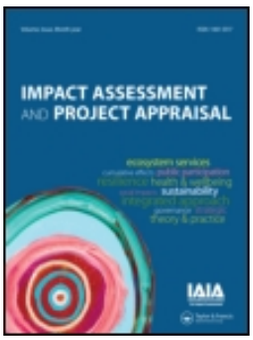

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Strategic environmental assessment: the state of the art

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This paper reflects upon the current state of the art of strategic environmental assessment (SEA), based on a review of existing literature, recent international conferences and practical experience. It provides an overview of how SEA has evolved, the main schools of thought, and application internationally. It briefly examines whether SEA is making a difference to planning and decision-making processes, and raises the question: 'where to next?' Based on the main strengths, weaknesses, opportunities and threats, a number of recommendations for future practice are made. We conclude that SEA has evolved rapidly into a broad field of application and that the 'family of SEA approaches' continues to develop. SEA brings about numerous benefits and has a high potential to contribute to better decision-making processes, even if it currently falls short of some of its expectations. We suggest that the SEA community must learn to better identify and promote SEA's less tangible benefits beyond the immediate decision-making situation and that SEA practice would benefit from a more explicit understanding and communication of how it can add value to any given context.

Keywords: Strategic environmental assessment; review; state of art

Introduction

The application of strategic environmental assessment (SEA) for identifying and evaluating potential impacts of policies, plans and programmes (PPPs) and promoting more sustainable patterns of development is a rapidly developing field worldwide. The year 2011 was the 10th anniversary of the European SEA Directive (European Commission 2001) entering into force. With the United Nations Economic Commission for Europe Protocol on SEA (UNECE 2003) entering into force in 2010, the application of SEA globally is envisaged to increase further.

Based on a review of existing literature, recent International Association for Impact Assessment (IAIA) conferences and practical experience, this paper reflects on the current state of the art of SEA by looking at four key areas:

(1) A brief history of the evolution and main schools of thought in SEA.
(2) A snapshot of SEA application and practice internationally.
(3) An examination of whether SEA is making a difference to planning and decision-making processes, drawing on recent evaluations of effectiveness.
(4) An exploration of possible future perspectives for SEA.

The paper closes by reflecting on some of the strengths, weaknesses, opportunities and threats which emerge in this paper, and suggests appropriate recommendations.

Evolution of SEA

The term 'strategic environmental assessment' was first coined by Wood and Djeddour in the late 1980s in an interim report to the European Commission (Wood and Djeddour 1989). However, the concept of evaluating environmental impacts of PPPs was formally established in the 1969 US National Environmental Policy Act (NEPA). NEPA required an environmental assessment of proposed federal agency actions, arguably constituting the first formal framework for both environmental impact assessment (EIA) and SEA in the world (Jones *et al.* 2005).

SEA has developed partly from the practice of EIA of proposed projects (e.g. Lee and Walsh 1992, Wood and Djeddour 1992). It has been suggested that, whereas EIA is primarily concerned with how a proposed development should take place in order to minimise adverse environmental impacts, SEA can have a real influence on the choice of alternative developments during the earlier stages of decision-making (Sadler and Verheem 1996). In other words, SEA can facilitate a proactive approach to ensuring that environmental and sustainability considerations are taken into account during early stages of strategic decision-making processes.

The role and aims of SEA vary according to the planning and decision-making context in which it is applied. It has therefore been suggested that SEA should be regarded as a 'family of tools' (Partidário 2000, p. 655) or 'a family of approaches' (Dalal-Clayton and Sadler 2005, p. 12) and as an 'overarching concept rather than a unitary technique' (Brown and Thérivel 2000, p. 186).

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The concept of SEA and its role in planning and decision-making has been given considerable attention in academic literature since the early 1990s. In this first part of the paper, we briefly explore the rationale for and the benefits of SEA, followed by a description of the evolution of some of the main approaches to SEA that currently exist.

Rationale and benefits

The rationale for SEA and the benefits of applying environmental assessment to PPPs have been discussed by many authors (e.g. Sadler and Verheem 1996, Thérivel 2004, Fischer 2007). Many of the original arguments in favour of SEA focused on the need to counteract some of the limitations of project-level EIA, including considering environmental impacts and alternatives earlier in the decision-making process, advancing the sustainability agenda, addressing cumulative and large-scale effects and including follow-up arrangements (e.g. Wood and Djeddour 1992, Thérivel and Partidário 1996).

