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From SEA to Sustainability Assessment?

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Introduction

Sustainability assessment (SA)[1] has emerged as the third generation of impact assessment, following environmental impact assessment (EIA) and strategic environmental assessment (SEA). For the purposes of this chapter, we will define SA broadly as an 'ex ante'[2] process that seeks to identify the future consequences of a proposed action in a manner that directs planning and decision-making towards sustainability.[3] SA is therefore not a prescribed process as such, but rather an orientation of practice.

There are two important points arising from this definition, both of which relate to the relationship between SEA and SA, which, as the title of this chapter indicates, is of particular interest. The first point is that SA may be applied at any level of decision-making, from the most strategic to the most project-specific, and this is a point of distinction between SEA and SA. The second point is that the concept of sustainability is fundamental to the practice of SA, and we will explore in detail the implications of the adopted interpretation of sustainability on the SA process. A 'three pillar' approach is common, in which the SA attempts to reconcile and integrate economic, social and environmental considerations. We will consider the various ways in which this conceptualization might be applied within decision-making, its limitations and emerging alternatives to this approach. Of particular concern here is the relationship between sustainability and the environment, and we argue that SA must ensure the protection of environmental assets within its broader mandate.

A review of current international practice found that there is already considerable practical experience with SA processes in different jurisdictions and sectors around the world (Dalal-Clayton and Sadler, 2011, in press). This chapter seeks to outline the current themes of discussion and debate. It draws mainly upon the contributions to and lessons of the Prague SEA Conference, but also attempts to reflect some of the more recent contributions to this rapidly evolving field.

No attempt is made to provide a 'one-size-fits-all' manual for conducting SA, as such a thing can never exist. Instead, the aim is to raise the issues that must be addressed in the process of clarifying what it is that we seek to achieve through SA and then to design processes that are fit for purpose within their specific application and context (Govender et al, 2006). We commence by providing some background to locate SA within the context of EIA and SEA, from which many applications of SA have evolved, and discussing the relationships between the three forms of assessment. Since the overriding goal of our work as SA theorists and practitioners should always be to contribute to the shift towards a more sustainable society, we devote some time and space to exploring the concept of sustainability.

At the heart of our discussion is the argument for an integrated approach to SA. We explore what integration means in relation to sustainability and its interpretation within a decision-making context, and then look more broadly at an integrative approach to the design and implementation of SA processes. As Gibson (2006) notes, 'the package is not easily at hand but is within reach'.

Background: SEA and SA

SA is evolving simultaneously from both SEA and EIA, as well as from other processes such as land-use planning, resource management, technology assessment and from broader sustainability debates in development assistance practice and elsewhere. However, in keeping with the theme of this book we will focus in this section upon the relationships between EIA, SEA and SA.

The evolution and practice of SA

Various forms of SA have emerged through different mechanisms and different drivers in different parts of the world. One of the most established is the UK process of sustainability appraisal of spatial plans, which has integrated the assessment requirements of the European Directive on SEA (Bond and Morrison-Saunders, 2009). In contrast, some non-European jurisdictions, such as Australia, Canada and South Africa, have applied SA to both public and private project proposals as part of an approvals process, building upon existing EIA regimes (Hacking and Guthrie, 2006; Pope and Grace, 2006). Many businesses, particularly large industrial corporations, now apply forms of integrated assessment to their internal decision-making processes (Hacking and Guthrie, 2006); while sustainability impact assessment is also increasingly applied to trade agreement and development strategies (Lee and Kirkpatrick, 2001; Hugé and Hens, 2007).

The result of this incremental development of SA from a variety of sources, including both EIA and SEA, is that there is now a diverse and significant body of experience with SA around the world from which lessons can be learnt and conclusions drawn. This 'learning by doing' is certainly occurring within specific contexts, is deliberate policy in some cases, and is inevitable insofar as different cases and places raise different problems and possibilities. For example, Western Australia is one jurisdiction where the former government adopted a deliberate 'learning by doing' approach to SA (Pope and Grace, 2006).

Relationships between EIA, SEA and SA

Interestingly, there is a recently discernible convergence between project and strategic level approaches to SA, as project level practice matures far beyond 'EIA with social and economic considerations added in' (Pope et al, 2004). Consequently, many of the criticisms directed at what has become common EIA practice, for example, its reactivity, lack of effective consideration of alternatives and focus on the minimization of negative impacts, do not automatically apply to project-level SA. Instead, SAs of project proposals are becoming more proactively integrated with proposal development and thus are exerting a far greater influence on decision-making. They are guiding the consideration of more sustainable alternatives, for example, in infrastructure site selection processes, and actively seeking positive project outcomes guided by the concept of sustainability. Some go even further and consider strategic and policy issues that extend well beyond the immediate project and its operations (Dalal-Clayton and Sadler, 2005; Gibson et al, 2005; Hacking and Guthrie, 2008; Pope and Grace, 2006).

