1997) related to the creation of public policies have shown rationalist assumptions to be unreal and inconsistent. It is almost impossible to proactively describe the details of a decision-making process with the help of the rational-instrumental paradigm, which is why some authors consider this model a poor representation of the decision-making process in descriptive terms (Cohen et al., 1972; Etzioni, 1967; Lindblom, 1959). The idealized vision of the planning process as an intellectual design activity, linearly structured, and carried out by a central actor has been progressively replaced by the idea of an interactive, dynamic, and complex process (Kingdon, 1984; Lindblom and Cohen, 1979; March and Olsen, 1979; Pressman and Wildavsky, 1973). Within this process multiple participants converge

with conflicting aims, values and preferences, generating decision arenas (formal and informal) of high uncertainty and ambiguity. All this reinforces the idea that the planning process is closer to *destructuring, conflict, instability, and uncertainty*, instead of *structuring, linearity, and foreseeability*, as the technical-rationalist paradigm suggests. Of course these emerging views on complex processes are contemporary to the establishment of EIA, and its influence was only felt subsequently. Earlier advocates of a more collaborative and learning-based view of SEA revealed this influence almost 20 years ago, and its slow incorporation in the more theoretical discourse is clear. Practice however is more resistant.

Many of the problems that governments try to solve through the formulation of policies are highly complex. Often there is conflict around content, causes, and consequences (Ackoff, 1969; Rittel and Webber, 1973). Problems are difficult to formulate as well as agreements on whether a solution has been achieved, there are problems which solutions are neither true nor false, and problems which are often unprecedented (and may even be symptoms of more transcendental problems) (van Bueren et al., 2003). Usually, decisions of high environmental consequence, related to key topics of sustainability, such as the management of natural resources, urban planning, the management of river basins, waste management, and energy planning (among many others), are cases of high complexity which correspond to so called *wicked problems* (Rittel and Webber, 1973).

It seems clear to us that recognizing the uncertainty and ambiguity associated to political and planning processes questions the importance of the rationalist model of analysis. The difficulty in structuring problems of a complex nature, the impossibility to predict the consequences of certain strategic decisions, and the limited role a technical-scientific assessment can play in a context in which values are in conflict, are a few key reasons that support our argument in this paper of why the traditional rationalist focus of environmental assessment seems highly inappropriate.

As Clark (2000) indicated almost 15 years ago “it appears that SEA has different features to other types of impact assessment. While high quality assessment of cumulative effects makes EIA richer and assessment of social impacts makes EIA deeper, SEA is a different kind of analysis. Recognizing this difference may be a crucial condition for understanding SEA and allow process and practice improvement.” Our view is that this difference starts being recognized by some scholars, but challenges the comfort zone of practitioners, in particular environmental consultants and ETOs. While the philosophy of EIA usually “classifies” decision-makers (proponents) as the “bad guys”, interestingly it seems that in SEA, by looking at results in Figs. 2 and 3, decision-makers seem to be more interested, than consultants and ETOs, in having a proactive and constructive SEA that delivers a discussion around strategies and strategic options to meet scenarios, and to use SEA to influence the formulation process.

Towards a more deliberative and constructive approach to SEA

So what could be done to bridge the gap? It is clear that in a pluralistic and open society that increasingly relies upon complex networks, our understanding of SEA cannot be one-dimensional, linear or based upon routines and simple recipes. In our view, one of SEA greatest challenges is to overcome the paradigm that has dominated environmental assessment in recent decades and incorporate the scientific theories associated to complex problems.

The challenge is to be simple, without being simplistic, in order to live up to the complexities of the real world and be able to contribute to finding ways away from conflict. To that end we need to develop an instrument whose purpose is not to weight probable effects against each other in order to enable the decision-makers to arrive to a decision, but rather to bring about an open dialogue among the implementers, the affected groups, and ultimate decision-makers on the propositions and results of these assessments. From this perspective, SEA is aimed

at overcoming asymmetrical debates among actors or stakeholders and furthering a constructive dialogue among them, by enhancing frame reflection and learning across actors with different belief systems, enhancing its role of knowledge brokerage as advocated by Sheate and Partidário (2010) and Partidário and Sheate (2013).

In this context, we must use SEA as a catalyst in organizational-learning processes, generating positive long-term cultural effects and visions of the world within organizations and sectors that apply SEA, strengthening the capacity of environmental management and planning. This perspective conveys the need to stimulate and develop a theoretical foundation for the development of appropriate methodologies for strategic-based SEA, and appropriate forms for carrying out effective applications. The key is to understand that what must drive SEA are issues of a different nature from what is currently performed in SEA practice, and that SEA must go much beyond the informative role on the hypothetical environmental effects of PPPs. The challenges ahead are quite high, and we are still trying to uncover the real meaning of SEA.

Conclusion

The results of this study aimed to confirm and justify an existing gap between the theoretical development of SEA and its practice. It is not yet evident how and when SEA practice will evolve in the same direction of theory, but the reports reviewed show that there is still some non-negligible evidence of resistance to change. Our major concern is the extent to which this trend may affect the credibility of SEA in relation to its ability to improve the way in which policy and planning decisions are formulated. The importance given to the prediction of impacts, to the assessment of effects and to the design of mitigation measures in SEA undoubtedly underlines the fundamental principles of instrumental rationality not only in terms of strategic decisions being able to be predictable, and therefore able to be mitigated, but also its consequences being predictable. The literature on strategic decision-making is useful in clarifying how this assumption can be misleading (see Partidário, 2007 for some initial discussion).

Reasons for this gap can be many, but we have concentrated our argument around two main reasons: resistance to change of practitioners and challenges created by inevitable complex systems. There are recent theories that help to better explain the world in rather more systemic ways instead of multiple linear ways. This requires learning, instead of formatted solutions. Interestingly, of the three groups interviewed, decision-makers seem to be quite aware of the need for innovation in SEA. Bridging the gap is essential, in our view, to turn SEA into a more credible instrument. Acceptance that the world has changed, learn with the actual practice of SEA, and adopt SEA in processes of knowledge brokerage instead of information-driven may be among possible solutions to help bridge the gap and bring the practice closer to the theory.

Acknowledgements

The authors wish to thank the PhD program on Environmental Engineering at the Instituto Superior Técnico (IST, Technical University of Lisbon), and the Programme AlBan (E07D402508CL) “high level scholarships to Latin America” that has in part sponsored the research developed.

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