Since these early sources of literature, it has become widely recognised that SEA can have multiple roles and more indirect, long-term benefits beyond the immediate, visible effects on planning and decision-making. Bina (2007, p. 586) suggests that 'there has been a systematic growth of expectations attached to SEA'. SEA can, for example, provide space for dialogue and individual and organisational learning (e.g. Owens *et al.* 2004), raise environmental awareness among those involved in the planning process, and improve the transparency of planning and decision-making procedures. SEA can also function as a 'checking mechanism' to ensure that environmental issues are taken into account. It can improve the environmental quality of planning policies by refining their content and can help to generate consistency and compatibility between the aims, strategies and policies of a plan. Participatory SEA can inform stakeholders of the environmental impacts of strategic decisions, contributing to communication and helping to reduce the risk of litigation by affected stakeholder groups, which in turn can help to avoid implementation delays (Jones *et al.* 2005).

Schools of thought

Since its inception, fundamental questions have been asked about the purpose of SEA and its role in the planning process. As has been stated: '[i]s SEA an instrument to safeguard environmental concerns in decision-making? Or is it intended to foster sustainability, or to support balanced decision-making with respect to all normative views and interests concerned?' (Thissen 2001, p. 40).

The debate around the role of SEA in decision-making has assimilated theories and conjectures from related disciplines such as the policy sciences, planning theory and decision-making. The origin of SEA, and impact assessment in general, is grounded in modernist, rational planning traditions (e.g. Arts 1998, Glasson *et al.* 2005). As a result, SEA (and EIA) theory was initially dominated by positivism and the implicit assumption that objective and quantifiable evidence on the environmental effects of decisions would lead to better decision-making. This theory was challenged when several authors put forward arguments that an expert driven, objective and rational environmental assessment does not necessarily align with the reality of planning processes (e.g. Owens *et al.* 2004).

SEA subsequently became strongly influenced by other planning paradigms, such as post-modern, post-positivist and collaborative planning theory. It was recognised that decision-making processes differ according to the institutional planning framework and the particular plan or programme in question, and that they are typically influenced by a variety of different factors, including environmental, social, economic, cultural and political issues. Informed by collaborative planning theory, it was argued that SEA practitioners must understand the decision-making processes within which they operate (e.g. Brown and Thérivel 2000, Nilsson and Dalkmann 2001, Runhaar and Driessen 2007). Following from this, many authors concluded that making use of the results and integrating the findings of SEA into planning and decision-making processes is critical to its successful implementation (e.g. Thérivel 1995, Kørnøv and Thissen 2000, Fischer 2007).

One of the more recent developments in the debate is a call for a more conscious treatment of the term 'rationality' in the context of SEA. Elling (2009, p. 129) emphasises that 'what is meant and understood by effectiveness is highly dependent on how the term rationality is perceived and the connotation attached to it', and that a distinction of different types of rationality understanding is important for understanding effectiveness in environmental assessment.

The description provided here of how SEA has evolved in line with different planning paradigms is necessarily simplified. It does, however, provide an insight into some of the fundamental theories which have influenced SEA and acts as a backdrop to understanding the different approaches to SEA which exist today. Linking the development in SEA theory to practical application, Bina (2007) describes a conceptual shift among SEA scholars and practitioners where SEA evolved into a process for actively shaping and formulating strategic initiatives. She attributes this shift to a growing recognition in the SEA community in the late 1990s that there are certain 'windows' in the decision-making process where SEA best can provide information on the implications of decisions. In this context, the 'Analytical SEA' project (ANSEA) developed a methodology for mapping 'decision windows' through which SEA can best act to integrate environmental and sustainability concerns (Caratti *et al.* 2004).

Based on this account, it can be surmised that SEA has evolved from a largely EIA-based and responsive mechanism, to a far more proactive process of developing sustainable solutions as an integral part of strategic planning activities. As concluded by Partidário (2005, p. 655): 'Despite its original roots as an impact

assessment tool, SEA has a major role to play in creating and facilitating strategic and integrative thinking in decision-making.' Perhaps, as Jiliberto (2007, p. 212) claims, SEA needed to 'distance itself from the concepts and models of EIA of projects, in order to be able to address the challenges of environmentally improving strategic decisions such as policies, plans and projects'.

