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Promise and dismay: The state of strategic environmental assessment systems and practices in Canada

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ABSTRACT

Has strategic environmental assessment (SEA) finally reached a point of maturity in Canada? Or, is it still stumbling to find its place in the impact assessment family? Strategic environmental assessment has been ongoing in Canada for a number of years, both formally and informally, and under a variety of labels and institutional models. The result is a system of SEA that is diverse, founded on a range of principles and frameworks, and not well understood. This paper provides a critical review of Canadian SEA systems and practices. To accomplish this objective, a manageable and diverse set of past and recent SEA and SEA-like frameworks and applications are described and critically analyzed based on a set of input, process, and output evaluation criteria. Results suggest considerable variability in SEA experience and value added. This is due in large part to the institutional and methodological pluralism of SEA, the boundaries of which are not well defined. Under the federal system, since the formalization of SEA, many applications have been disappointing in light of broader SEA good-practice principles and criteria. Indeed, some of the better examples of SEA have neither carried the SEA name tag nor occurred under formal SEA requirements. Further, many of the same challenges to project-based impact assessment also plague the development and value added of SEA. Of particular concern is the systematic separation of SEA from downstream decision inputs and assessment activities. As Canada commences review of its federal SEA Directive in preparation for the next generation of SEA, this paper reflects on what it has achieved in the prior.

1. Introduction

Various forms of strategic environmental assessment (SEA) have been ongoing in Canada for a number of years; yet at the same time SEA remains the least understood of the impact assessment family. The beginnings of SEA in Canada date back to the Environmental Assessment and Review Process (EARP) of the early 1970s and the subsequent *Guidelines Order* of 1984, which defined the reach of environmental assessment to extend well beyond individual projects and encompass broader regional, conceptual, and policy-level review processes (Noble, 2002; Sadler, 2005). Early strategic forms of impact assessment, such as the Mackenzie Valley Pipeline inquiry (1974–1977), the Beaufort Sea hydrocarbon review (1982–1984), and the Atomic Energy of Canada Limited's nuclear fuel waste management concept (1988–1994), were operationalized as area-wide reviews, public review panels, and concept-based assessments. Although none of these early assessments were formally recognized as SEA, they have much to offer the future of SEA development.

It was not until 1990 that SEA was formally established by way of a federal Cabinet Directive and as a separate process from project impact assessment, "making it the first of the new generation of SEA systems that evolved in the 1990s" (Dalal-Clayton and Sadler, 2005: 61). In many respects, however, the formalization of SEA in Canada was a step backwards for impact assessment in general insofar as the Directive created a non-statutory system for policy, plan, and program (PPP) assessment that would remain separate from any legislated environmental assessment process to come. Procedural guidance for SEA was provided in *The Environmental Assessment Process for Policy and Programme Proposals* (FEARO, 1993), with implementation subject to oversight by the Federal Environmental Assessment Review Office and later the Canadian Environmental Assessment Agency. Critiqued for inconsistencies and inadequacies in its application, a revised Directive was issued in 1999 to strengthen the role of SEA in PPP decision making and to clarify the obligations of federal departments and agencies.

From 2000 onward SEA experienced considerable growth. This new era of SEA, however, is in sharp contrast to the conceptual, public and area-wide reviews conducted under EARP; SEA under the Directive is narrowly focused on the implications of federal government initiatives and confidential memoranda submitted to Cabinet. It was not until January 2004 when Canadian federal departments and agencies were required to prepare a public statement whenever a full SEA had been completed. Outside the federal process, SEA is practiced largely on an ad hoc basis and with much less known of assessment experiences, frameworks and outcomes. As such, notwithstanding

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decades of SEA development in Canada there remains only limited knowledge of the diverse nature and scope of SEA systems and practices and the value added to PPP development and decision making. Aside from selected reviews of individual applications under the Canadian federal system (e.g. Auditor General, 2004; Hazell and Benevides, 1998; Noble, 2004, 2003; Sadler, 2005), there has not been an examination of Canadian SEA models and frameworks that includes both formal and informal applications across a range of federal and provincial PPP initiatives.

In response, this paper provides a critical review of formal and informal SEA systems and practices in Canada. More specifically, the objective is to present and evaluate a range of SEA case applications, characteristic of a variety of SEA models and frameworks, with a view to understanding how each incorporated a number of proposed SEA principles and design criteria and contributed to improved decision making. The case analysis is based on work completed by the author for the Canadian Minister of Environment's Regulatory Advisory Committee, Sub-Committee on SEA (herein referred to as the SEA Sub-Committee), in preparation for the review of the Canadian SEA Directive—the *Canadian Cabinet Directive on the Environmental Assessment of Policy, Plan, and Program Proposals*. Lessons learnt from the case reviews, together with the *Directive* review, will set the stage for discussions concerning the 'next generation' of SEA in Canada.

This paper is presented in five sections, including the Introduction. In the sections that follow the study approach and review framework and criteria are presented. This is followed by a critical review of selected Canadian SEA experiences, and the results of the review framework application. The paper concludes with a number of observations concerning the state of SEA systems and practices in Canada, and opportunities and challenges for the next generation of SEA.

2. Strategic environmental assessment review framework

Evaluating SEA systems and performance has received considerable attention in the international academic literature in recent years; however, research into the application of these criteria suggests that they are not equally applicable in all decisional contexts and across all systems of SEA. There is indeed considerable evidence to suggest that no universal set of criteria can equally apply to all SEA contexts (Dalal-Clayton and Sadler, 2005; Fischer and Gazzola, 2006; Noble, 2003; Partidario, 2005); and not all criteria are equally valid for every SEA, but could vary from the policy to the program level (Fischer, 2002). Part of the challenge in developing SEA evaluation criteria is that considerations as to what SEA really is, what it delivers and how it should perform remain far from a consolidated stage (Bina, 2007; Vicente and Partidario, 2006).

Nonetheless, standardized evaluation of SEA against normative design criteria is a useful exercise for several reasons. First, it provides an opportunity to identify the 'state-of-practice' across SEA systems based on a common set of principles and criteria. Second, it enables identification of common SEA constraints and opportunities for improvement. Third, it provides an opportunity to refine normative models of SEA principles and criteria to better fit the realities of PPP decisional contexts—as Nitz and Brown (2001) suggest: learning how policy and planning actually work.