If the suggestion of a linear evolution from SEA to SA is simplistic and not representative of reality, then what is the true nature of the relationship between SEA and SA? Firstly, as might be expected, many topics of current debates within SEA described in other chapters of this volume are also emerging as challenges and ambiguities in the context of SA. For example:

- What is an appropriate process framework for SA and should it graft onto existing decision-making processes or impose a methodology of its own to align decision-making with sustainability?
- What is the relationship between the environment and other potentially competing objectives that fall under the concept of sustainability and are also increasingly addressed in SEA processes?
- Is tiering a useful concept and what is the relationship between an assessment and its broader context?
- What institutional arrangements are appropriate?

With respect to such concerns, to some of which we will return later, there is much that SEA and SA can learn from one another. But perhaps the most debated aspect of the relationship between SEA and SA is their point of difference, and whether or not they are the actually the same thing (not withstanding that, unlike SEA, SA may also be applied to project proposals). This may be the case in some applications but it depends upon the conceptual basis of each form of assessment.

Although there is debate in SEA literature on whether and when SEA should shift towards a comprehensive sustainability agenda or should be a process of purely biophysical/ecological evaluation and (at least implicitly) advocacy (Kørnøv and Thissen, 2000; Govender et al, 2006; Morrison-Saunders and Fischer, 2006), SA is less ambiguous on this point. We argue, supported by the general consensus at the Prague conference, that the defining characteristic of SA is that it must be sustainability-oriented (Dalal-Clayton and Sadler, 2011, in press; Hacking and Guthrie, 2006; Pope, 2006).

Therefore, the extent to which SEA and SA may be considered analogous depends upon the extent to which an SEA process embeds the concept of sustainability.

Sustainability: The conceptual basis of SA

The concept of sustainability is fundamental to SA as defined here. However, sustainability is an ambiguous and contested concept (McManus, 1996; Dobson, 1996; Jacobs, 1999). Many alternative theoretical formulations have been developed, which are founded upon common concerns and principles but have different emphases depending upon the decision-making context, the disciplinary orientations and any number of other factors (Gibson, 2001; Hermans and Knippenberg, 2006).

In the following discussion, we highlight some of these conceptual complexities and challenges by comparing the prevailing 'three pillar' approach with alternative, more holistic conceptualizations, leading into a discussion in the following section of how this abstract concept might be 'operationalized' for practical decision-making.

The 'three pillars'

One of the most common conceptualizations of sustainability involves the 'three pillar' integration of environmental, social and economic considerations, and correspondingly most SA processes are based upon a three pillar approach (Eales and Twigger-Ross, 2003; Pope et al, 2004). In jurisdictions in which environment is broadly defined to encompass socio-economic as well as biophysical issues, EIA and SEA processes may already provide a platform for SA based upon the three pillars. However, sustainability and the environment have an uneasy relationship that is heightened within an assessment context. The main argument against three pillar approaches to SA is that they frustrate integrated, systems-based thinking and encourage trade-offs between the pillars by emphasizing the traditional conflict between economic and environmental concerns, usually to the detriment of the environment (Gibson, 2001; Lee, 2002; Jenkins et al, 2003; Sheate et al, 2003; Morrison-Saunders and Fischer, 2006).[4]

From the three pillar perspective, the term 'integration' typically refers to a process of weighing up environmental versus social versus economic issues at some stage of a SA process. This has led to debates about whether this should occur during the process or at the final decision point (see, for example, Jenkins et al, 2003). In practice, multi-criteria analysis (MCA) techniques are often utilized to integrate the various dimensions of SA processes to determine an overall 'score' by which various alternatives can be compared (see for example Kain and Söderberg, 2008). Integration of the three pillars can also mean recognizing the relationships between different factors, for example, noting that protecting a conservation area may have economic benefits through increased tourism and social benefits in terms of community recreation opportunities, as well as direct environmental benefits.