There appears to be a sizeable consensus in academic literature that the way in which SEA has evolved since the early 1990s has been a positive one; furthermore, that the 'holy grail' is a situation where SEA is more closely integrated into the planning process – possibly to the point where there is no longer a differentiation between SEA and planning, where sustainability issues are effectively considered and where SEA ultimately leads to political change. Yet it has to be considered that different countries are in different phases along this line of evolution – in some contexts, SEA is still practised as a largely 'EIA-based' tool (Verheem and Dusik 2011) – and it is important to remember that different approaches will work best in different contexts (e.g. Retief *et al.* 2008).

International perspectives

Since the concept of SEA was established in the USA in the early 1970s, the environmental assessment of PPPs has been introduced into the legal frameworks of national governments, international organisations and development banks across the world (Wood 2002, Dalal-Clayton and Sadler 2005). The widespread adoption of SEA procedures is inextricably linked to an increased understanding of the relationship between development and environment, which has undergone profound change since the beginning of the modern environmental movement in the 1960s and 1970s. The need to integrate environmental considerations with development was firmly established by the Brundtland report and became part of World Bank policy in 1987. The 1992 UNCED Earth Summit, the Rio Declaration and Agenda 21 provided further impetus for national governments to incorporate environmental considerations into all levels of decision-making. Finally, in 1991 the UNECE Espoo Convention on Environmental Impact Assessment in a Transboundary Context was signed, and entered into force in 1997. The Convention sets out the obligations to carry out an EIA of certain activities at an early stage of planning and provides for transboundary consultation. It has been supplemented by a Protocol on SEA in 2003 (see below). The UNECE Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters was signed in 1998, and entered into force in 2001. It triggered better consideration of public participation in SEA.

By 2001, less than 20 countries globally had made formal provisions for the SEA of PPPs (Sadler 2001). Yet the spread of SEA accelerated rapidly from that point in time, partly due to three important triggers: (1) the World Bank and other donor agencies stimulating SEA practice in the development co-operation context, (2) the adoption and transposition of the European SEA Directive and (3) the adoption and negotiation of the SEA Protocol to the Espoo Convention.

Numerous activities of the UNDP, UNEP, World Bank and other bilateral and multilateral donor agencies led to strengthening the link between the concept of SEA and development co-operation and helped to establish SEA as a crucial tool for capacity building in developing countries as well as in countries of transition (e.g. Partidário 2011). A cornerstone within these activities was the 'Good practice guidance for development co-operation' (OECD 2006) prepared by the SEA Task Team within the OECD Development Assistance Committee (DAC) building on the network of Environment and Development Co-operation (ENVIRONET). Based on this, OECD/DAC prepared further guidance covering aspects such as SEA and adaptation to climate change, SEA and disaster risk reduction, SEA and ecosystem services and SEA and post-conflict development and offered training in these fields. The World Bank also issued an online SEA toolkit.[1]

The evolution of SEA in the development co-operation context not only provided for capacity building, but also enhanced the concept of SEA in other contexts. For example, it strengthened the role of SEA in promoting public participation and extended its scope to also cover policy-based approaches including lending and sector-level programming (Dalal-Clayton and Sadler 2005).

The European SEA Directive (European Commission 2001) required all Member States to bring into force the laws, regulations and administrative provisions necessary to implement the Directive by 21 July 2004. On the due date of transposition, only nine Member States had transposed the Directive (there were 15 Member States at the time of adoption of the Directive, and 25 by the time it came into force). By 2009, all 27 Member States had transposed it. Despite formal transposition, 23 infringement procedures against individual Member States were launched by the European Commission, mainly related to the scope of SEA. As of September 2011, eight of these infringement cases were still open (Kremlis 2011).