The criteria for this review were developed based on discussion with the SEA Sub-Committee, an interdisciplinary team of environmental, academic, industry, and government representatives; drawn from the IAIA (2002) SEA performance criteria; and then modified based on Thissen (2000), Sheate et al. (2001), Noble (2003), Gibson et al. (2005), Fischer (2005), and Jones et al. (2005). Following the lead of previous SEA evaluation exercises (e.g. Dalal-Clayton and Sadler, 2005; Fischer, 2002; Jones et al., 2005; Noble, 2004; Retief, 2007; Therivel, 2004), the criteria are separated into *system*, *process*, and *results* criteria (Table 1). The purpose of grouping the criteria is to ensure that the various elements of SEA are captured in each case analysis, and to limit the potential of mutually exclusive criteria appearing in any single category.

It is emphasized here that the success of SEA, with regard to outcome measures, is in large part a function of the input and process elements. That is to say, the added value of SEA is to a significant

Table 1
Criteria for strategic environmental assessment in Canada

System components	Evaluation criteria
1. Provisions	– clear provisions, standards or requirements to undertake the process
2. Integration	– application early enough to address deliberation on purposes and alternatives, or to guide initial conception of review for an existing PPP
3. Tiering	– assessment is undertaken within a tiered system of environmental assessment, planning and decision making
4. Sustainable development	– sustainability / sustainable development a guiding principle and integral concept
Process components	**Evaluation criteria**
5. Responsibility and accountability	– clear delineation of assessment roles and responsibilities – mechanisms to ensure impartiality/ independence of assessment review – opportunity for appeal of process or decision output
6. Purpose and objectives	– assessment purpose and objectives are clearly stated – centered on a commitment to sustainable development principles
7. Scoping	– opportunity to develop and apply more or less onerous streams of assessment sensitive to the context and issue – consideration of related strategic initiatives – identification and narrowing of possible valued ecosystem components, to focus on those of most importance based on the assessment context
8. Alternatives	– comparative evaluation of potentially reasonable alternatives or scenarios
9. Impact evaluation	– identification of potential impacts or outcomes resulting from each option or scenario under consideration – integration or review of sustainability criteria specified for the particular case and context
10. Cumulative effects	– consideration of potential cumulative effects and life cycle issues
11. Monitoring program	– procedures to support monitoring and follow-up of process outcomes and decisions for corrective action
12. Participation and transparency	– opportunity for meaningful participation and deliberations – transparency and accountability in assessment process
Result components	**Evaluation criteria**
13. Decision making	– identification of a 'best' option or strategic action – authoritative decisions, position of the authority of the guidance provided
14. PPP and project influence	– defined linkage with assessment and review or approval of any anticipated lower-tier initiatives – demonstrated PPP influence, modification, or downstream initiative – identification of indicators or objectives for related or subsequent strategic initiatives or activities
15. System-wide learning	– opportunity for learning and system improvement through regular system or framework review

Table 2
Canadian SEA and SEA-type case studies

SEA model / case study	Complete	Sector	Authority	Institutional requirements	Tier
1. Canada–Nova Scotia Offshore Petroleum Board, Misaine Bank SEA	2005	Energy	Independent joint agency, federal–provincial	Policy-based, in accordance with the SEA Directive	Program
2. Great Sand Hills Regional Environmental Study, Saskatchewan	2007	Land use	Province	Informal /*ad hoc*	Plan, Regional
3. National Capital Commission Core Area Sector Plan SEA	2005	Urban	Federal, crown corporation	Policy-based, in accordance with the SEA Directive	Plan
4. Foreign Affairs and International Trade SEA of WTO Negotiations	2002	Trade	Federal	Directive based	Policy
5. British Columbia offshore oil and gas moratorium public review	2004	Energy	Federal	Policy-based review panel, in accordance with the SEA Directive	Policy
6. Ontario Power Authority Integrated Power System Planning	2007	Energy	Province, crown corporation	Legislated, provincial Electricity Act	Plan
7. Pasquia–Porcupine 20-yr Forest Management Plan Assessment	1998	Forestry	Province	Legislated, provincial Environmental Assessment Act	Plan
8. Capital Regional District regional growth strategy, British Columbia	2003	Regional	Regional government	Informal / *ad hoc*	Plan, Regional
9. AECL conceptual review of nuclear fuel waste disposal	1998	Waste	Federal	Guidelines Order, EARP review panel	Plan
10. British Columbia salmon aquaculture review	1997	Energy	Independent joint agency, federal–provincial	Legislated, provincial Environmental Assessment Act	Program

extent related to the nature of the institutional environment or intended objectives of SEA and to the quality of the SEA process itself. Thus, attention must be given to the nature and context of the SEA system, context and objectives of application, and the SEA process itself before critiquing output and PPP influence (see Hilding-Rydevik and Bjarnadóttir, 2007).

2.1. Case studies

The case studies represent both formal SEA and 'SEA-type' models and applications in Canada. 'SEA-type' is used here as an umbrella term, after Dalal-Clayton and Sadler (2005), to capture *near-equivalent SEA* processes of environmental appraisal of PPPs, *integrationary SEA* where application occurs indistinctive of a PPP development process, and *para-SEA* or *ad hoc* applications that reflect SEA principles and methodologies but do not meet the basic, formal definition of SEA. Cases were selected for review in consultation with the SEA Sub-Committee and based on three principal selection criteria: i) the case study must be a completed work, or work near completion, such that sufficient information is available and there is an opportunity to explore the real or potential benefits of the application; ii) there must be sufficient evidence to label the work as a *strategic*-level assessment, or SEA-type application (e.g., integrated SEA, parallel SEA, or post PPP assessment); and iii) there must be preliminary evidence that at least some of the proposed principles and criteria are met.

