

A DECISION-MAKER'S TOOL FOR SUSTAINABILITY-CENTRED STRATEGIC ENVIRONMENTAL ASSESSMENT

PETER CROAL*

*Canadian International Development Agency
Gatineau, Quebec, K1A 0G4, Canada
Peter.Croal@acdi-cida.gc.ca*

ROBERT B. GIBSON

*Department of Environment and Resource Studies
University of Waterloo, Waterloo
Ontario, N2L 3G1, Canada
rbgibson@uwaterloo.ca*

CHARLES ALTON

*Strategic Environmental Consulting
New Port Richey, FL 34655, USA
charles.alton@earthlink.net*

SUSIE BROWNLIE

*deVilliers Brownlie Associates
21 Menin Avenue, Claremont, 7708 South Africa
susie.brownlie@dbass.co.za*

ERIN WINDIBANK

*Secretariat, University of Waterloo
Waterloo, Ontario, N2L 3G1, Canada
ewindiba@uwaterloo.ca*

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*Corresponding author.

This paper outlines a Decision-Maker's Tool (DM Tool), designed to guide practitioners and their inter-disciplinary teams through a typical strategic environmental assessment (SEA) process. While SEA properly includes post-decision follow-up, the DM Tool covers the SEA process up to the creation of a Briefing Note for the decision maker. Together, use of the DM Tool and the Briefing Note should facilitate positive contributions to sustainability through well considered and aligned policies, plans and programmes (PPPs), by enhancing the comprehensiveness, consistency, clarity, accessibility and credibility of decision making information.

The discussion presumes that the SEA is central to the PPP development process, rather than being a separate exercise. The DM Tool and Briefing Note are designed to recommend PPP action based on clearly stated needs and purposes, addressing the key issues, and application of explicit sustainability criteria in the comparative evaluation of feasible alternatives. Particular attention is paid to recognising trade-offs and residual risks, and presenting all this information concisely for the decision maker.

Keywords: Strategic environmental assessment; sustainability assessment; decision making; process design; evaluation criteria; alternatives; trade-offs.

Introduction

Most strategic environmental assessment (SEA) guidelines revolve around aspects of process stages and steps, methods and techniques (Thérivel *et al.*, 2004). However, since the influence of SEA on a strategic initiative (policy, plan or programme — PPP) is notably related to the extent to which SEA recommendations are in line with the values and interests of the main decision makers (Runhaar and Driessen, 2007), it is important to consider the specific decision context. Fischer (2006), for example, focuses on the overall context of SEA and applies an SEA system's approach to developing guidance for the transport sector. Morrison-Saunders and Therivel (2006) explore integration of ecological, social and economic considerations in sustainability assessment, noting that although integration generally starts early in the decision-maker's mind, the reports to support the decision-making process — including SEA — could remain unintegrated throughout this process.

Sustainability-based SEA seeks to integrate the full spectrum of considerations within the policy formulation or planning process. In so doing, it faces two conflicting realities. On the one side are the complexities of ensuring that strategic initiatives (PPPs) make a positive contribution to sustainability; the potential effects of which must change or even reverse the established practices of many interests, some of them sensitive and powerful. On the other side are the senior decision makers responsible for strategic choices; people who are typically smart but not experts in the multitudes of specialist fields, and who have limited time to

devote to individual cases and decisions. For SEA practitioners this means that much depends on the Briefing Note, or its equivalent: the document that takes the core findings of the sustainability-based assessment work and summarizes, translates and conveys them to the decision maker. To be effective, the Briefing Note must be carefully tailored to meet the decision-maker's needs, and be concise, clear, sufficiently comprehensive and credible. The presentation of information can help meet these requirements, but much depends on the quality of the SEA work on which the Briefing Note is based.

The Decision-Maker's Tool (DM Tool) outlined here is meant to guide SEA practitioners and their inter-disciplinary teams through a typical SEA process, in order to arrive at a concise and easily accessible message that meets the priority needs of decision makers. It uses a number of steps and questions that enable the process to recommend the optimum alternative, taking due account of trade-offs associated with different alternatives, and to support and produce an effective Briefing Note for the decision maker, focused on crucial sustainability issues. [Morrison-Saunders and Therivel \(2006\)](#) acknowledge that the issue of trade-offs in sustainability decision making is a key factor that must be explicitly acknowledged and proactively addressed in the sustainability assessment process. As such, the DM Tool could be of value to both SEA practitioners and decision makers.

The approach described is not tied to any particular legal or policy requirement (e.g., the European Union Strategic Environmental Assessment Directive); it is sufficiently generic to be applied in a wide range of contexts where sustainability is the desired outcome. As a generic tool, the DM Tool can act as the starting point and catalyst for tiering decisions. It can be used from the policy level, through to plans, programmes and ultimately to projects. In the absence of effective tiering, communication processes may become broken or interrupted, creating dissonance with other levels of decision-making (ICON, 2001, in [Fischer, 2006](#)). In addition, by looking first at the policy level and helping to define parameters for sustainability "downstream", the DM Tool lays a strong foundation for decision making at subsequent tiers.

The intention of both the DM Tool and the Briefing Note is to promote positive contributions to sustainability by improving the base for decision making on PPPs and other proposals of a strategic nature, e.g., regulatory initiatives and budgets. The DM Tool has been developed for environmental assessment at a strategic level, since it is at this level that the scene is set and the bounds defined for project-level assessments. However, many major projects themselves effectively establish policy positions and determine land or resource use frameworks that are equivalent to plans. For this reason, many of the steps and questions in the DM Tool would

be relevant, and could be applied, to project-level assessment in the pursuit of sustainability.

The primary purpose of SEA in particular and environmental assessment in general is to improve proposals, engage stakeholders and inform decision makers, and ultimately, improve real environmental outcomes. Use of the DM Tool should enhance all these aspects. The DM Tool acts as a foundation and guide for the crucial step in an SEA process when the SEA practitioner must present the findings of the SEA of a proposed PPP to the decision maker in a usable and useful form, and in a consistent and relevant way. That is the role of the Briefing Note.