The SEA Protocol to the Espoo Convention was adopted on 21 May 2003 during the Ministerial 'Environment for Europe' Conference in Kiev. It entered into force in July 2010, being ratified by 16 states. The Protocol introduces a non-mandatory application of SEA to policies and legislation in addition to plans and programmes (which is the scope of the European SEA Directive), and is therefore envisaged to stimulate increased application of SEA also in these areas (Aulavuo 2011). It also places a strong emphasis on the consideration of health within environmental assessments. Being open to all UN Member States, the SEA Protocol has a potentially global application.

The conference programme of the 2011 IAIA Special Conference on SEA states that SEA systems are currently in place in some 60 countries.[2] There is no exact overview of the number of countries with legal or formalised SEA requirements, but it is clear that 'SEA is undertaken, both formally and informally, in an increasing number of countries and international organizations' (Sadler 2011a, p. 1).

Table 1. Selected countries with legal SEA provisions and snapshot state-of-the-art analysis.

Country/group of countries	SEA provision	Snapshot state-of-the-art analysis [building on Sadler (2011a) based on contributions of national experts,[3] CEC (2009) and Lam *et al.* (2009)]
27 Member States of the EU	SEA Directive 2001/42/EC (entry into force 2004) and its national legal transposition	The Directive has triggered the establishment of SEA EU-wide slowly but successfully. There are differences in the number and the quality of completed SEAs among Member States. There are ideas to extend the scope of the Directive to cover policies and to better address certain issues such as climate change and biodiversity.
USA	National Environmental Policy Act (NEPA, 1969)	Despite being the place of origin of SEA, only a 'handful' of SEAs are completed each year. However, there are some innovative examples of SEA practice.
Canada	Cabinet Directive on Environmental Assessment of Policy, Plan and Programme Proposals (introduced 1990, various amendments)	The flexible approach to SEA established in Canada is generally considered to have resulted in patchy compliance with provisions, weaknesses in process implementation and poor follow-up.
Australia	Australian Environment Protection and Biodiversity Conservation (EPBC) Act of 1999 (plus a range of other federal and state legislation)	There is considerable experience with mandatory SEA of fisheries and emerging practice of other discretionary applications of SEA following the 2006 amendments to the EPBC Act.
China	Environmental Impact Assessment Law of 2003	Fast and varied evolution of SEA; however, the practical application has remained somewhat limited, potentially due to unspecific legislation.

Table 1 summarises a snapshot state-of-the-art analysis from a number of countries with formal SEA provisions. Drawing on this analysis, it can be concluded that formalised SEA requirements are no absolute guarantee for establishing the practice of SEA, and do not necessarily ensure that SEA is applied effectively.

Application of SEA

SEA is applied at many different levels of strategic activity (e.g. legislation, lending, policies, plans and programmes) around the world. It can be applied to a particular geographical area (e.g. national, regional, local), a particular sector (e.g. spatial planning, transport, agriculture, forestry, fisheries, energy, waste/water management, tourism) or to a specific issue (e.g. climate change, biodiversity). Generally, the fields of SEA application within any country will depend on the types of PPPs and the specific SEA provisions in that country.

There is no recent record of the distribution of the fields of SEA application worldwide. However, we suggest that the biggest and possibly the most successful sector of SEA application is spatial planning (e.g. building on Wood 2002, Jones *et al.* 2005) due to the great number of spatial plans available worldwide and the requirement for SEA of certain land use plans under the SEA Directive and the SEA Protocol. There are also other sectors with extensive SEA application, like transport, water management and extractive industries. In addition, there is an increasing use of SEA in the energy sector ranging from wind farm developments to energy network plans and nuclear waste strategies. Other SEA sectors constitute a considerable proportion of the SEAs prepared in individual countries, but do not have a big global application, such as the fisheries sector in Australia with more than 120 cases (Ashe and Marsden 2011).

SEA – is it making a difference?

Having established that many countries worldwide apply SEA or certain aspects of SEA, we nevertheless agree that: 'While much experience already exists, SEA is still far from a mature stage' (Partidário 2011, p. 437). In this section, we explore the effectiveness and performance of SEA practice based on evidence from the literature.[4]

Effectiveness of SEA

According to Sadler (2004, p. 263), the 'litmus test for the effectiveness of EIA and SEA is whether and how these processes make a difference to decision making'. Is SEA effectively influencing planning and decision-making processes, and is the practice of SEA contributing to the development of more environmentally friendly or sustainable PPPs?