The number of cases identified reflects what is considered to be a balance between the analytical detail that is desired to draw conclusions concerning specific SEA principles and criteria, and the breadth of SEA coverage across a range of sectors and PPPs in Canada. The cases are illustrative of SEA applications at both the federal and provincial level and encompass a variety of sectors and PPP initiatives (see Table 2). The intent is not to comparatively evaluate SEA cases, as any single set of criteria cannot be used widely and unequivocally; rather, each case is explored individually based on a variety of possible criteria deemed to be characteristic of desirable SEA models and frameworks for Canada. The analysis of each case study followed a three-phased approach:

i) a description of the respective SEA framework and/or application;
ii) a review of the SEA framework and/or application against the proposed criteria based on the case documents and supporting literature; and
iii) an email questionnaire and follow-up telephone interview conducted with those who were involved in the management or administration of each SEA system or case study in question.

Twelve surveys were administered and ten follow-up interviews conducted. Based on triangulation of the document review, surveys, and interviews, each case was 'scored' against the respective criteria using a similar approach to Dalal-Clayton and Sadler (2005): criterion fully met, criterion partially met, criterion not met, or unknown. The scoring process was not straightforward for all cases, particularly for those near-equivalent or para-SEA applications where the process occurred outside the purview of any federal or provincial system of environmental assessment. In order for a criterion to be considered 'fully met' it must have been supported by evidence from *both* the case document review and questionnaire results. Follow-up telephone interviews served to resolve any outstanding conflicts or uncertainties in the scoring process.

3. Case studies of strategic environmental assessment: a critical review

This section presents a critical overview of each of the case studies. Collectively, the cases illustrate a range of SEA models and experiences from across Canada and under a variety of assessment systems and planning frameworks. While all assessments were completed within the past decade, a number commenced as early as the 1980s under EARP and the *Guidelines Order*. Others were initiated more recently and were guided by the federal *Directive* or policy-based, regulatory, or para-SEA systems. Where available, a web-link to the full SEA or planning document or process framework is provided for each case (Table 3).

3.1. Canada–Nova Scotia Offshore Petroleum Board, Misaine Bank Area SEA

The Canada–Nova Scotia Offshore Petroleum Board (CNSOPB) is an independent joint agency of the governments of Canada and Nova Scotia responsible for the regulation of petroleum activities in the Nova Scotia offshore area. Strategic environmental assessment under the CNSOPB is undertaken solely at the program level, prior to issuing a call for bids for oil exploration and subsequent project development. In 2005, an SEA was undertaken for the Misaine Bank offshore area—the third and most recent SEA under the CNSOPB.[1] The purpose was to provide an overview of the offshore region, identify the potential effects associated with exploration activity, and to assist in determining whether exploration rights should be offered, in whole, or in part for the area (C-NSOPB, 2005). The assessment consisted of a review

[1] For copies of SEAs completed under the CNSOPB see http://www.cnsopb.ns.ca.

Table 3
Canadian SEA and SEA-type case study characteristics

Case study		1	2	3	4	5	6	7	8	9	10
System criteria											
1. Provisions	Clear provisions, standards or requirements to undertake the SEA, or equivalent, process	▣	☒	▣	☑	☒	☑	☑	▣	▣	▣
2. Integration	Application early enough to address deliberation on purposes and alternatives, or to guide initial conception of review for an existing PPP	☑	☑	▣	☑	☑	▣	☑	☑	☒	▣
3. Tiering	Assessment is undertaken within a tiered system of environmental assessment, planning and decision making	☒	☒	▣	☒	☒	▣	▣	▣	☒	▣
4. Sustainable development	Sustainability or sustainable development is a guiding principle and integral concept	☒	☑	☑	▣	☒	▣	▣	▣	☒	☒
Process criteria											
5. Responsibility accountability	Clear delineation of assessment roles and responsibilities	☑	☑	☑	☑	☑	☑	☑	▣	☑	☑
	Mechanisms to ensure impartiality/ independence of assessment review	▣	☑	☑	▣	☑	▣	☑	☒	☑	☒
6. Purpose and objectives	Opportunity for appeal of process or decision output	☒	☒	☒	☒	☒	☒	▣	☑	☒	☒
	Assessment purpose and objectives are clearly stated	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	Centered on a commitment to sustainable development principles	☒	☑	☑	▣	☒	▣	☑	▣	☒	☒
7. Scoping	Opportunity to develop and apply more or less onerous streams of assessment sensitive to the context and issue	☑	☑	☑	☑	☑	☒	▣	☑	▣	☑
	Consideration of related strategic initiatives	☑	☑	☑	☑	☑	☑	☑	☑	☒	☑
	Identification and narrowing of possible VECs, to focus on those of most importance based on assessment context	☑	☑	☑	☑	☑	▣	▣	☒	☑	▣
8. Alternatives consideration	Comparative evaluation of potentially reasonable alternatives or scenarios	☒	☑	☒	▣	▣	▣	☑	☑	☒	☒
9. Impact evaluation	Identification of potential impacts or outcomes resulting from each option or scenario under consideration	▣	▣	☑	☑	▣	▣	☑	☑	▣	▣
	Integration or review of sustainability criteria specified for the particular case and context	☒	▣	▣	☒	☒	☑	☒	☒	☒	☒
10 Cumulative effects	Consideration of potential cumulative effects and life cycle issues	▣	▣	▣	☒	☒	☒	☒	☒	▣	▣
11. Monitoring program	Procedures to support monitoring and follow-up of process outcomes and decisions for corrective action	☒	▣	▣	▣	▣	▣	☑	☑	☒	▣
12. Participation and transparency	Opportunity for meaningful participation and deliberations	▣	▣	☑	▣	☑	▣	☑	▣	☑	☑
	Transparency and accountability in assessment process	☑	▣	☑	▣	☑	☑	☑	☑	☑	☑
Output and results criteria											
13. Decision making	Identification of a 'best' option or strategic action	▣	☑	▣	▣	☒	☒	☑	☑	☒	☒
	Authoritative decisions, position of the authority of the guidance provided	☒	☒	▣	☒	☒	☑	☑	☒	☒	☒
14. PPP and project influence	Defined linkage with assessment and review or approval of any anticipated lower-tier initiatives	▣	▣	▣	☒	☒	☑	☒	☒	☒	▣
	Demonstrated influence in PPP development, modification, or downstream initiative	□	□	☑	□	□	□	☑	▣	☑	▣
	Identification of indicators or objectives for related or subsequent strategic initiatives or activities	☑	▣	☑	▣	☑	☑	☒	▣	☒	▣
15. System-wide learning	Opportunity for learning and system improvement through regular system or framework review	▣	□	☑	▣	▣	☑	☑	☑	□	▣