The three pillar concept may be applied differently in different approaches to SA, with correspondingly different purposes and intentions (Pope et al, 2004). Morrison-Saunders and Thérivel (2006) distinguish eight different aims that might underpin SA processes, six of which are based upon a three pillar conceptualization of sustainability. These range from the minimization of adverse impacts, to the maximization of objectives, to the delivery of net overall gains, to the achievement of mutually beneficial win/win/win outcomes across the three pillars. In a world in which current behaviour is not sustainable and key trends are negative, SA should go beyond the identification, evaluation and mitigation of the negative impacts of a proposal to at least promote positive outcomes and contributions towards aspirational objectives (Gibson, 2001; Pope et al, 2005). For example, in Canada, there is increasingly a requirement to demonstrate 'contribution to sustainability' (Gibson et al, 2005), which is more aligned with attempts to achieve 'win/win/wins', 'net gains' or to 'maximize objectives'. These more positive approaches also commonly underpin spatial planning assessment processes (Morrison-Saunders and Thérivel, 2006). In contrast with the three pillar approach, Morrison-Saunders and Thérivel's two highest level conceptions interpret sustainability as a more inherently integrated concept as considered in the following section.

Alternatives to the three pillars

The view that the three pillar approach is an inappropriately reductionist interpretation of sustainability is gaining momentum and was strongly endorsed in the Prague conference. Alternatives for the purposes of assessment have been espoused (Pope et al, 2004; Gibson, 2006; Morrison-Saunders and Thérivel, 2006). George (1999, 2001) was among the first to consider how alternative interpretations of sustainability might guide SA. Using the UK's sustainability appraisal as a starting point, he argues that it attributes too many factors to the concept of sustainability, which more appropriately belong in the realm of planning. Instead, he advocates SA based upon criteria derived from the Rio Declaration sustainable development principles of inter-generational and intra-generational equity where the former is characterized by the preservation of environmental systems for future generations.

Others have promoted models of sustainability based on principles that cross the three pillars. Hermans and Knippenberg (2006) propose a model based upon the principles of justice, resilience and efficiency. At first glance these may appear to align with the three pillars, but they are inherently more integrative. Gibson (2001, 2006; Gibson et al, 2005) also presents a set of inherently integrative principles for sustainability which, he argues, are generally accepted at their highest level (see Box 34.1),[5] serve as 'driving objectives and consequent evaluation and decision criteria to avoid the three conventional categories', and are fundamental to an approach to SA that recognizes the essentially integrated nature of the concept of sustainability.

Sustainability as an integrative concept

As well as blurring the demarcation lines of the three pillars and intrinsically linking the human and the biophysical, sustainability principles such as those

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Box 34.1 *Integrated sustainability principles*

- Socio-ecological system integrity.
- Livelihood sufficiency and opportunity.
- Intra-generational equity.
- Inter-generational equity.
- Resource maintenance and efficiency.
- Socio-ecological civility and democratic governance.
- Precaution and adaptation.
- Immediate and long term integration.

Source: Gibson (2006)

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listed in Box 34.1 begin to suggest some of the other linkages inherent within the notion of sustainability. Sustainability also links 'present and future, local and global, active and precautionary, critique and alternative vision, concept and practice, and universal and context-specific' (Gibson, 2006). An integrated concept of sustainability requires recognition and consideration of these many facets and layers.

It has also been argued that sustainability should be conceptualized in a way that integrates its concrete and quantitative dimensions with characteristics that are less tangible and qualitative (Bradbury and Rayner, 2002). In practice, it is often observed that the latter category, which includes concepts such as equity, justice and democracy, is often marginalized and given scant consideration in decision-making processes (Davison, 2001; Owens and Cowell, 2002). Consultation and engagement processes (discussed in the following section) may help to redress this imbalance. For example, Bradbury and Rayner (2002) highlight the dominance of descriptive social sciences approaches in SAs that focus on job creation, public infrastructure and the like, and call for further attention to the interpretive social sciences and the importance of social meaning and values. Similarly, Knippenberg and Edelmann (2005) highlight the 'strong qualitative undertone' and 'process-like character' of social considerations within SA, and offer an alternative conceptual model for the social-cultural domain of sustainability.

More recently, there has been an increasing interest among SA practitioners in the first of the sustainability principles listed in Box 34.1: the notion of socio-ecological system integrity, together with the associated concepts of complexity and resilience (Audouin and de Wet, 2010; Gaudreau and Gibson, 2010; Grace, 2010). The systems approach, exemplified by the Millennium Ecosystem Assessment (2005) takes as its starting point the interrelatedness of socio-economic and ecological system components, usually within a defined geographical area. It seeks firstly to understand the dynamics of the socio-ecological system, particularly the points at which the resilience of the overall system might already be under pressure, as the basis for assessing the impacts of proposed activities on the area. The over-riding objective of SA is then to ensure

that the health and resilience of the socio-ecological system is maintained (Grace, 2010).