Early in the history of SEA literature, Mens en Ruimte (1997) defined SEA effectiveness as a measure of how well SEA has been integrated into the decision-making process, or – in summary – the degree to which the SEA process has influenced the PPP (and its lower tiers). Some years later, Thérivel and Minas (2002) suggested that an effective SEA proposes changes to a strategic action which are incorporated in order to make the action more sustainable or environmentally benign.

These early definitions of SEA effectiveness broadly assume that SEA needs to bring about amendments to PPPs. However, along with the evolution of SEA discussed earlier, the understanding of SEA effectiveness

shifted from a 'change of PPP' oriented school of thought to a more 'process' oriented understanding of SEA. This is reflected in the authoritative set of SEA performance criteria published by the International Association for Impact Assessment in 2002 which state that a good quality SEA process must be (1) integrated, (2) sustainability led, (3) focused, (4) accountable, (5) participative and (6) iterative (IAIA 2002).

A number of authors have contributed to the discussion of what makes an SEA effective, including Partidário (2000), Fischer (2007), Retief (2007), Runhaar and Driessen (2007) and Jha-Thakur *et al.* (2009). As a result the current understanding of SEA effectiveness covers wider, less tangible benefits, as summarised by Cashmore *et al.* (2008) who suggest the following effectiveness criteria:

- Learning outcomes – both social and technical.
- Governance outcomes – e.g. stakeholder participation.
- Development outcomes – design choices, consent decisions.
- Attitudinal and value changes.

In line with this, van Buuren and Nooteboom (2009) suggest that the effectiveness of an SEA depends not only on the use of the knowledge to enable rational and sustainable policy choices but also on its contribution to a collaborative dialogue.

The most recent developments in the debate deal with an understanding of effectiveness that considers relevant frame conditions, such as decision-makers' understanding of environmental and sustainability issues (direct effectiveness) and the building up of environmental governance capacity by incremental changes in environmental awareness, institutional changes and the creation of institutional arenas for social learning (incremental effectiveness) (Stoeglehner 2010). Stoeglehner *et al.* (2009) also analyse and discuss the role of planners in SEA implementation, concluding that their 'ownership' of SEA is crucial for both democratic and environmental effectiveness. Faith-Ell and Arts (2011) argue that the creation of true public–public or public–private partnerships that strengthen the commitment to SEA can help to improve SEA performance.

Measurement of SEA effectiveness

There are methods which allow for the measurement of SEA effectiveness, mainly focusing on the amendments to PPPs that SEA brings about. However, the effectiveness of SEA becomes harder to measure the more integrated SEA is in the planning process. In addition, many process oriented effectiveness criteria can be difficult to measure, as can incremental effectiveness which is not necessarily attributable to an individual SEA and requires measurement over time.

As underlined by several authors, what makes an SEA effective will invariably differ according to the context in which it is applied. We therefore concur with Cashmore *et al.* (2009, p. 93) who suggest that 'the notion of effectiveness as some sort of absolute measure is untenable' and welcome their suggestion of reconceptualising the study of effectiveness as a learning paradigm.

Mixed findings of SEA effectiveness

In light of the above, there cannot be one universally valid answer to the question of whether SEA is effective. As can be expected, recent reviews of SEA effectiveness provide mixed results. Some studies provide evidence of SEA delivering both direct and indirect benefits. Weiland (2010) reports that in Germany, SEA contributes to changes being made to PPPs during their development. There are also several examples from the development co-operation context that document effects like structured and participatory learning outcomes (OECD 2006). Thérivel *et al.* (2009, p. 165) found that 'foreknowledge that [SEA] was going to be carried out made the plan authors think more seriously about a wider range of sustainability issues from the start, with the result that plans tended to be better for sustainability [...] before the assessment even took place'. In an overview of SEA application in major sectors in the UK, Poland and Portugal, West *et al.* (2011) claim that whereas SEA in most cases only leads to minor changes to plan contents, SEA is contributing to raising the awareness around environmental implications of decisions and leading to more transparent processes.