When an environmental assessment adopts a set of criteria for evaluating impacts and options, it should cover sustainability issues, the interests and aspirations of society, the government's policy directions and other concerns of interest to the decision maker. As the accountable authority, the decision maker must have a convenient and well-informed basis for confidence in the overall grounds for a decision. Typically s/he will need to see how the major and particular issues have been addressed in the SEA, how their interconnections have been recognised, how alternatives have been compared, how any significant trade-offs and risks have been considered, and how the results reflect the outcomes of the SEA.

The DM Tool is meant to meet these needs and provide the decision maker with a document for discussions at a Cabinet, executive management or board meeting. It provides the decision maker with the necessary background for further discussions with stakeholders and the broader public. While decision makers need evidence of careful and detailed analysis, they also need concise and reliable summary information. The DM Tool is designed to focus on the links between critical information in a sustainability-centred SEA and the priority needs of decision makers. It acts as a simple "how to" guide on the way in which an SEA can be distilled down to a Briefing Note format with key recommendations.

An effective Briefing Note presents the SEA information in a clear and accessible format, increasing its potential influence and facilitating accountability. The DM Tool aims to assist Briefing Note preparation by translating a wide array of technical information and values into a language that matches the culture familiar to the decision maker. At the same time, it distils out the crucial sustainability issues for the decision maker in the Briefing Note, creating an effective bridge between the strategic assessment and decision making. Later, when developing and assessing downstream initiatives such as more specific programmes and projects guided by the strategic undertaking, the Briefing Note becomes a useful instrument for the decision maker and public by providing a rational link demonstrating the consistency between the strategic undertaking and the design, assessment and implementation of these subsequent initiatives.

A Caveat

The SEA process outlined in this paper is a simplification. It suggests a basically rational, linear step-by-step exercise leading from objectives and criteria through identification and evaluation of alternatives, to a well-founded decision. The reality for most PPPs is less tidy. Strategic initiatives typically have a long and more or less murky heritage of past PPPs and informal rules. They are surrounded by overlapping new initiatives, shifting objectives, conflicting higher level influences, entrenched ideas and habits, limited resources and capacity, hierarchies of authority, narrow mandates and inter-agency competition, all of which conspire to obscure goals, discourage comprehensiveness, confuse the analysis and multiply the number of decision makers. The DM Tool will eliminate none of these factors.

Even in the best of circumstances the process described here will need to be adjusted and elaborated in various ways to be suitably iterative and sufficiently flexible to accommodate the messy complexities of actual SEA. No doubt in some regrettable cases, important aspects will have to be compromised. The basic principles nevertheless stand and should be useful as a foundation for particular applications in the vast range of challenges for real-world SEA.

The DM Tool and Briefing Note

The DM Tool consists of a series of steps and questions meant to guide the SEA practitioner in the framing of assessment work and provide the foundation for an effective Briefing Note. The DM Tool allows for the transfer of critical information to the front of documentation for decision making while providing a clear trail so that supporting and comprehensive information may be easily obtained when required.

Because the central goal of the DM Tool and Briefing Note is to help decision makers understand and use sustainability-based SEA analyses, it is critically important to ensure attention to interrelationships between and among the natural, social, cultural, economic, institutional, technical and political environments and influences. Without this broad focus it is impossible to seek mutually reinforcing positive contributions to sustainability, or to evaluate the trade-offs a decision maker must face while considering the net effects and implications of strategic decisions.

Decision makers are the primary audience of the DM Tool and Briefing Note, and the discussion here respects the particular needs of decision makers for concise presentation and analysis of options and trade-offs. But the DM Tool products are

also intended to serve public understanding by including documents that give stakeholders and the interested public a clear statement of the analyses presented to the decision maker.

The approach adopted here is meant to be generally suitable for application in all jurisdictions, including those whose traditional priority is promotion of economic expansion. Long, diverse and often bitter experience has taught that economic growth will not bring net lasting benefits unless the full suite of sustainability considerations is addressed. While trade-offs will not always be avoidable, there is no future in treating economic, social and ecological needs as inherently competing objectives. The DM Tool and Briefing Note rest on the core insight of sustainability theory and practice, namely that social, ecological and economic objectives are interdependent, and that good decision making must find ways of enhancing human wellbeing and biophysical stewardship simultaneously.

The DM Tool is made up of two main parts:

- **Part A** addresses the **SEA process in decision making** and provides a sustainability-centred focus to ensure that the SEA results are based on comprehensive analysis that will assist decision makers with broad public interest responsibilities. It explains the role of SEA in the broader decision-making context, and covers the principal considerations to be addressed through the SEA process in arriving at a recommendation to the decision maker in the form of a Briefing Note and supporting documentation.
- **Part B** deals specifically with the format and content of the **Briefing Note**, and supporting documentation.

Part A: The SEA Process in Sustainability-Based Decision Making

This part of the DM Tool addresses the linkages and factors that should influence strategic decision making, and the role of sustainability-based SEA (**Part A1**). It provides guidance on the main considerations that inform a recommendation to the decision maker (**Part A2**). It is structured in the form of a series of steps and core questions.

The purpose of the questions is to stimulate ideas and uncover answers where information exists. Where information is lacking, this should be noted; if the missing information could have a significant influence on the choice of alternatives or options, proper responses are likely to include additional studies and/or a risk-averse approach to decision making.

The information gathered in response to these questions will help focus the SEA process and provide supporting information to the Briefing Note.

Part A1 Establishing the decision-making context: linkages, influencing factors and the role of the SEA

The SEA and the Briefing Note must address the full suite of sustainability issues specified for the particular PPP case and context. They should also clearly address the decision-maker's mandate and consider all factors likely to influence decision making: the influence of the prevailing policy and institutional context on the integrity and effectiveness of proposals must be recognized (e.g., [Pope and Grace, 2006](#)). The ultimate objective is to enhance the quality of decision making and help stakeholders and the public understand the final decision. Developing this understanding should promote acceptance, especially in situations where some trade-offs have been unavoidable.

The decision maker needs to be aware of all of the main considerations relevant to a decision to approve, reject or modify a proposed PPP, whether or not s/he chooses in the end to accept the findings and recommendations of the SEA.

The SEA has three main purposes:

- (i) to ensure careful attention to the full range of important considerations, including ones often neglected in the absence of SEA;
- (ii) to inform stakeholders and give them a voice; and
- (iii) to provide decision makers with well-founded analyses of the options and trade-offs involved, so that there is an explicit foundation and defensible rationale for decisions.