* ☑ = criterion met; ▣ = criterion partially met; ☒ = criterion not met; □ = not able to determine or not applicable.
Case study:

1 Canada–Nova Scotia Offshore Petroleum Board, Misaine Bank Area SEA.
2 Great Sand Hills Regional Environmental Study, Saskatchewan.
3 National Capital Commission Core Area Sector Plan Assessment.
4 Foreign Affairs and International Trade Initial Environmental Assessment of World Trade Organization Negotiations.
5 British Columbia offshore oil and gas moratorium federal public review.
6 Ontario Power Authority Integrated Power System Planning.
7 Pasquia–Porcupine 20-year Forest Management Plan Assessment, Saskatchewan.
8 Capital Region District's regional growth strategy, British Columbia.
9 Atomic Energy of Canada Limited conceptual review of nuclear fuel waste disposal.
10 British Columbia salmon aquaculture review.

of seismic surveys and exploratory drilling activities, followed by a baseline description and discussion of the potential individual and additive effects of, and mitigation options for, exploration activities. Only a relatively narrow set of alternatives were considered: to proceed with a call for offshore licensing or not. However, the alternatives are consistent with the intended role of SEA under the CNSOPB: to streamline the EIA and approvals process, and is also consistent with SEA alternatives considered elsewhere in the offshore industry (see, for example, UK DTI, 2007). The SEA concluded that the area was not more sensitive than other offshore areas on the Soctian Shelf, but it did identify certain marine areas that should be included in subsequent EIAs for offshore development. Mitigation measures for downstream development were identified, but no formal monitoring mechanism exists to ensure enforcement or compliance. Strategic environmental assessment under the CNSOPB reflects a proactive approach to offshore exploration, but at the same time is inherently restrictive in alternatives consideration and scope.

3.2. Great Sand Hills Regional Environmental Study, Saskatchewan

In 2004, the Government of Saskatchewan commenced a Regional Environmental Study (RES) of the Great Sand Hills (GSH).[2] The GSH is an ecologically complex region of active sand dunes, rare and endangered species, and native grasslands. The area is also home to natural gas development, ranching activity, and is of significant cultural value to neighboring Aboriginal populations. The RES set out to provide strategic recommendations in the form of a management plan to guide human activities so that the ecological integrity of the area could be maintained while economic benefits are realized (Scientific Advisory Committee, 2007). The process consisted of a baseline assessment of the current and cumulative biophysical, economic, and social conditions of the region;

[2] The completed RES and supporting documentation are available on the Government of Saskatchewan, Ministry of Environment's web site at http://www.environment.gov.sk.ca/.

the development, projection, and assessment of alternative scenarios of surface disturbances; and the identification of a preferred scenario and guidelines and recommendations for implementation, mitigation, and monitoring—including specific targets, thresholds, and objectives for select ecological components. Although lacking the SEA name tag, and informal in the sense that the RES was a government response to earlier land use study recommendations as opposed to a regulatory requirement, the assessment demonstrates an ambitious approach to SEA—proactive in terms of planning orientation, focused on achieving a broader regional sustainability objective, and unfolded as an integrated and objectives-led process leading to the formulation of a management plan. That said, there is no formal tiering arrangement for the RES and the responsibility for implementation is beyond the authority of the independent scientific advisory committee appointed to carry out the assessment. At the time of this paper the RES was still under public review; it is too early to determine whether the recommendations will be implemented or how the recommendations will influence downstream project development and land use management.

3.3. National Capital Commission Core Area Sector Plan Assessment

The National Capital Commission (NCC) is an arm's length agency of the government of Canada with a mandate to plan federal lands in the national capital region. In 2003, the NCC commenced development of the Core Area Sector Plan (CASP) as "the lead policy document governing the planning and development…over the next 20 years" (NCC, 2005).[3] The CASP was subject to SEA under policy direction of the NCC and in the spirit of the Cabinet *Directive*. The SEA was conducted as a parallel process to plan development with the intent that information would feed into the planning process, ensuring that environmental considerations are built into planning actions for resulting strategies and projects. As a sector plan, the CASP was third in a hierarchy of previous plans for the Core area. Specific project-related actions under the CASP are to be addressed in subsequent project EIAs under the *Canadian Environmental Assessment Act*. The NCC SEA process was objectives led, and adopted a structured approach to impact assessment. Initiatives under the plan were identified and each reviewed to assess potential environmental and space crowding effects. Alternatives were not explicitly assessed; rather emphasis was placed on identifying a range of future planning actions or initiatives most likely to result from the CASP and then evaluating their potential impacts. Overall, according to the NCC, the final CASP and subsequent planning initiatives were improved by the SEA; however, conducted parallel to plan development, the SEA results proved difficult to coordinate and integrate with the CASP plan development process.

3.4. Foreign Affairs and International Trade Initial Environmental Assessment of World Trade Organization Negotiations

The *Initial Environmental Assessment of the World Trade Organization (WTO) Negotiations* was released by the Department of Foreign Affairs and International Trade (DFAIT) in 2002.[4] The purpose of the SEA was to identify potential sectors or activities that may be affected by WTO negotiations, with the intent that such issues would be given more rigorous analysis in the draft and final stages of the SEA process. While not explicitly tiered within a PPP arrangement, there is a tiered process of SEA application whereby an 'initial' SEA scopes environmental concerns; a draft SEA is released at the start of trade negotiations to inform the negotiation process; and a final SEA is prepared following negotiations to document the outcome. The scope of the initial SEA was determined by the trade issues to be negotiated, including the effects of phasing out agricultural export subsidies and tariff reductions in non-agricultural products. Alternatives were considered, but limited to the consideration of either a reduction in the status quo or the baseline condition for each of agricultural export subsidies and non-agricultural market tariffs**.** The SEA was not explicitly sustainability-led in comparison to the Sustainability Impact Assessment approach employed by the European Union (EU), identified by DFAIT as 'too general for an accurate assessment' (DFAIT, 2001: 21). The SEA concluded that the effects WTO negotiations are likely to have on the Canadian environment are minimal. Mitigation and monitoring measures were identified, but such recommendations are non-binding under the current framework. Perhaps the only significant outcome of the SEA is an explicit recognition of the relationship between international trade and the environment.