The first formal report on the application and effectiveness of the SEA Directive (CEC 2009) concludes that SEA practice across the European Member States is generally effective, both in the sense of integrating environmental considerations into decision-making and causing plans and programmes to be amended as a result. However, the Commission also clarifies that the overall picture of the application and effectiveness across Member States is a varied one in terms of the institutional and legal arrangements of the SEA procedure, and in terms of how Member States perceive its role.

In contrast, other studies report that SEA has little direct or measurable influence on the contents of PPPs. Retief (2007) found that SEA was unable to influence PPP contents or decision-making in South Africa. Similarly, Thérivel *et al.* (2009) concluded that sustainability focused SEA (sustainability appraisal) resulted in few changes being made to the plan contents of English local-level spatial plans. Other studies report shortcomings relating to the performance of SEA processes, such as failing to generate reasonable alternatives as part of the planning process (e.g. West *et al.* 2011) or failing to document the reasons why a particular alternative was selected (e.g. Smith *et al.* 2010). There are also reports that the practice of cumulative effects assessment has to date been rather ineffective (e.g. Weiland 2010). Fischer (2010) reports *inter alia* unclear impact of public participation and the SEA on plan making, and insufficient consideration given to monitoring in English spatial strategy SEAs. Hanusch and Glasson (2008) confirm that monitoring has been a minor priority within the SEAs of English regional spatial strategies and German regional plans.

Examples of effective SEAs are partly, yet not consistently, collected by certain institutions[5] and consultants[6] and referred to in SEA guidance documents. Often these case studies provide evidence of the effective application of individual aspects of SEA, such as scoping, environmental baseline, impact prediction, alternatives assessment, stakeholder involvement and monitoring, rather than proclaiming to be an 'effective' SEA overall.

The mixed results emerging from recent effectiveness reviews may partly be attributed to the difficulties inherent in determining and assessing the effectiveness of an SEA. It is also worth reflecting that there is a general tendency within the academic literature to highlight shortcomings and weaknesses, whereas reports from practice and public bodies tend to focus on strengths and successes. Some authors (e.g. Thérivel *et al.* 2009, West *et al.* 2011) report evidence of SEA being perceived among some planners and decision-makers as an exercise to meet legislative requirements, rather than a process which adds real value to the planning process. Additionally, the capacity of SEA to exert influence is often limited by SEA having a 'fine-tuning' rather than a 'plan-shaping' role (Smith *et al.* 2010). However, the signals for the future are positive. Taking stock of the field of SEA overall, Sadler (2011a, p. 18) concludes that integration of SEA into PPP development is the most widely accepted criteria for effectiveness, and that 'emerging directions [in SEA] include the shift toward a more integrative approach'.

Future perspectives – where next?

In the previous sections we have established that SEA is being undertaken in an increasing number of countries and organisations, but that its effectiveness can be difficult to determine. In many ways, SEA is still evolving, with growing expectations of what it can deliver. At the same time, global challenges linked to increasing pressures on the natural environment are forcing some changes in SEA, and three possible future perspectives for SEA are presented below.

Environmental limits and ecosystem services

With echoes back to the drive behind the environmental movement in the 1960s and 1970s when SEA emerged, there are strong arguments for an enhanced consideration of environmental limits and ecosystem services within the practice of SEA. The recommendation from the mid 1990s that SEA follow-up has to cope with the effects on the ecosystem as a whole (Au and Sanvicens 1995) is even more pertinent in the light of current environmental pressures. Thérivel *et al.* (2009) argue that in order for SEA to enable a robust testing of whether a plan leads to a 'high level of protection of the environment', SEA must test strategic actions against environmental standards or limits.

In this context Slootweg and Jones (2011) introduced resilience thinking to the SEA community and sparked a lively debate. Resilience can be simply defined as the ability of a system to absorb shocks, and return to its original state. Examples include the regeneration of a forest after a fire and the rebuilding of a community after a flood.

The growing interest in resilience thinking is based on the assumption that it may provide us with a structure for identifying socio-environmental limits and considering them within SEA. Resilience thinking may also help to provide new, structured ways of dealing with the uncertainty and complexity inherent in planning processes and to incorporate ecosystem services in development proposals and assessments.

Climate change

In the past few years the SEA community has recognised the need for better management of climate change issues. This was reflected by two IAIA Special Symposia on Climate Change and Impact Assessment held in Aalborg, Denmark, and in Washington, DC, both in 2010.