The relationship between PPP decisions and subsequent initiatives guided by approved PPPs is also important. Typically, the results of the SEA are to set policy or plan direction and not to act as absolutes. General conditions assumed in PPP level assessments may not always be matched at the specific project level. Moreover, conditions change: ecosystems, community capacities, scientific understandings, technological options (etc.) are dynamic. SEA work and the DM Tool must therefore anticipate complexities in the implementation of PPPs (especially the application of broad policies, plans and programmes to more specific undertakings), and the need to adjust and revise both PPPs and their application. This entails providing guidance on where flexibility may or may not be acceptable, how possible exceptions are to be judged, and how revisions to the PPP are to be made in the short-term as well as through regular review.

Table [A1](#) sets out the steps and core questions for use in the initial establishment of the linkages, influencing factors and other considerations affecting the decision-making context of the SEA.

Table A1. Steps and core questions concerning the decision-making context.

Steps and core questions	Guidance/tips
Who is (are) the responsible decision maker(s) for the decision on whether or not the PPP should proceed?	Identify the appropriate decision maker(s) at the outset of the SEA.
What is the legal and policy framework surrounding the decision?	Identify the parties involved in and/or responsible for elements of the PPP decision. Determine any laws that may affect implementation. Illustrate the framework for PPP decision making.
<p>What is the current agency policy/ mandate the decision maker is obliged to meet? Is this supportive of the PPP initiative?</p> <p>Would the PPP be in keeping with current initiatives and future direction?</p>	Determine the possible institutional constraints. Include 'who, what, and how' concerning their possible influence on the SEA outcomes.
What are the current political influences and commitments (national to international)? Is the proposed PPP seen to be a priority in this context?	Identify the importance of these influences and commitments (e.g., Millennium Development Goals, focus countries or sectors, ratified international or bilateral agreements, political sensitivities, commitments and priorities, etc).
Who are the potential stakeholders beyond the decision-making agency, how have they been involved in the deliberations and what are their perceptions?	Consider all relevant stakeholders. Determine their worldview, priorities, aspirations, pre-conceptions, expectations and concerns.
<p>How has broader public participation been incorporated? At which stage/s of the process?</p> <p>What is the current public perception? Is the proposed PPP in line with prevailing ideas and expectations? Is it likely to be acceptable to different audiences?</p>	<p>Rigorous identification and incorporation of key issues from the outset of PPP deliberations and in the SEA help to address concerns and potential conflict early and avoid delays later in the process.^a</p> <p>Note the current public perception (local to international, affected nations for trans-boundary cases, donor and recipient countries for development assistance cases, etc.) and identify the potential influence on and significance to decision making.</p>
<p>What is the potential for the PPP to enhance relevant economic and business initiatives in ways that also enhance socio/cultural and ecological effects?</p> <p>Have the relevant economic and business linkages been identified?</p>	Connect the initiative with relevant business/economic issues and present its potential contribution to a larger vision (price stability, resilient markets, improved efficiency of resource use, more equitable distribution of risks and gains, long term maintenance of economic capital and opportunity, etc.).

Table A1. (Continued)

Steps and core questions	Guidance/tips
What is the potential for the PPP to further social and cultural goals in ways that also enhance economic and ecological effects? Have the relevant social and cultural priorities been identified?	Connect the initiative with relevant social or cultural issues as a contribution to a larger vision (poverty reduction, decreased vulnerability, curbing AIDS, equal access to resources and opportunities, protection of heritage, gender equity, education, health care, etc.).
What is the potential for the PPP to contribute to biodiversity conservation and ecosystem services goals in ways that also enhance socio-cultural and economic effects?	Connect the initiative with relevant biodiversity/ ecosystem services issues as a contribution to a larger vision (biodiversity conservation, enhancement of ecosystem services, stewardship incentives, stimulating a “green economy”, etc.).

^aPublic consultation and participation approaches for such purposes are now quite well developed. See, for example, the work of the International Association for Public Participation (IAP2) <http://www.iap2.org/displaycommon.cfm?an=5>, as well as the Calabash Public Participation project on www.SAIEA.com for a developing country perspective. An illustrative example of Key Regional Issues identified by various stakeholders is in the case of the Bonneville Power Administration’s (BPA) Fish and Wildlife SEA. See C. Alton, Bonneville Power Administration Fish & Wildlife Implementation Plan Final EIS, DOE/EIS-0312 (April 2003).

Part A2 Doing the analysis: need and purpose, key issues, alternatives, criteria, evaluation, trade-offs and risks

The SEA should lead to a recommendation to the decision maker, formulated on the best available information and methods of analysis. The components of Part A2 of the DM Tool are designed to ensure that the necessary information for sound decision making exists within the SEA, so that an effective and well-focused Briefing Note can be prepared. The emphasis is placed on information that is critical and requires attention in the Briefing Note.

In particular, the decision maker needs to have clear answers to the following big questions, each of which is addressed in a separate section and associated tables below:

- (i) Why is the PPP being pursued — its need and purpose (Part A2.1)?
- (ii) What key issues are associated with the proposed PPP (Part A2.2)?
- (iii) What alternatives were evaluated (Part A2.3)?
- (iv) How were sustainability-based criteria specified for the particular case/context (Part A2.4)?

- (v) How were the criteria applied in the selection and evaluation of the alternatives, and which alternative was found most likely to deliver positive sustainability contributions without posing a threat of significant adverse effects (Part A2.5)?
- (vi) What trade-offs are associated with choosing between the different alternatives, taking into account compensation for residual effects that are difficult to avoid or mitigate? How were the trade-offs evaluated (Part A2.6)?
- (vii) What risks are associated with the implementation of the proposed PPP (Part A2.7)?

Answers to these questions should give the decision maker a firm basis for understanding why a particular alternative emerges as the most reasonable option for meeting the sustainability criteria. The answers should also reveal for the decision maker which alternatives were ranked close to the optimum alternative in terms of meeting these criteria, and may be re-considered in the future if a change is needed. The decision will rely on the methods and processes of the SEA that take the specifics of the PPP context into account. The Briefing Note needs to be explicit in this respect.