3.5. British Columbia offshore oil and gas moratorium federal public review

In 2003, Natural Resources Canada called for a federal public review of the long-standing moratorium on oil and gas activity offshore British Columbia. The review was to identify the potential impacts of oil and gas activity in the region and information gaps that may need to be filled prior to, or following, any decision on lifting the moratorium. The review was conducted in accordance with the provisions of the *Cabinet Directive*, but was not an SEA in name. Sadler (2005: 49) describes the review as an "extended SEA", intended to "roll up long-standing issues and uncertainties relating to the environmental justification of the moratorium." The review consisted of three parallel and independently administered processes: a science review; a public review; and a First Nations engagement process, which together comprise the SEA.[5] Missing from the review, however, was an integrated report that combined the results of each process into a single, SEA decision support framework identifying the 'best' option or strategic action. The science review concluded that "provided an adequate regulatory regime is in place, there are no science gaps that need to be filled before lifting the moratoria…" (Royal Society of Canada, 2004: 121). The public review concluded there is not "…a ready basis for any kind of public policy compromise at this time in regard to keeping or lifting the moratorium", and went on to propose four options ranging from keeping the moratorium to lifting it (Priddle et al., 2004). The First Nations engagement process reported consensus that the moratorium should not be lifted, or should not be lifted at the present time. Recommendations emerging from the review were many and varied, but non-binding and with no authority to ensure implementation. A media release in that same year by Natural Resources Canada indicated that "the three-part federal process is not a decision making process, but rather a way to explore the issues and views…regarding the federal moratorium".[6] The moratorium continues, with no formal federal response to the public reviews.

3.6. Ontario Power Authority Integrated Power System Planning

In 2005, the Ontario Minister of Energy directed Ontario Power Authority, Ontario's planning authority for electricity, to begin the process of developing an Integrated Power System Plan (IPSP) for the province's electricity system to 2027. Power system planning is exempt from the Ontario provincial environmental assessment

[3] See http://www.capcan.ca/bins/ncc_web_content_page.asp?cid=16300&lang=1 for an overview of the NCC and its planning and assessment framework.

[4] See http://www.dfait-maeci.gc.ca/tna-nac/ea1105-en.asp for the WTO SEA and DFAIT SEA framework.

[5] Copies of the panel reviews are available at http://www2.nrcan.gc.ca/es/erb/prb/english/View.asp?x=655.

[6] Natural Resources Canada media release 2004/64. http://www.nrcan.gc.ca/media/newsreleases/2004/ 200464_e.htm.

process, but legislated under the *Electricity Act* and reviewed by the Ontario Energy Board. The basis for the IPSP was a supply mix directive, which identified a preferred set of electricity supply and distribution objectives for the province based on a review of possible supply mix alternatives. The IPSP was developed through a series of discussion papers, each made available for public review, including a paper which set out the sustainability criteria for IPSP development and evaluation.[7] The IPSP process is the first of its kind in Ontario, and is currently in its final stages of development and review. Although the IPSP was neither a SEA by name nor was it reviewed under any system of environmental assessment, it is illustrative of an attempt at integrated SEA for sector-based plan development—albeit constrained in the sense that the process was limited to a prescribed electricity mix and to the evaluation of alternatives within the scope of a predetermined policy outcome. The IPSP will not result in identification of a preferred alternative but the rationalization of a prescribed electricity mix. In this sense, while the IPSP itself is fairly comprehensive, the model of SEA depicted by the planning process is restrictive in comparison to SEA applications for electricity planning in the United Kingdom's privatized electricity sector (see Marshall and Fischer, 2006).

3.7. Pasquia–Porcupine 20-year Forest Management Plan Assessment, Saskatchewan

Saskfor–Macmillan Limited Partnership (SMLP) commenced negotiations with the Saskatchewan government in 1995 for a forest management agreement, resulting in a 20-year Forest Management Plan (FMP) that would allow harvesting and timber management in the Pasquia–Porcupine forest area.[8] While there is no formal system of SEA in Saskatchewan, the environmental assessment of 20-year FMPs is legislated under the provincial *Environmental Assessment Act* and set within a tiered forward-planning framework of which plan development and assessment is one component. The FMP guiding principles were based on sustainability, with an overall purpose to "manage the use of land and…resources of the planning area on an integrated and environmentally sound basis to ensure ecological, economic, social and cultural benefits for present and future generations" (SMLP, 1998: i). Five strategic alternatives were identified, each systematically assessed based on a set of criteria developed within the context of industry objectives, industry standards and regulatory requirements. A follow-up and evaluation strategy was also developed as part of the plan and integrated assessment, which includes an annual review of plan implementation, public reporting, and an independent audit as per legislated requirements. At the conclusion of FMP development, a preferred option was identified and a single plan and environmental assessment document submitted for approval. The benefits of plan development and integrated assessment were clearly evident: the plan and preferred option were consistent with the various government regulations and specified industry standards; public values and concerns had already been considered at the time the plan was completed and forwarded for approval; and unexpected delays in plan approval were minimized.

3.8. Capital Regional District's regional growth strategy, British Columbia

In 1996, the Capital Regional District (CRD), a regional governing body on southern Vancouver Island, British Columbia, initiated a process to develop a regional growth strategy (RGS). The purpose was to define a common vision, goals, and regional priorities and strategies to manage growth to the year 2026 (CRD, 2003).[9] The RGS is unlike the NCC Core Area Sector Plan reported above in that the RGS is illustrative of a planning approach that depicts the elements and practices of SEA but makes no actual reference to an environmental assessment process of any form. The RGS is the product of a series of documents generated from a planning and decision process that unfolded over a period of 7 years; at no point was the RGS subject to a formal environmental assessment. Development of the RGS commenced with a baseline and visioning exercise, followed by four alternatives, each evaluated based on 18 criteria, from which a preferred option for plan development was identified and a bylaw passed for adoption. Implementation and monitoring requirements and indicators and targets were also identified. A number of initiatives have been implemented under the RGS since its approval in 2003, and several growth management targets met, but the goals and targets established by the RGS are neither enforceable nor directly tiered to downstream planning initiatives and guidelines. As a model of SEA, the RGS is illustrative of an assessment of strategic alternatives for the purposes of selecting a preferred option, for which a plan would then be developed. However, the overall process was lengthy, cumbersome, and, unlike planning in the NCC, resulted in a plan with limited authority to directly influence downstream activities and decision making.