When discussing climate change issues there is a need to distinguish between mitigation and adaptation. Climate change mitigation is essential to reducing greenhouse gas emissions. Currently, the consideration of greenhouse gas emissions and their impacts is poorly dealt with in SEA practice; however, from a technical perspective it would seem feasible to incorporate the consideration of mitigation into the assessment steps of SEA. Incorporating the aspect of adaptation, on the other hand would arguably require a change of viewpoint within SEA. Recently published OECD guidance suggests that a well-performed SEA can fulfil one or more of the following functions in relation to climate change adaptation (OECD 2010, p. 7):

- An independent analysis of the likely performance of existing or new PPPs in light of new climate change predictions (effectively a form of climate proofing of PPPs prepared without reference to climate change).
- An integrated planning and assessment process designed both to generate and test PPP options against different climate scenarios which are actively explored as part of the SEA.
- A study process focusing entirely on predicting and quantifying the likely effects of climate change within a given area.

We are now at a stage where the first good practice cases on climate change and SEA are emerging (e.g. Larsen and Kørnøv 2009, Wilson and Piper 2010). Some SEA systems already explicitly require the integration of specific aspects like climate proofing – thereby demanding a greater amount of creativity from SEA practitioners. 'A practical guidance for integrating climate change and biodiversity' is being prepared on behalf of the European Commission, and the Commission is also considering the need to extend the scope of the SEA Directive to better address certain issues such as climate change, biodiversity and risks.

More strategic and more creative SEA

There are indications in both the development co-operation context and the Western world that SEA will continue to become more strategic than it is at present (e.g. Sadler 2011b). The World Bank and other donor agencies strongly promote policy-based SEA approaches that also support good governance (World Bank 2005). As already mentioned, the application of SEA to policies is expected to increase further under the SEA Protocol (Aulavuo 2011).

As highlighted by UNEP (2009, p. 3), creativity becomes especially important in periods of recession: 'In order to support and sustain those fresh winds blowing from the current financial and economic crisis, adaptive governance and creative policymaking need to be supported.' This signals that in periods of recession, the need for instruments like SEA to adapt creatively is extremely high. However, there is also a danger that recession brings a reduced awareness of environmental issues and that there will be less resources available for SEA. There is therefore a greater impetus on the SEA community to highlight the benefits of SEA in these economically difficult periods.

Concluding remarks

In this final section we ask whether SEA is a flop or a success story. Building on some of the main strengths, weaknesses, opportunities and threats which have emerged in this paper, we develop recommendations for future practice.

SEA – a flop or a success story?

At the IAIA Special Conference on SEA in Prague in 2011, the SEA community reported a measurable and distinct progress since the last conference on SEA which was held in 2005. Our review of some of the recent evaluations on SEA effectiveness nevertheless presents mixed findings with regards to whether SEA is effective. The main strengths, weaknesses, opportunities and threats reflected during this state-of-the-art review are summarised in Table 2.

There is considerable focus in the academic literature on some of the long-standing weaknesses relating to SEA performance and practical application, and on the missed opportunities for realising some of the theoretical benefits of SEA. In some aspects, SEA has failed to live up to its expectations, and some of the weaknesses of SEA practice are related to issues which constituted the original rationale for SEA.

Yet despite criticism, there are also many arguments for calling SEA a success story. There is evidence that SEA leads to changes in PPP contents and increases transparency concerning the way in which environmental considerations have, or have not, been taken into account in decision-making processes. We suggest that there is hardly any country that has not been in touch with the idea of SEA or SEA-like processes. On the whole, SEA can be said to be 'on the map' and continues to raise awareness of the environmental implications of strategic decisions.

SEA is still evolving and has not reached its full potential

We suggest that SEA is still in the process of evolving to a more proactive process of developing sustainable solutions and a multifaceted concept. Combined with the seemingly ever-widening expectation of what SEA can and should deliver, this could partly explain why it is difficult to provide clear evidence that SEA leads to more sustainable and environmentally friendly plans.