Part A2.1 Need and purpose

The decision maker is ultimately accountable for taking decisions on strategic matters. S/he needs to know exactly what needs and purposes underlie development

Table A2.1 Steps and core questions concerning the need for and purpose of the PPP.

Steps and core questions	Guidance/tips
Has the need for the PPP been defined in light of broad sustainability objectives?	The need is the underlying reason for the proposed PPP. Specifying the need helps define the boundaries or scope of alternatives that would be appropriate to consider. A narrow definition will diminish the range of reasonable alternatives and their potential for contributing to overall sustainability objectives.
Have the purposes to be achieved by the proposed PPP been clearly and openly articulated to other stakeholders and the public, and with reference to the agency mission, legal requirements, responsibilities to the public and/ or clients, business drivers, political realities, and social and ecological imperatives?	The purposes will be used by the decision maker to judge the selection of alternatives and to evaluate the trade-offs made in reaching a decision. It may be used by the decision maker to demonstrate to stakeholders why and how a decision was made.

of the proposed PPP, what core objectives are to be served, and what authorities, laws, policy directions, regulations and other international or national obligations must be met.

It is important to define the PPP needs and purposes broadly enough to enable exploration of fresh approaches and opportunities for sustainability gains beyond the core mandate of the proponent. One way of encouraging this breadth is to consider how a PPP might contribute to multiple sustainability objectives. Typically these multiple objectives overlap with the long term interests of the diversity of stakeholders who ought to be engaged in the PPP deliberations.

Part A2.2 Key issues

“Key issues” are those issues determined by the institution/agency/organisation to be critical for its work, raised during the stakeholder engagement or public scoping process as being significant, and evidently important in determining whether the proposed PPP may make a positive contribution to sustainability. These key issues need to be addressed during the SEA.

The identification of, and focus on, key issues is an important part of defining the criteria for evaluation and decision making during the SEA, and for arriving at an optimum recommendation for the PPP. The key issues and evaluation criteria inform the questions to be answered through the SEA process, including the range of PPP alternatives, the significance of predicted effects, the potential adequacy of mitigation and enhancement, any risks, the acceptability of trade-offs, the relative desirability of alternatives, the nature of any conditions of approval, and the priorities for follow-up. The decision maker will ultimately use the information developed for these key issues to arrive at a final decision.

Table A2.2. Steps and core questions concerning the key issues.

Steps and core questions	Guidance/tips
Has the early stakeholder engagement and public scoping process provided enough information to determine the key issues that need to be addressed in the SEA?	Early engagement with the public, all potential interest groups (non-government organisations, community-based organisations, business, etc.) and key stakeholders (including other government bodies) to flush out public concerns and special interests will limit unnecessary delays and guard against legal challenges late in the decision-making process. Keeping the SEA process transparent, and using open and neutral experts, is important to build trust and confidence and ensure that fears, aspirations, issues and concerns are expressed.

Part A2.3 Identification of alternatives

Often in conventional environmental assessments, including SEAs, the process begins with a favoured option and alternatives are assessed because of legal obligations and/or to build a justification for the initially favoured PPP. SEA is unlikely to serve sustainability objectives unless the identification of alternatives is creatively open and impartial, starting with the broadest base of different alternatives, and presenting them without prejudice.

Table A2.3. Steps and core questions concerning the alternatives.

Steps and core questions	Guidance/tips
<p>What are the strategic alternatives to meet the underlying need(s) for the proposed PPP?</p> <p>Have broad sustainability objectives and the key issues, identified during early public scoping in the PPP process, informed the choice of alternatives to be assessed?</p> <p>Are these alternatives clearly laid out, including the “no-go” or <i>status quo</i> option?</p>	<p>Broad alternatives and more specific options that address broad sustainability objectives and respond to the key issues and could achieve the same goals as the proposed initiative should be considered.</p> <p>The idea is to have enough analysis of impacts associated with the key issues to support numerous combinations and possible decision outcomes, based on a reasonable number of significantly different SEA alternatives (Alton, 2003). These alternatives could include:</p> <ul style="list-style-type: none"> ● the <i>status quo</i> (current situation), ● the most ecologically sensitive, ● the highest technically achievable, ● the least expensive, and ● the alternative currently favoured by the proponent body, often comprising elements of the other alternatives. <p>The objective would be to identify the alternative promising the most desirable package of multiple, mutually reinforcing and lasting gains while avoiding significant adverse effects.</p>
<p>Are the proposed strategic alternatives within the scope of the need?</p> <p>If alternatives have been considered and rejected during the SEA, are explicit and clearly defensible reasons given for their rejection?</p>	<p>It is <i>essential</i> to start with the broadest possible range of alternatives. In some PPP processes, alternatives that emerge as being unlikely to contribute to sustainability may be discarded. However, it is important to show that these alternatives were considered, and to provide the reasons for their rejection.</p>

Evaluation of the alternatives using the sustainability criteria will provide the necessary identification of strengths, weaknesses and trade-offs for each alternative. With this information, the decision maker makes the final decision for which s/he is ultimately accountable.

Part A2.4 Criteria for evaluation and decision making

In order for strategic assessment to support decision making effectively, the decision process should be the departure point for the assessment (Nilsson and Dalkmann, 2001). Decision makers need to compare the choices open to them in accordance with an explicit set of sustainability-based decision criteria. These criteria also function as evaluation criteria in the SEA process for judging the significance of impacts, alternatives, possible enhancement or mitigation measures, and for designing follow-up requirements. The criteria and the processes for their selection need to be visible and available for debate.

The criteria for both evaluation and decision should be based on a combination of

- the fundamental requirements for progress towards sustainability (to ensure comprehensiveness), and
- the major objectives and concerns arising from the particulars of the specific PPP's nature, purpose and context (to ensure relevance).