As Gibson (2006) suggests: 'Sustainability is an essentially integrative concept. It seems reasonable, then, to design SA as an essentially integrative process and framework for decision-making on undertakings that may have lasting effects.' But what might an integrative SA process look like in practice? In the following section we explore the contours of a framework for integrative SA that is based upon an integrated, holistic concept of sustainability as well as other, more process-orientated forms of integration.

Integrative SA processes

Gibson (2006) argues that sustainability is an essentially integrated concept and SA must consider the global as well as the local, the qualitative and abstract as well as the quantitative and concrete, the future as well as the present and the particular as well as the conceptual. He goes further to argue that integration should be the guiding principle for SA, relating not just the interpretation of sustainability itself, but extending into every aspect of the process design and the overall system of governance for sustainability. One particularly important form of process integration is the integration of SA with the process of developing a proposal. This means that the assessment is applied proactively rather than reactively at a time when most important decisions have already been made (Lee, 2002).

In this section, we examine the application of a holistic, integrated concept of sustainability to decision-making in practice, present a broad methodological framework designed to promote integration, and discuss important aspects of processes affecting integration, including governance and institutional structures and consultation and engagement processes.

Applying the concept: sustainability for SA

While the starting point for integrated SA must be an holistic conceptualization of sustainability that avoids the reductionism of the three pillars, the risk remains that, when applied to a specific decision, the concept will become reduced, and mechanistic, and in spite of best efforts will revert to something approximating the three pillars (Hacking and Guthrie, 2006). Some of the counters against this tendency are the design of the process and particularly the relationship between the assessment and the process of developing the proposal in the first instance, as well as the effective use of consultation and engagement, and potentially also institutional reform (which are addressed in the following section). For now, the focus is upon how the concept of sustainability might be applied to decision-making in a way that remains true to its essentially holistic and integrative nature.

Sustainability decision criteria

On a practical level, the concept of sustainability must be 'operationalized' in the form of criteria for sustainability decision-making (Gibson, 2001; Hacking and Guthrie, 2006). Dalal-Clayton and Sadler (2011, in press) argue that SA

'is an impact assessment carried out against or within an explicit framework of goals, principles, rules and indicators'. Similarly, Pope and Grace (2006) discuss the concept of a 'sustainability decision-making protocol' that guides decision-making and also provides a basis for the evaluation of the sustainability implications of a proposal, whether by internal decision-makers or external regulators.

The first step in the development of decision criteria is the identification of the sustainability factors that should be considered in decision-making. These must be relevant to the decision at hand, but also guided by a holistic suite of sustainability principles such as those reproduced in Box 34.1, as well as reflective of the dynamics of the socio-ecological system in question. The higher-level principles help to ensure the inclusion of aspects of an holistic sustainability discourse that may otherwise be neglected, particularly less tangible concepts such as equity and justice (Gibson, 2006). Like Gibson, Verheem (2002) reminds us that when we are considering sustainability, impacts go beyond the local and the foreseeable future and that 'at the heart of SA is the question of whether a plan or project will lead to improvements on all fronts, or whether there is a risk of *transfer of impacts* into another domain – either in *time* or *place*' (Verheem, 2002, p10, emphasis in original).

Thus, the integrated concept of sustainability means something for assessment and decision-making that goes beyond identifying linkages between aspects of a proposal and seeking beneficial synergistic relationships between outcomes. SA must also find ways to recognize and incorporate the full breadth and depth of the sustainability concept, including its global dimensions, and resist any temptation for a narrow focus and short-sightedness. Hacking and Guthrie (2006) explore a variety of ways in which sustainability decision criteria might be developed. Along with Gibson (2006), they acknowledge the challenges associated with aligning high-level, generic principles for sustainability with local considerations to guide a specific decision and they consider the contribution of stakeholder engagement, backcasting and tiering, through which higher level decisions provide the boundaries for lower level ones.

Sustainability decision criteria should not be viewed as another attempt at reductionism, whereby sustainability is mechanically converted into a series of quantitative indicators and targets. Rather, it should be conceived as a framework within which decision-making occurs, decision-making that is inclusive and deliberative and that acknowledges the value-based and subjective dimensions of sustainability. It provides the catalyst for debates between opposing views, a focus for discussions in which underlying assumptions and worldviews are exposed, and in which learning occurs and system understanding is developed. Box 34.2 provides an example of how this has worked in practice.