Despite SEA currently falling short of some of its expectations, it has a strong potential to contribute to better decision-making. However, there is no one-size-fits-all SEA and the 'family of SEA approaches' is large and diverse. Reflecting on the variety of SEA approaches we suggest that it is time to stop trying to formulate a common standardised understanding of SEA, and to rather give due

Table 2. Main strengths, weaknesses, opportunities and threats reflected in this paper.

	Strengths	**Weaknesses**
Global SEA process/practice	• SEA increasingly leads to changes in PPP contents • SEA becoming more integrated into the planning process • Raising awareness around environmental implications of decisions • Leading to more transparent processes • Widespread application • Contributing to capacity building	• Capacity of SEA to exert influence often limited • Long-standing shortcomings related to SEA process limitations
	Opportunities	**Threats**
External influences on practice	• Better integration with decision-making • Policy SEA encouraged by SEA Protocol • Face global challenges: consider environmental limits, ecosystem services and climate change issues • More strategic SEA supporting good governance especially triggered by development co-operation	• Unclear role and aim of SEA • Overload of SEA expectations • Recession causing limited resources available for SEA

recognition to the richness of different approaches and the value they add to different contexts.

The need for SEA to be 'fit for purpose' has become somewhat of a mantra in the field of SEA, but perhaps without sufficient focus on how this might practically be achieved. We suggest it is time to operationalise this concept and advise practitioners on how to establish and communicate more explicitly what the 'purpose' of SEA is in any one context.

There appears to be a consensus that increased integration into planning and decision-making leads to more effective SEAs. Without diminishing this viewpoint, we suggest that the issue of integration is rapidly becoming the 'elephant in the room' and that there is an urgent need to examine what it really means in the context of SEA effectiveness. Is the ultimate goal an SEA which is integral to the planning process to the extent that SEA is undertaken by the same individuals as those developing PPPs? Or does SEA need to remain a distinct process in order to ensure transparency and accountability regarding the way in which environmental and sustainability considerations are taken into account? These are some of the questions which need to be addressed by the SEA community.

Main recommendations for SEA

Based on the above reflections on the current state of the art of SEA, our main recommendations are:

- SEA must become more strategic, focusing on plan-shaping activities.
- SEA must become more integrated into PPP development and decision-making. It must be clarified what 'integration' should practically involve and the conditions under which increased integration can lead to improved SEA effectiveness.
- SEA must become more flexible, and explicitly consider and communicate how it can be fit for purpose and add value in any specific context. This is even more pertinent in periods of recession.
- SEA must face global challenges and develop tools to better incorporate environmental limits and climate change.
- SEA must recognise that benefits may not become apparent until later in time, and place greater value on indirect effectiveness and learning processes.

Closing comments

Due to the breadth of this topic the authors recognise that there are many other aspects which could be considered. We acknowledge that much of the analysis in this paper is EU-focused and would like to recommend additional reviews dedicated to:

- International practice of SEA.
- IAIA performance criteria for SEA – do they need a revision?
- SEA in the face of global challenges.
- Creative SEA– exploring informal and 'non-traditional' SEA approaches.
- Sector-specific SEA – experience and distribution of fields of SEA application.

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Notes

1. There is an abundance of SEA guidance material available, partly tailored to country-specific needs. For an overview on SEA guidance see Schijf (2011).
2. For more comprehensive overviews of SEA practice see the *Handbook of strategic environmental assessment* (Sadler *et al.* 2011) and the books by Schmidt *et al.* (2005) and Dalal-Clayton and Sadler (2005).
3. For Australia John Ashe and Simon Marsden, for Canada Barry Sadler, for the USA Ray Clark, Lisa Mahoney and Kathy Pierce, for the EU Barry Sadler and Ausra Jurkeviciute.
4. In the literature a distinction is often made between effectiveness and performance. In essence, this involves differentiating between the degree of influence which SEA has on decision-making (effectiveness), and the quality of the information delivered by the SEA process (performance). For the purpose of this paper, both aspects are considered under the umbrella heading of 'effectiveness'.
5. Including http://www.iaia.org, http://www.seataskteam.net, http://www.rec.org and http://ec.europa.eu/environment/eia/sea-support.htm.
6. Levett-Therivel have annually provided a list of (non-vetted) recommended SEA/SA reports since 2005 on their webpage: http://www.levett-therivel.co.uk.

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