3.9. Atomic Energy of Canada Limited conceptual review of nuclear fuel waste disposal

Nuclear fuel waste (NFW) management has been an issue in Canada since 1974, when Atomic Energy of Canada Limited (AECL), Ontario Hydro, and Hydro Quebec proposed a geological disposal concept that would involve burying NFW deep within the Canadian Shield. In 1988, the concept was referred for public review under the federal EARP *Guidelines Order* and an independent panel appointed to develop the scope of the assessment and to conduct a public review of the assessment document.[10] The panel's mandate was unusual when compared to typical EARP reviews in that the panel was asked to review a concept rather than a project with a specific geographic location. Moreover, the implementing agency of the concept was not defined and the public review was to span five provinces. The terms of reference directed the review to consider, among other things, the acceptability of the NFW disposal concept and a comparison of the concept to approaches adopted by other countries. The consideration of alternatives was a highly contentious issue. AECL argued that the consideration of alternatives would open up the review to a scope beyond that which was intended by the terms of reference, the disposal concept itself (see Murphy and Kuhn, 2001). The public called for a broader consideration of alternatives. The impact statement was released in 1994 and was based largely on a technical review of the deep geological burial disposal concept itself with no comparable, technical assessment of competing alternatives (see AECL, 1994). The panel's report to government found AECL's concept to be technically sound but not publicly acceptable as only a single option, AECL's proposed concept, was assessed. Approximately 30 years since the NFW concept was initially proposed, the concept and alternatives are currently being re-assessed.

3.10. British Columbia salmon aquaculture review

In April 1995, the government of British Columbia placed a moratorium on the issuance of new salmon aquaculture licences and called for a review of environmental issues and of provincial salmon aquaculture policies (Salmon Aquaculture Review, 1997).[11] The review

[7] See http://www.powerauthority.on.ca/Page.asp?PageID=1224&SiteNodeID=127 for the IPSP reports.

[8] The FMP is available at http://www.environment.gov.sk.ca/Default.aspx?DN=f359c7be-ea4e-4e62-81c4-7995bb44ccdf.

[9] See http://www.crd.bc.ca for an overview of the CRD and RGS.

[10] The Review Panel's report is available at http://www.ceaa-acee.gc.ca/010/0001/0001/0012/0001/report_e.htm.

[11] See http://www.agf.gov.bc.ca/fisheries/studies_rpts.htm for the complete assessment document and updates.

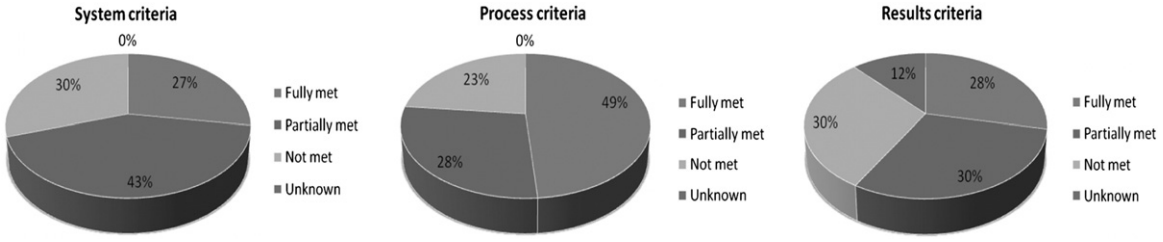

Fig. 1. Summary of SEA characteristics and case study performance criteria.

was in response to a long-standing concern over industry regulation and the potential effects of interaction between wild and escaped farm salmon. The Environmental Assessment Office (EAO) was asked to direct the regulatory and management review processes, marking the first use of the *Environmental Assessment Act* for a policy and regulatory assessment (Davidson, 1999). A technical advisory committee led the science review, and a committee of stakeholders and First Nations was formed to lead the public review. In many respects the assessment was novel under the British Columbia system, but restricted in the sense that only the current level of aquaculture production was considered and not alternative industry growth scenarios. The focus was on the adverse impacts of aquaculture operations and identifying preventative and potentially mitigating measures (Davidson, 1999). Several communities were involved in consultation; however, the public review committee played only a nominal role in that, unlike federal review panels, it did not prepare a separate report but played an advisory role to the technical review team. The technical team concluded that salmon aquaculture, at current production levels, presents a low overall risk to the environment. The outputs of the review were a series of recommendations, but the EAO had no authority to ensure their implementation. The Ministry of Agriculture, Fisheries and Food indicated in 2003 that 39 of the 49 recommendations had been implemented in full[12]; however an independent review (Connell, 2004) suggests that only 10 of the 49 recommendations have been implemented.

4. Characterizing the Canadian experience

While each case described above exhibited notable features of SEA, it cannot be expected that all SEA applications will meet all of the desired SEA criteria simultaneously. Systems and practices of SEA in Canada are diverse and, in many cases, designed to meet specific objectives and functions that range from program-level decision making and streamlining downstream project-based EIA to broader visioning and considerations of sustainability in plan and policy development. As such, the cases demonstrate considerable variability across the range of evaluation criteria. This is not surprising given that the nature of SEA, how it functions, and what it is expected to deliver are far from consensus across Canadian systems and practices (Noble, 2002). Overall, across all cases, the proposed SEA criteria were fully met only 40% of the time, partially met 31%, not met 26%, and 3% indeterminable. In terms of system, process, and results criteria, the process criteria were most frequently met across the range of cases (Fig. 1). Bearing in mind the limitations of the small sample size, no apparent patterns emerged in terms of the year of assessment, tier, or level of authority.