Decision criteria for sustainability should include both aspirational objectives and acceptability limits, where the latter represent the line of demarcation between what is sustainable and what is unsustainable (Devuyst, 2001; Hacking and Guthrie, 2006), ideally derived through an understanding of system dynamics and resilience (Grace, 2010). The articulation of

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Box 34.2 *South West Yarragadee Water Supply Development*

The SA of the South West Yarragadee Water Supply Development was conducted in 2004–2006 as part of finalizing the proposal to extract 45 gallons of water per year from the south-west region of Western Australia and supply it to the integrated scheme serving the capital city of Perth. The proposal was controversial, due to the perception by the regional, rural communities that 'their' water was being taken away, thus potentially denying them future options to use the water for private agricultural purposes.

The assessment was guided by a 'sustainability decision-making protocol' that defined relevant sustainability factors, objectives and acceptability criteria. Impact data was then collected and evaluated against the protocol. The economic goal of maximizing the economic value of the water implied that the water should be supplied to an integrated public water supply, which meant supplying the city, since the rural communities are not connected to an integrated scheme, and the economic analysis thus favoured the broad proposal. This, however, was in conflict with the social goal of ensuring that the rural communities' reasonable needs for water were met, since an interpretive approach to the social impact analysis identified a prevailing storyline of 'futures foregone'.

Deliberations around this tension between the two objectives led to a reframing of the proposal itself in a way commensurate with both objectives: in addition to supplying the city, the integrated water supply scheme could be extended to also serve the rural communities. This would ensure the best economic use of the water and also meet social objectives.

Source: Pope and Grace (2006)

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acceptability limits or bottom lines is particularly important to prevent the erosion of achievements over the past 30 years towards ensuring the consideration of ecological concerns in decision-making (Sadler, 1999; Sippe, 1999). These may otherwise remain vulnerable to trade-offs, whether the SA is based upon the three-pillar or an integrated concept of sustainability, and as Gibson (2006) argues: 'Sustainability assessment must not be introduced in a way that threatens them.'

Trade-offs

One dimension of integration already discussed is the relationship between different sustainability factors or objectives. These might be mutually supportive, potentially leading to 'win/wins'; or may be opposing, leading to trade-offs. Gibson et al (2005) point out that trade-offs are often unavoidable, and may have to be accepted in the identification of best overall options, since 'trade-offs allow some adverse effects in the interests of securing important gains'. Although the focus should always be on avoiding trade-offs, guidance for determining which trade-offs might be acceptable would help where it is not possible to avoid them (Gibson, 2006).

Because development is rarely possible without some adverse impact on the natural environment, mechanisms are often needed to achieve a net positive environmental outcome from a development. Such mechanisms include the concept of 'net conservation benefits' or 'environmental offsets'. Offsets can be considered as a special kind of trade-off, made within a pillar rather than between pillars.

Trade-off rules proposed to guide decision-making seek to protect the components of the sustainability discourse, such as the environment, that might be vulnerable if potential trade-offs are not specifically identified and evaluated (Gibson et al, 2005; Gibson, 2006). These rules are based upon the principles of: ensuring maximum net gains; placing the burden of argument on the trade-off proponent; avoidance of significant adverse effects; protecting the future by rejecting the displacement of significant negative effects to the future; and requiring explicit justification and open process.

Integrative process frameworks and methodologies

It has been argued extensively in SEA literature that assessment methodologies which commence early in the process of developing a proposal and inform every stage of decision-making achieve better outcomes for the environment than those applied more reactively (Thérivel and Pártidario, 1996; Brown and Thérivel, 2000; Eggenberger and Partidário, 2000; Noble and Storey, 2001). The same is true for SA where a proactive approach not only delivers better outcomes, but is more consistent with a holistic interpretation of sustainability and less likely to lead to trade-offs being made (Morrison-Saunders and Thérivel, 2006).

The relationship between the assessment and the decision-making processes is defined by the question framing a SA process as discussed in Morrison-Saunders and Thérivel (2006) and Pope and Grace (2006). They contrast strategic, open questions (such as 'what should the future of area X be?') with questions of acceptability (such as 'is proposal X acceptable at site Y?'). The former encourage proactive assessment methodologies in which a desired outcome is defined and alternative means of achieving this outcome are proposed and assessed (Noble and Storey, 2001; Thérivel, 2004). By its nature, the latter defines an assessment that is reactive to a proposal. An example of the relationship between the question and integration are presented in Box 34.3.