The fundamental requirements for progress towards sustainability and associated decision criteria have been conceived and organised in many different ways (Pope *et al.*, 2004; Dalal-Clayton and Sadler, 2004). Those that adopt the conventional social, economic and ecological categories (the three pillars of sustainability) are probably most common, especially in the private sector where “triple bottom line” approaches have been popular (Elkington, 1997). These approaches have the advantage of convenient fit with established divisions of professional expertise, agency mandate and collected data. However, they tend to treat these categories in silos, focus on trade-offs and are ill-equipped to deal with the sustainability imperatives of paying attention to interactive effects and pursuing multiple, mutually reinforcing gains. More integrated approaches such as the one set out by Gibson *et al.* (2005) use less familiar categories such as socio-ecological system integrity, inter- and intra-generational equity, but are better suited to the complex system realities in which PPP initiatives are typically immersed.

Because circumstances vary greatly from one context to another, no single generic approach is adequate; the criteria need to build on fundamental sustainability requirements, elaborated and specified for the particular case and context.

Table A2.4. Steps and core questions concerning the criteria for evaluation and decision making.

Steps and core questions	Guidance/tips
How are the fundamental requirements for sustainability recognised?	The development of criteria should begin with a basic understanding of what is needed to ensure progress towards sustainability. The best summaries are drawn from lessons over decades of deliberation and experience with sustainability-oriented initiatives. Attention to “bigger picture” sources such as global studies (e.g., MEA, 2005), regional and national protocols, responsibilities, laws, policies, targets (etc.) is also helpful.
<p>What are the case- and context-specific goals and associated sustainability criteria?</p> <p>How do these incorporate the basic PPP issues or problems to be solved and/or the opportunities to be maximised?</p> <p>How have the key issues identified during stakeholder engagement (including the public scoping process) informed the formulation of case- and context-specific sustainability criteria?</p> <p>How have the potentially relevant interactions among objectives, influences and effects been identified and recognised in the criteria development?</p>	<p>Formulation of the sustainability criteria should combine attention to</p> <p>(i) the broad purpose(s) of the PPP and related considerations (e.g., response to major concerns, opportunity for supplementary benefits, costs, effectiveness, manageability, adherence to established strategies, competitive priorities, flexibility and adaptability, and the nature of subsequent projects to be guided);</p> <p>(ii) the key issues (which should reflect the priorities, aspirations and goals, and aspects that are important to stakeholders), including attention to vulnerable parties and the valued socio-ecological system components relevant to the case and context; and</p> <p>(iii) system components that may be affected by the PPP decision, and/or may influence implementation of the PPP.</p>
How will the criteria be integrated and grouped into a manageable number of recognisable categories for summarising the findings?	<p>The crucial considerations, typically, are how best to ensure that</p> <p>(i) all fundamental sustainability requirements are covered;</p> <p>(ii) the relevant audiences will understand the meaning and significance of the major criteria and, especially, the categories of criteria; and</p> <p>(iii) the interactions among objectives, influences and effects are recognised by having criteria that focus on the interactions among the various effects in particular areas.</p>

Important considerations include the purpose(s) to be achieved by the PPP, the key issues identified during the SEA process, and factors likely to be affected or crucial to the success or failure of the initiative.

The criteria can be organised in a wide variety of ways: using base categories centred on the fundamental sustainability requirements, based on the main groupings of purposes and key issues associated with the particular case or context, or using some combination of the two.¹

Part A2.5 Application of the criteria in evaluating the alternatives

The central task of the SEA process is applying the criteria to the identification and evaluation of particular and cumulative effects, and overall merits and limitations of the alternatives. This may involve two or more iterations: initially to pare down the set of potentially viable alternatives for more detailed specification and examination; and in the end to compare the alternatives in light of how well each is likely to contribute to sustainability, preferably in multiple, mutually reinforcing as well as lasting ways, while avoiding significant adverse effects.

For the decision maker, the assessment must provide a traceable, reasoned basis for the recommended action. It should aim to be comprehensive yet concise, impartial, and explicit, so that any failures are visible and open to challenge.

Part A2.6 Trade-offs

Decision makers need to know the grounds for trade-offs they are about to make. Trade-offs are to be avoided where possible in the pursuit of sustainability, where the objective is multiple, mutually reinforcing gains in interacting areas. In practice, however, some trade-offs may be unavoidable. In these cases, the consideration of trade-offs in arriving at a decision should be explicit and transparent. Many tools exist to help in the evaluation of trade-offs, including cost-benefit analysis, matrix based appraisal methodologies, multi-criteria assessment, multi-criteria decision analysis, backcasting, alternatives assessment, scenario building, total economic value calculations, etc. It is important to evaluate the significance of the trade-offs in light of the comprehensive set of sustainability criteria properly specified for the context. Standard sustainability-based trade-off rules (Gibson *et al.*, 2005) can provide an initial basis for the evaluation.

¹For a discussion of the options and an elaboration of one case example, see Gibson (2006). A somewhat different example, incorporating the Millennium Development Goals as well as generic sustainability requirements and case-specific issues, is illustrated in Rogozinski (2005).

Table A2.5. Steps and core questions about application of the criteria in evaluating alternatives.

Steps and core questions	Guidance/tips
To what extent does each of the assessed alternatives meet the criteria?	Weigh the alternatives against the criteria. For each alternative and for each criterion, determine the predicted sustainability effects (from strongly positive to strongly adverse). Summary findings for each alternative would cover the major and overall advantages and disadvantages of the alternative.
<p>What is the relative overall ranking of the alternatives?</p> <p>How fully does the preferred alternative meet the criteria and how reliable is its promise to provide multiple, mutually reinforcing and lasting gains while avoiding significant negative effects?</p>	<p>The summary findings for each alternative should be compared with attention not only to their net overall predicted effects, but also to the level of uncertainty or confidence in the predictions and the extent to which trade-offs would be involved (see Part A2.6, below).</p> <p>Set out the anticipated lasting gains from the optimum alternative(s) along with the uncertainties and potential adverse effects.</p>
How can the findings be effectively summarised and presented?	<p>The evaluation of each alternative can most easily be summarised in a set of matrices that depict its predicted sustainability effects</p> <ul style="list-style-type: none"> (i) for each criterion; (ii) for each category of criteria; (iii) for each major area of interactive effects; and (iv) involving unavoidable trade-offs, <p>and provide space for notes, e.g., about uncertainties and requirements for enhancement or mitigation of effects.</p> <p>The comparison of alternatives is also likely to be most easily summarised in a matrix that shows quickly how well or badly the different alternatives meet the criteria. This comparison will be needed in the Briefing Note for the decision maker.</p>

Part A2.7 Risks

Three overlapping kinds of risks are important to the decision maker:

- risks associated with the substance of the alternatives, including especially the optimum alternative (e.g., unprecedented or ambitious and untested technologies);

Table A2.6. Steps and core questions about evaluation of trade-offs.