4.1. SEA systems

The case studies illustrate a range of systems and provisions for SEA and SEA-equivalent processes including: legislated requirements for environmental assessment above the project level, albeit with no SEA label, such as the case of 20-year FMP assessments under Saskatchewan's provincial environmental assessment system; policy requirements for formal SEA application in compliance with the cabinet Directive, as illustrated by the DFAIT WTO Initial Environmental Assessment; one-time conceptual and policy reviews carried out under the auspices of legislated environmental assessment guidelines and provisions, such as the British Columbia Salmon Aquaculture Review; and applications demonstrating good-practice SEA methodology, such as the Great Sand Hills RES, but carried out under neither the SEA label nor any formal system of environmental assessment. Interestingly, across the range of SEA principles and criteria, there appears to be little difference between those systems and applications that carry the formal SEA name tag and those that do not.

Most cases demonstrated, to some extent, early application of SEA or of the SEA-type system; however, in those cases where SEA was an integrated part of PPP development, such as the SMLP 20-year FMP and the Great Sand Hills RES, its value to planning and decision making was more fully realized by those engaged in the process. In cases where SEA was implemented as a parallel process, such as the National Capital Commission CASP, the outcomes of assessment proved to be much more difficult to integrate with PPP development. Where SEA was carried out for an already existing PPP or for a single strategic decision, such as the British Columbia Salmon Aquaculture Review or the AECL nuclear fuel waste disposal concept, its scope and value added to informing PPP direction were not surprisingly limited.

A major limitation of all SEA systems examined, formal and informal, was the lack of a tiered system of assessment and decision making that carries forward SEA results to the next level. Only half of the cases provided for some form of tiering mechanism, with the remainder demonstrating no tiered system. Ideally, SEA and project-based impact assessment are considered in sequence, where SEA proactively examines a range of alternatives and selects a preferred course of action. Project assessment is then initiated to determine in greater detail the potential impacts and implementation options of the 'best' alternative. While SEA and project assessment does not always occur in such a structured and tiered forward-planning framework, if SEA is to be influential downstream then there is a need for SEA results to inform decision inputs at the next tier, and for SEA objectives to be informed by the decision outputs of previous tiers of assessment and decision making. A number of cases examined did demonstrate tiered arrangements within the planning framework itself, such as DFAIT's system of initial, draft, and final SEA reporting, and the NCC's hierarchical policy and planning framework; however, overall there is largely a disconnect and only limited transmittal of strategic-level assessment output to actions and assessments at next tier.

4.2. SEA processes

In most cases there was a clear delineation of assessment roles and responsibilities, but only five cases clearly demonstrated assurance of impartiality and independence of the assessment and review process. One of these was an SEA carried out under the *Directive* (the National

[12] Recommendations status report available at http://www.agf.gov.bc.ca/fisheries/cabinet/salmonreview_apr03.pdf.

Capital Commission CASP); others include a federal review panel assessment dating back to the former EARP system (the AECL nuclear fuel waste disposal concept), and another carried out under no formal system of environmental assessment (the Great Sand Hills RES).

Most cases provided an opportunity for some level of public involvement and public review of the completed assessment document; however only one case, the Capital Regional District's RGS, clearly demonstrated an opportunity for formal appeal of the process or decision output. In those cases were separate, public review panels were established for the assessment they were either not involved in the development of the terms of reference or establishing the scope of the assessment (AECL), or served only an advisory role (British Columbia Salmon Aquaculture Review). Purposes and objectives were clearly stated across all cases, and the majority provided an opportunity to develop more or less onerous streams of assessment sensitive to the particular context and issue at hand. The only exception was the Ontario Planning Authority's IPSP, for which the process, scope, and content were predetermined by way of both a provincial electricity act and supply system directive, leaving little flexibility in the process.

The consideration and assessment of a reasonable range of alternatives or scenarios, a defining characteristic of SEA, was clearly evidenced in only three of the ten cases: the Great Sand Hills RES, the Pasquia–Porcupine FMP assessment, and the Capital Regional District RGS. The DFAIT WTO initial SEA, the federal review of the oil and gas moratorium offshore British Columbia, and the Ontario Power Authority IPSP demonstrated only a limited consideration and assessment of alternatives. The remaining cases did not provide any sort of comparative evaluation of alternatives or scenarios. That said, the potential for alternatives consideration is not equal under every SEA system or application. In the Canadian offshore sector, for example, alternatives considered under the CNSOPB SEA framework are inherently restrictive, but reflects the range of options available at the program level under the offshore regulatory system.

All cases, to some extent, identified the potential impacts or implications of the alternative(s) under consideration. However, a dedicated cumulative effects assessment was either weak or non-existent in all cases. Only two cases clearly demonstrated a formal, required program for follow-up and monitoring of outcomes and decisions for corrective action—a limitation not unique to assessment at the strategic-level. Further, only two cases clearly expressed sustainability or sustainable development as the overall guiding principle. Of these two cases, interestingly, neither explicitly adopted sustainability review criteria for impact evaluation. Only the Ontario Power Authority IPSP explicitly addressed the integration of sustainability criteria as part of the impact evaluation process; this also was the only assessment to demonstrate a clear, legislative-based linkage to the assessment, review, and approval of any anticipated lower-tier initiative.

4.3. SEA outputs

For half of the cases examined it is too early to tell whether the SEA or SEA-type application has been influential in either PPP development or modification of downstream initiatives. However, the National Capital Commission CASP, the Saskatchewan 20-year FMP, and the AECL nuclear fuel waste disposal concept clearly demonstrated influence and modification of downstream assessment and development initiatives. The influence of the SEA-type review of the Capital Regional District's RGS and the policy review British Columbia salmon aquaculture regulations, on the other hand, have generated only mixed results.

Only three of the cases examined actually identified a 'best' option or strategic direction. Three additional cases partially met this criterion, but the strategic direction identified was in principle the only option proposed. Only two cases demonstrated authoritative decisions and a position on the authority for downstream development actions or activities—reflecting a major challenge to SEA influence in that if there is no tiered system of assessment and only limited commitment to ensuring that SEA output is carried forward to decision making processes, it is unlikely that the added value of SEA will be fully realized. This is of particular concern for SEA systems and practices such as the Great Sand Hills RES and the CNSOPB, where SEA is carried out with the intent of influencing and improving downstream development activities; yet there is no vehicle to ensure that SEA results are integrated with subsequent decision inputs and assessment processes.