In both SEA and SA, different questions and correspondingly different process methodologies, may be relevant in different applications. For example, project SAs based on EIA may be more reactive, although, as noted in the background section, even project-level SAs are beginning to become more proactive and to play a greater role in shaping the proposal. In contrast, the generation of development plans for a region are, by their nature, likely to be more proactive and strategic (Morrison-Saunders and Thérivel, 2006).

A generic framework for an integrated, proactive SA process might consist of the following broad steps (see also Noble and Storey, 2001):

- Define the issue to be addressed and the desired outcome, ensuring that this is defined as openly and strategically as possible.

Box 34.3 *The Gorgon gas development in Western Australia*

This case study relates to the integrated assessment of the proposed Gorgon gas development on Barrow Island, a Class A nature reserve in Western Australia, which was conducted in 2002–2003.

Question: Can Gorgon gas processing facilities be located on Barrow Island? This defined an essentially reactive assessment of the proponent's preferred option.

Approach: Initially win/win/win – the assessment applied a three pillar approach with an emphasis on achieving simultaneous environmental, social and economic gains, with the application of 'net conservation benefits' or environmental offsets designed to achieve an overall positive environmental outcome. It eventually proved impossible to achieve the desired win/win/win, due to the high environmental risks and hence the approach reverted in effect to 'minimize impacts'.

Integration: The assessment of impacts was conducted in two separate sections: the environment and the social and economic, which reached opposing conclusions. 'Integration' was thus limited to a trade-off decision at the level of the cabinet decision to approve the proposal.

Conclusion: The potential for integration and win/win/win outcomes was hindered by a closed, non-strategic framing question, a reactive assessment process and the separate consideration of environmental, social and economic implications.

Source: Adapted from Morrison-Saunders and Thérivel (2006).

- Define the sustainability decision criteria.
- Identify alternative means of achieving the desired outcome.
- Analyse the sustainability implications of each alternative.
- Select the most desirable alternative.
- Refine the preferred alternative to maximize potential benefits and minimize potential adverse effects.

It has recently been argued that this simple framework can be enhanced by (Grace, 2010):

- Taking a systems approach that commences with defining the socio-ecological system and seeking to understand its dynamics and resilience as the basis for the identification of appropriate sustainability decision criteria and the assessment of alternatives.
- Undertaking the SA in the context of a range of future scenarios of conditions to which the system might be subjected.
- Acknowledging the uncertainties inherent to the process and developing an adaptive management strategy to ensure that system integrity is maintained into the future.

Governance and institutional arrangements for integration

From a governance perspective, integration means that a specific SA should link with other decisions at all levels (the concept of tiering) and with decision-making processes beyond assessment (for example monitoring and follow-up). Unfortunately, governance and institutional structures that might support these forms of integration remain rare in practice. Recent experiences with SAs conducted for the purpose of project approvals have emphasized that decision-making based upon the integrated and holistic concept of sustainability often sits uncomfortably with traditional bureaucratic structures in which environmental, social and economic mandates are separated (Gibson, 2006). Such cases can degenerate into conflicts between agencies, with little chance of an integrated approach to assessing sustainability or the achievement of positive sustainability outcomes (Pope et al, 2005). In jurisdictions such as Canada and Western Australia, attempts have been made to overcome this fragmentation through the use of 'sustainability panels' charged with presenting integrated advice on the sustainability of a proposal to government decision-makers (Gibson et al, 2005; Gibson, 2006; Pope and Grace, 2006). The systems approach in particular highlights the interrelatedness of all system components, some of which may fall within the jurisdiction of various government agencies and others within the remit of a proponent, and calls for a high level of cooperation and sharing of responsibilities.

The influence and purpose of SA may go beyond making better decisions into another form of integration. Hacking and Guthrie (2006) and Pope and Grace (2006) have described how individual project-level SAs have influenced aspects of their policy and institutional contexts, and how they have raised more fundamental questions regarding the way society is structured through a process of social learning. Similar observations have been made in relation to SEA (Owens and Cowell, 2002; Bina, 2003). An integrative approach calls for governance systems that capture and implement such learning outcomes (Jenkins et al, 2003). Furthermore, the extent to which private project proponents can be encouraged to adopt a proactive sustainability approach to the development of a proposal will also depend upon the legislative and governance structures in place. It therefore seems likely that institutional and perhaps legislative reform may be required in some jurisdictions in the future to enhance the degree of integration of SA processes (Pope and Grace, 2006).