Steps and core questions	Guidance/tips
<p>Have the anticipated significant adverse impacts that are unavoidable, or cannot be fully or confidently mitigated, been identified for each PPP alternative?</p>	<p>The residual adverse impacts identified here will be the focus of tradeoffs. The significance of these impacts can be judged using a wide range of criteria and thresholds (e.g., Lawrence, 2003), preferably linked to sustainability considerations.</p> <p>Reducing trade-offs may involve accepting a broader range of more modest lasting gains instead of a few more dramatic but shorter term gains.</p>
<p>Has any compensation or offset been proposed for the residual adverse impacts? What is proposed to replace or substitute for the anticipated net loss or damage? Is that replacement or substitute likely to be controversial or unacceptable to key stakeholders? What is the net effect after compensation has been taken into account?</p>	<p>Full and effective compensation for residual negative impacts removes the need for tradeoffs. Compensation can include substitutions in time, place, or kind. Different forms of compensation have different implications with regard to costs, access, affordability, risks to socio-ecological resilience, acceptability to affected parties, and keeping future options open.</p> <p>Stakeholders should indicate the likely acceptability of compensation.</p>
<p>What trade-offs are identified for the given alternatives, including the <i>status quo</i> option?</p>	<p>The basic trade-off considerations are as follows (Gibson <i>et al.</i>, 2005, pp. 122–141):</p> <ol style="list-style-type: none"> (1) trade-offs must be avoided where possible, because the sustainability goal is maximum net mutually reinforcing and lasting gains; (2) trade-offs must be evaluated in an open process and presented with explicit rationales; (3) significant adverse effects must be avoided to the extent possible; and (4) no displacement of significant adverse effects to future generations can be justified unless all other options are worse. <p>Weightings for trade-offs should be adjusted according to the specific context (e.g., more attention to ecosystem services where these are already seriously stressed; more attention to re-distribution of, or change in access to assets where there are major inequities).</p>

Table A2.6. (Continued)

Steps and core questions	Guidance/tips
	<p>Aim for relationships, not exact numbers; a false sense of precision will give a false sense of security over the long term.</p> <p>Explain the trade-offs that would be made for each alternative, and justify reasoning.</p>

Table A2.7. Steps and core questions concerning the identification of risks.

Steps and core questions	Guidance/tips
<p>What possibly significant adverse effects could result from approval of the proposed PPP?</p>	<p>Report all potentially significant negative effects, including worst case scenario effects, their possible significance, distribution and equity implications, and likelihood.</p>
<p>Are there any risks to the effective implementation of the PPP associated with the safety, security and political stability of the targeted area or sector?</p>	<p>Note any conflict or disturbances within the geographic region and/or sector, and analyse potential risk (safety, natural disasters, political upheaval, etc.) that may impede PPP implementation.</p> <p>Gauge the likelihood that the proposed initiative will be challenged (legally or otherwise). Take into account the history of introducing PPPs in the targeted area or sector, noting any controversy and similarity to other challenged PPPs.</p> <p>Note the degree and grounds of public or agency or other stakeholder controversy or resistance (e.g., “not in my backyard”) related to the PPP. Also note any resource or regulatory issues (e.g., global conventions, trade agreements, etc.). Note the degree of “us and them” divisiveness between or amongst key stakeholders.</p>
<p>Are there any risks that the information used in the SEA, the SEA process and/or methods of analysis, may be unreliable, invalid and/or discredited, could distort the findings of the SEA and/or jeopardise optimum decision making?</p>	<p>Give assurance of reliability, validity and adequacy through independent review, peer review, use of professionally certified consultants, transparency and accessibility to the SEA process, etc. Recognise remaining uncertainties.</p>

Table A2.7. (Continued)

Steps and core questions	Guidance/tips
Are there any major risks associated with gaps in information, unknowns, or major uncertainties that could undermine impact predictions? What are the possible penalties for “getting it wrong“?	Describe likely scenarios to make potential penalties clear to the decision maker. Focus on any irreversible impacts or risks of losing irreplaceable resources, potential catastrophic events and particularly vulnerable parties. Take into account anticipated trends in background biophysical or socioeconomic factors.
Are there any risks associated with the ability of institutions or agencies to implement the proposed PPP promptly, effectively and efficiently?	Consider the stability and continuity of institutions or agencies, levels of commitment, any conflicts of interest, available resources and levels of competence.
Have the alternatives, especially the optimum alternative, been designed for resilience and adaptability in the face of uncertainties and risks?	Include for each alternative, an assessment of the characteristics that are vulnerable to changes in circumstances, and the characteristics that facilitate adaptation (diversity of tools, flexibility, reversibility, fall-back options, safe-fail qualities, etc.).

- risks surrounding the implementation of the PPP (e.g., limited managerial capacity, uncertain funding, public controversy or opposition for key stakeholders); and
- risks arising from uncertainties in the SEA work (especially concerning effects predictions and conclusions).

Each of these categories of risks should be addressed in the SEA and should influence choice of the optimum alternative. The Briefing Note must report these risks. In considering the Briefing Note and taking a decision, the decision maker should feel confident that the information on which a decision will be based is sufficient, relevant and reliable. That is, s/he needs to be aware of anything that may undermine the credibility of the SEA and associated Briefing Note.

The evaluation/decision criteria should be designed to ensure that the analysis identifies, and seeks means to avoid, risks. The criteria should favour alternatives and more specific options that are minimally vulnerable to uncertainty and surprise because they incorporate resilience characteristics (Walker and Salt, 2008, pp. 145–150). The evaluation of the PPP alternatives should include additional effort to identify risks that could sway the decision maker’s final decision. The likely consequences associated with taking these risks should be spelled out.

Part B: The Briefing Note

The approach to SEA and decision making described here presumes that the sustainability-based assessment covers the full suite of key considerations and is an integral part of the PPP development process, not a separate advisory exercise. The Briefing Note, accordingly, recommends the optimum PPP action and provides the grounds for this recommendation on the basis of the comparative sustainability-based evaluation of the alternatives.

Any effective Briefing Note must be concise, clear, comprehensive, reliable, targeted to the particular context of needs, opportunities and surrounding considerations that the decision maker must respect, and understandable to the decision maker. SEA Briefing Notes must also address the higher challenges, where the test is a positive contribution to sustainability in a world where overall practice tends in the opposite direction. The added sustainability dimension provides a consistent analytical foundation for PPP proposals, encourages attention to multiple benefits, facilitates recognition of key risks and trade-offs and generally provides a stronger base for reaching defensible conclusions.

Table B1. Steps and core questions concerning the format and content of a Briefing Note.

Steps and core questions	Guidance/tips
Is the document in the form of a Briefing Note?	<p>Present the basic recommendation at the top. Cover the following matters in order:</p> <ul style="list-style-type: none"> (i) the issue and the basic background (ii) need for a PPP response and the purpose(s) to be achieved (iii) the process used (especially the use of fundamental and case-/context-specific sustainability criteria) (iv) current situation/<i>status quo</i> option (v) the alternatives assessed (vi) results of the comparative analysis of the alternatives (vii) recommended decision/ optimum PPP (viii) enumeration of risks and justification for proposed trade-offs. (ix) mitigation and enhancement requirements, if any <p>Additional supporting material may be appended at the end of the Briefing Note (see Part B2 below).</p>

Table B1. (Continued)

Steps and core questions	Guidance/tips
<p>Is the most relevant information for decision making highlighted?</p> <p>Does the document meet the decision-maker's practical needs? Is it</p> <ul style="list-style-type: none"> (i) concise? (ii) comprehensive in relation to, and clear about, the sustainability analysis and rationale? (iii) context-specific? (iv) explicit about risks and trade-offs? (v) adequate for defending as well as making the decision? 	<p>For senior officials, an effective Briefing Note must present the key information on about two pages using a familiar structure with easily scanned components. Supporting details can be appended.</p> <p>The basic standard format should retain sufficient flexibility for application to different PPPs.</p> <p>Situate the particular purposes of the initiative and the priorities of the agency within the broader contribution to the sustainability agenda. Integrate attention to particular considerations and key issues central to the purposes and context of the PPP.</p>
<p>Is the Briefing Note simple and expressed in common, easily understood terms (i.e., no technical jargon)?</p>	<p>The decision maker will often have no specialist expertise and only moderate tolerance for detail. The general public generally has a low tolerance for detail. However, confidence in the work behind the Briefing Note is crucial for both audiences.</p>
<p>Are any limitations that may affect the reliability of the SEA as the basis for optimum decision making clearly stated?</p> <p>Are any risks that may influence the successful implementation of the proposed PPP clearly communicated?</p> <p>Are opportunities to contribute positively to other strategic initiatives, and/or for mutually reinforcing benefits clearly communicated?</p> <p>Have the sustainability-based criteria been used in the comparative evaluation of alternatives?</p> <p>Have the trade-offs been evaluated and justified in an open process, taking into account the key issues?</p> <p>Do the lasting effects of the PPP play a clearly central role?</p>	<p>Highlight information gaps, uncertainties, risks and/or questions linked to the substance of different alternatives, and to SEA quality assurance which may undermine decision making. Also highlight risks to, and major factors likely to influence implementation.</p> <p>Highlight opportunities for reinforcing or linking the proposed PPP with other strategic initiatives to achieve multiple, mutually reinforcing and lasting benefits.</p> <p>It is essential that the fundamental sustainability criteria have been applied, and elaborated in light of the key issues peculiar to the case and context, and that trade-offs have been assessed openly in light of the generic considerations for trade-offs.</p> <p>The pursuit of sustainability is about building lasting gains, perhaps through a slow transition. A special emphasis on lasting gains is often needed in institutions whose habitual focus has been on immediate or at best medium-term objectives.</p>

Table B1. (Continued)

Steps and core questions	Guidance/tips
Has the sustainability-centred SEA process been described in the Briefing Note?	<p>The decision maker should know the key steps in the SEA process leading to the proposal at hand.</p> <p>Outline the reasons for initiation, the nature and extent of engagement with stakeholders (different interests, authorities, partners, the general public), and the analyses undertaken.</p>
<p>Has the implementation process been described, giving an indication of the measures required to ensure enhancement of positive effects, mitigation of negative impacts, and effective management, monitoring and follow-up action?</p> <p>Has there been due emphasis on PPP design for adjustment and adaptation in response to unanticipated opportunities and problems?</p>	<p>Indicate any measures required to enhance PPP benefits, mitigate negative impacts, compensate for residual negative impacts, build institutional capacity to implement, satisfy stakeholder concerns, maintain sustainability, etc.</p> <p>Highlight opportunities for positive linkages with other strategic initiatives and mutually reinforcing benefits.</p> <p>Highlight plans for follow-up measures, including established indicators, and commitments to monitoring and adaptive or corrective management of impacts associated with each alternative, to ensure due diligence throughout the PPP lifecycle.</p>

Part B1 The format and content of the Briefing Note

Part B1 of the DM Tool provides guidance on the format and content of the Briefing Note itself. Table B1 considers only what would be included in the body of the Briefing Note; appendices for supporting information and documentation are normally also provided. These appendices are covered in Part B2 of the DM Tool.

Part B2 Appendices to the Briefing Note

The Briefing Note must be brief. It therefore cannot include the hefty mass of data and analysis that is often used to support proposals and decisions. The Briefing Note can, however, be accompanied by a carefully selected set of appendices that give the decision maker a better basis for understanding and relying upon the analysis underlying the recommendations.

Different appendices will suit different cases. Depending on the circumstances, decision makers may need supplementary background information on different aspects. A manageable Briefing Note package cannot address all of these matters

Table B2. Steps and core questions concerning the selection and preparation of appendices to the Briefing Note.