Consultation and engagement

Many authors note the increasing emphasis on public participation and engagement in impact assessment and decision-making generally throughout the history of environmental assessment (EA) and cite the potential advantages of this trend in enhancing the following aspects: social responsibility and learning; procedural fairness; the integration of social values into analytical decisions; increased public trust and confidence in decisions and decision-makers; and the quality of technical assessment processes through lay interrogation and challenging of expert assumptions (Kørnøv and Thissen, 2000; Monnikhof and Edelenbos, 2001; Scrase and Sheate, 2002; Petts, 2003).

Table 34.1 *From SEA to SA: Summary statement*

Main trends and issues	A rapid growth of SA reflecting a wide range of approaches across the world, and recognition of the opportunity and need to collectively reflect and learn from practical experiences.
	Recognition that the interpretation of sustainability implicit to a SA process has a significant influence over the process and its potential outcomes, and that, ideally, sustainability should be recognized as an integrative concept that informs every stage of the process.
	Emergence of SA processes underpinned by the concepts of socio-ecological system integrity and resilience.
	Debate about the appropriate relationship between SA and the decision-making process itself, and recognition that this is shaped by the question framing the decision and the nature of the application.
	Increasing calls for both practical guidance in the form of process frameworks, tools and techniques, underpinned by conceptual understanding.
Main perspectives	**Current status**: The practice of SA is occurring in different contexts, applications and jurisdictions around the world. While much has been learnt already from these experiences, there is a need for further cross-jurisdictional sharing and learning, underpinned by a conceptual understanding of different practices, their roles and aims. There is a particular focus on integration and what this means in terms of sustainability itself and in the design and implementation of SA processes. Systems approaches to SA are emerging.
	Strengths and weaknesses: The current variety of approaches to SA is a strength – it reflects the evolution of SA practices that are appropriate to the context in which they are conducted; and it provides a rich base of experience from which to learn. But is also a weakness, since it creates difficulties in comparing different practices as context-dependent assumptions are often built into particular processes.
	Many applications of SA build upon existing practices, particularly in EIA and SEA, which again is both a strength and a weakness. The strength is that processes can evolve appropriately through a learning by doing approach; the weaknesses are that: the specific and potentially distinguishing conceptual and theoretical basis for SA has received little attention to date; and the legacy of impact assessment with its focus on specific issues, and the institutions that support it, may limit the ability of SA processes to contribute to the essentially integrative and holistic concept of sustainability.
	A further related weakness is that, depending upon the interpretation of sustainability applied within an assessment process, there is a risk that environmental protection may be undermined. This is particularly true of assessment processes based upon the 'three pillars' of environmental, social and economic considerations and which are not essentially integrative.
	Information and inputs: The quality of information and inputs will vary according to the particular application. In general, however, SAs, by virtue of their broad scope, tend to generate vast amounts of data.

(continued)

Table 34.1 (*continued*)

	Outcomes and benefits: SA that is an integral part of the decision-making process has been demonstrated to improve individual decisions, including project proposals. It is also becoming apparent that such processes also have the potential to influence and change aspects of the prevailing policy and institutional context in a process of 'trickle-up' and ultimately to enhance the whole socio-ecological system. Additionally, SA processes that involve collaborative decision-making can support social learning that may make an important contribution to sustainability.
Key lessons	An integrative approach to SA should be guided by the holistic and integrative concept of sustainability, should be inherent to the process of developing a proposal, should be supported by appropriate governance and institutional systems, and should embrace community engagement and deliberation.
	Reflection upon the conceptual basis and intent of a SA is essential to good practice. Such reflection will also facilitate learning among practitioners working in different sectors and different jurisdictions. This, in turn, is vital to the continued development of SA.
Challenges for the further development of SA	The development of an increasingly integrative approach to SA, as defined above, in particular, the further development of SA processes that take account of socio-ecological systems and resilience.
	The relationship between SA and the broader context within which it is conducted, and the potential for each to influence the other.
	The potential for SA to contribute to a process of social learning through deliberation and engagement.
	The challenges associated with operationalizing sustainability in the context of a specific decision and establishing appropriate decision criteria.
	The development of practical guidance informed by reflections on these conceptual aspects.