Steps and core questions	Guidance/tips
<p>What appendices are needed and how should they be organised?</p>	<p>The appendices, like the Briefing Note proper, have a core audience with little time or specialised expertise. The items need to be concise, quickly digestible, and arranged in order of anticipated importance.</p>
<p>How can the appendix convey very quickly both</p> <ul style="list-style-type: none"> (i) how the sustainability criteria were organized and applied in the evaluation of the alternatives, and (ii) some details about the sustainability effects of each of the alternatives as assessed? 	<p>The first appendix, generally, should use a simple matrix to present the categories of criteria and the evaluations of the sustainability effects of each alternative in light of each criterion as well as an overall rating of each alternative. See Fig. 1.</p> <p>The second appendix should present the full set of criteria under each criteria category so the decision maker can see what considerations were addressed under each category.</p>
<p>On what other matters does the decision maker most need supplementary information for understanding the Briefing Note and having confidence in its contents?</p>	<p>Consider the needs for additional information in light of the particulars of the PPP case. Commonly include information on</p> <ul style="list-style-type: none"> (i) the record of past PPP actions (ii) particularly complex or delicate key issues (iii) major stakeholders' interests and concerns (iv) potentially overlapping PPP initiatives (especially complementary or competing initiatives) (v) the process for establishing the evaluation/ decision criteria (vi) the differences between the alternatives considered (vii) the advantages and disadvantages of particular alternatives (especially the optimum alternative and any closely competing alternative), and/or (viii) significant trade-offs and risks, and their potential implications.

Table B2. (*Continued*)

Steps and core questions	Guidance/tips
What use is to be made of the full SEA report and related background documentation summarised in the Briefing Note?	While the decision maker can be expected to rely on the Briefing Note and appendices, staff of the decision-making body and a wide range of stakeholders and interested members of the public may well want to see all or part of the supporting documentation. It is no longer difficult to make it all available to everyone with an internet connection. Traditions of secrecy and legitimate grounds for confidentiality on some matters will affect the extent and timing of access, but the principles of transparency, accountability and learning apply.

in useful detail. In any event, it is usually wise to focus on the most crucial and likely-to-be-read items.

Until sustainability-based assessment is entrenched in PPP development and approval practice, decision makers will need to see the criteria and how they have been applied. And in every case, the decision maker should want to see how the various alternatives fared in the analysis. Perhaps the most universally valuable appendix in a PPP briefing note is one that shows how the sustainability criteria were organised and applied in the comparative evaluation of the alternatives. The summary matrix (Fig. 1) is probably the most effective way of presenting this information concisely and accessibly. The matrix sets out the main categories of sustainability criteria (integrating fundamental sustainability requirements with context-specific ones), and presents the predicted overall or net sustainability effects of each alternative side by side for easy comparison.

Concluding Note

The DM Tool and Briefing Note outlined above does not promise some magic way of making an enormously difficult challenge easy for decision makers whose capacities are already over stretched. The world's entwined biophysical, social and economic systems are still highly complex and poorly understood. The dominant trends in sustainability matters (demands on biospheric capacity, distribution of wealth and opportunity, vulnerability to climate change, etc.) remain unfavourable and driven by deeply entrenched interests, institutions and ideas. Our decision makers are still human. And, as we have noted in the caveat, the realities of

Legend:

- A1 = Alternative 1: No new extractive activities
- A2 = Alternative 2: Restrained pace/scale of extractive development
- A3 = Alternative 3: Restrained pace/scale + transition fund/plan
- A4 = Alternative 4: Unrestrained pace/scale + transition fund/plan
- A5 = Alternative 5: Unrestrained pace/scale of extractive development

Strongly positive	Modestly net positive	Neutral or evenly mixed	Modestly net adverse	Strongly adverse
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M = mixed positive and adverse effects

NA = not applicable

Criteria categories	A1	A2	A3	A4	A5
Cumulative effects on biophysical, ecological and socio-ecological systems and traditional activities (summarises judgements on criteria concerning effects on ecosystem services, threatened biodiversity, fisheries, indigenous uses of the land, human health, etc.)					
Cumulative effects on livelihoods and socio-economic wellbeing (summarises judgements on criteria concerning effects on employment and livelihood activities, diversity of associated development opportunities and risks, community stresses and services, social capital, etc.)		M		M	
Cumulative effects on intragenerational and intergenerational equity (summarises judgements on criteria concerning effects on currently advantaged and disadvantaged local residents, gender equity, exposure to negative effects and risks, capacities and options for future generations, lasting burdens, etc.)	M		M		
Cumulative effects on resource availability (summarises judgements on criteria concerning lifecycle use of extracted resources, externalisation of costs, motivations for efficiencies, global resource sufficiency, infrastructure requirements and uses, etc.)				M	
Cumulative boom and bust effects (summarises judgements on criteria concerning rise and fall of employment opportunities, revenue fluctuations, regional inflation, etc.)	NA				
Prospects for bridging to viable post-development future (summarises judgements on criteria concerning transitional use of non-renewable resources, transitional application of resource revenues, building of post-development capacity, etc.)					
Effects of and on governance capacity (summarises judgements on particular criteria concerning planning and regulatory demands at local, regional and higher levels, facilitation of innovation and learning, etc.)					
Implications of vulnerability to risks, adequacy of resilience and adaptability (summarises judgements on criteria concerning plan flexibility, vulnerability to global economic shifts, risk of technological failure, path dependency, etc.)				M	
Interactions among effects (summarises judgements on criteria concerning potential for reinforcing benefits and/or damages and risks)					
Significance of trade-offs between or among criteria categories (especially ones that involve significant adverse effects and/or displacement of adverse effects to future generations)					

Fig. 1. Illustrative matrix for comparing alternatives in light of key categories of sustainability criteria (assumes a regional development plan centred on non-renewable resource extraction).

strategic decision making are, and will no doubt remain, a good deal messier than is recognised in the basic steps and contents outlined here.

It remains, however, that PPP initiatives will continue to be planned, options assessed and briefing notes prepared. The purpose of the DM Tool and Briefing Note is to provide a package of steps, content guides and questions to assist SEA practitioners and other participants in PPP processes, as well as decision makers, to incorporate sustainability considerations more fully and effectively in their work. That work will rarely be as linear and potentially rational as the simple model used here. The basic approach and core ideas should, nonetheless, be broadly applicable where authorities wish to act on their expressed commitments to enhanced sustainability.

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