However, Bradbury and Rayner (2002, p23) have observed that consultation and engagement processes are often limited to 'instrumental' approaches in which 'information from the agency is a commodity (input) causing change (response) in a passive, public recipient' and the main aim is to legitimate decisions that are well on the way to being made. This approach has been repeatedly proven to be entirely inadequate and to escalate rather than limit conflict. Consequently, it is increasingly being recognized that it is better to engage the wider community early in the decision-making process, including the framing of the assessment, the identification of alternatives and the modelling of the socio-ecological system (Enserinck, 2000; Monnikhof and Edelenbos, 2001; Petts, 2003; Partidário et al, 2009).

Extending this argument, Owens and Cowell (2002, p51) believe that consultation and engagement processes should facilitate a process of social learning, using the potential of assessment processes to raise 'searching questions about policies and development strategies' (see also Sinclair et al, 2008). This phenomenon has been observed in relation to project SA in Western Australia. Here, participation and open deliberation have identified gaps and anomalies in the immediate policy and institutional context and have also posed challenges to deeply embedded societal and political assumptions affecting sustainability (Pope and Grace, 2006).

Providing deliberative space within SA processes may be one of the most powerful facets of integrative SA processes. It may help to ensure a holistic approach to sustainability in which values and different worldviews are not only respected but play a part in shaping the decision in the antithesis of a reductionist and mechanistic approach to sustainability. Furthermore, allowing the kinds of deep challenges discussed above has the potential to generate growing societal awareness of what global sustainability might require, thus integrating the decision at hand with its context in a deep and fundamental way.

Conclusion

Although SA has much in common with SEA, its distinguishing feature is that it is grounded in the societal goal of sustainability, the complexity and ambiguity of which has been briefly outlined in this chapter. This deceptively simple distinction has broad implications and bestows upon the practice of SA a mandate that extends beyond an individual decision and seeks to contribute to a more sustainable society.

We have explored the contours of an integrative framework for SA, examining how the assessment process should be integrated with the process of developing the proposal; the relationship between the decision and its broader governance and institutional context; and the potential power of deliberative consultation processes to promote integration. We have attempted to briefly introduce the emerging thinking around systems approaches to SA. We do not claim that our picture is complete. Rather, we hope that pitching our discussion largely at a conceptual level has provided a basis for two important activities: the sharing of experiences from different contexts and the development of good and effective SA practices. Both require us to reflect upon the conceptual underpinnings of our practice.

In continuing to develop and refine SA processes that might contribute to a shift towards a more sustainable society, we must ask:

- How do we understand sustainability?
- How might the proposal at hand contribute to sustainability?
- By what criteria might sustainability be defined within this socio-ecological system?
- What is the question that the assessment process is to help answer?
- What process methodology will answer this question most effectively?
- What are the institutional and governance implications?
- How can we incorporate the views and values of the broader community?

Only when these questions have been addressed can we consider which analytical tools and techniques might enable us to gather and analyse the data upon which the assessment process depends.

If SA is to effectively contribute to this global agenda, its practitioners must engage fully with the concept of sustainability and explore its contours and

meaning in relation to assessment and decision-making. Sustainability calls for us to challenge our own notions of what impact assessment is and should be, and how our field of practice might evolve to contribute to a better future.

Acknowledgements

Notes

1 While the alternative term 'sustainability appraisal' has a specific meaning in the UK, we will use 'sustainability assessment' as a more general term, and one that reflects the preferred terminology of most contributors to our session in Prague.
2 We use the term 'ex ante' here to mean assessment that is conducted prior to the implementation of a proposal or action, in contrast with 'sustainability assessments' that seek to determine the 'state of sustainability' in a particular area and that are 'ex post' monitoring tools.
3 This definition is derived from one suggested by Theo Hacking (personal communication). We have modified it by choosing the term 'sustainability' over 'sustainable development', following Davison (2001) in suggesting that the former has more holistic and integrative connotations.
4 In the development sector, the potential for trade-offs is viewed in a more positive light. The integrated triple bottom line approach to sustainability appraisal is seen as a process for striking an appropriate balance between environmental, social and economic outcomes, and therefore perhaps providing the means to make acceptable a proposal that would otherwise be considered unacceptable if viewed only in environmental terms (Pope et al, 2004).
5 There is considerable variation in terminology evident in the recent literature: for example, Hacking and Guthrie (2006) use the term 'objectives' for both aspirational and threshold criteria (in our terminology); Gibson (2006) uses 'criteria' to refer to what Hacking and Guthrie (2006) and Pope and Grace (2006) term 'principles'.

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