5. Observations and conclusion

Based on the case studies, and in considering the lessons learnt from SEA experiences reported elsewhere in the literature, a number of observations are ventured concerning the state of SEA and its development in Canada. Some of these observations point toward critical decisions and actions that must be taken if SEA is to advance; others address general challenges to SEA systems and practices that have plagued environmental assessment in general since its inception.

First, the notion of a strategic-level assessment is not new to Canada, but skepticism remains as to the benefits of SEA. In large part, this skepticism is due to a lack of common understanding of the roles SEA can and should play in decision making, the limited availability of tested methodological frameworks, and, perhaps most significantly, a lack of cases clearly demonstrating the added value of SEA to PPP development or downstream assessment. The cumulative result is difficulty in conceptualizing how to apply SEA and, when applied, applications that often fall short of expectations. That being said, 'SEA-type' practices are ongoing in Canada, many of which carry no SEA label but are based, purposefully or not, on relatively sound principles and methodology. This suggests that there *must* be some *real* benefits to SEA; the problem is that very little is known about such applications as SEA exists nowhere in a formal context outside of the federal Directive. In those instances where SEA is applied in compliance with the Directive, there is a greater tendency for its application to be perceived as something that "must be done", an ad hoc exercise in policy review, but having limited influence over, or contribution to, PPP development or downstream actions.

Given the current state of development and understanding of SEA in Canada, there is not a definitive answer as to whether a more formalized and legislated SEA would be advantageous. The assessment of PPPs in Canada was separated from formal EA with the development and implementation of the *Canadian Environmental Assessment Act* in 1992 and 1995. There is little evidence to suggest that a federally legislated requirement for SEA would translate to 'better' assessment or have any influence over SEA systems and practices under provincially regulated processes or within the private realm of industry. Some of the 'better' SEA experiences in Canada to date have neither carried the SEA name tag nor occurred under formal SEA requirements; rather, such cases have been integrated with government or private sector PPP development, often adopting SEA principles and methodology 'accidentally', and tailor-made to the particular needs and objectives of the planning system and problem at hand.

Second, part of the challenge to realizing the benefits of SEA is the currently limited tiering of strategic- and project-level assessment and decision outputs. Indeed, SEA is often touted as a tool that can complement and support lower tiered assessments by identifying preferred options and directions for decision making. In practice, however, Canadian SEA remains relatively static, limited to a single tier at a time, and with only marginal input to subsequent assessment processes. While in most cases SEA is *intended* to influence or guide subsequent actions and decisions, there is often no clear connection between systems of SEA and downstream environmental assessment

input requirements. In this sense, the systematic separation of SEA has constrained its ability to effectively influence downstream activities.

Third, in those cases where SEA has demonstrated at least some success it unfolded as an integrated process with PPP development. Even as a parallel process to planning and decision making, the added value of SEA has proven to be limited in terms its ability to adequately integrate and coordinate assessment methods, objectives, and outputs with those of the existing planning and decision making process. That being said, an integrated approach does require that SEA become an accepted part of PPP development. This will be difficult to achieve in Canadian practice where environmental assessment has long been an add-on process or yardstick against which the acceptability of proposals is measured, rather than an integrated decision support tool to develop better ones.

Fourth, although SEA is said to be something different than traditional EIA it is still plagued by many of the same problems—in particular post-decision follow-up and monitoring. The promise of SEA follow-up is a popular theme in recent literature (e.g. Arts and Morrison-Saunders, 2004; Partidario and Fischer, 2004), but thus far there has been little guidance for real implementation. As such, SEA is still very much an *ex ante* evaluation and rarely carries over to the post-decision stages to address PPP implementation effects. In the Canadian context, this appears to be more so the result of limited institutional capacity (or desire) to link SEA outputs to subsequent PPP and project inputs rather than the "splash effect" (see Partidario and Arts, 2005) of strategic initiatives per se.

Finally, context is critical. Understanding context is essential to understanding the value of SEA. Hildén et al. (2004) argue that different perspectives and understandings of planning and decision making lead to very different views of what SEA is about and what it should be delivering. SEA systems, from the formal to informal, are designed very differently across Canada and intended to serve very different ends. The nature and characteristics of any SEA system or application is dictated in large part by the institutional framework and how and where SEA fits into the relevant decision making process (Sheate et al., 2001). To return to the CNSOPB offshore Misaine Bank assessment as a case in point, the intent of SEA was to streamline downstream assessment. From an outsider's view of the system may seem narrowly focused; however, in practice SEA is operating within the context in which was intended to operate and under the constraints of the offshore regulatory system. While general guiding principles for SEA may be established, there is not likely to emerge a single best one-size-fits-all framework.

5.1. Conclusion

An assessment of the overall state of SEA in Canada is difficult to determine objectively given that the majority of SEAs at the federal level are not publicly available, there is no central registry of SEAs as there is for EIA, and a large number of SEA applications do not occur under the SEA name tag or under the federal SEA framework. However, based on known experiences to date, Canadian SEA systems and practices are diverse, far from consolidated in scope and function, and encompass a range of models and practices. As such, there is considerable variability in outcome and expectations. In part, this may be due to how SEA was introduced and evolved in Canada—as a 'good concept', but one that lacked the necessary methodological guidance and institutional support.

Canadian SEA is currently characterized by methodological and institutional pluralism, the boundaries of which are not well defined. There is no single model of SEA that can be unequivocally applied to all SEA systems and practices under the various PPP regulatory systems that exist; rather, attention must be given to custom-designed SEA sensitive to the tier of application and to the specific nature, objectives, and constraints under which SEA is operating. Bina (2003) goes so far as to argue for the conceptualization of SEA at the level of organisations, not of PPP tiers or of economic sectors alone, framing the purpose of SEA by how it fits the decision framework. This is not to say that 'good practice' SEA should not be defined by an agreed-upon set of principles and criteria, but rather SEA operates in diverse forms, under a range of institutional and methodological frameworks and expectations; evaluations must be sensitive to context.

In conclusion, the results of this study suggest that SEA practice is ongoing in Canada, both formal and informal, but under varied systems and frameworks and with mixed success. In light of the upcoming review of the Canadian federal SEA system and Cabinet *Directive*, there is a need to examine a larger number of cases across a broader range of sectors, at different tiers of decision making, and under both formal and informal SEA systems in order to gain a comprehensive understanding of SEA experiences, state-of-the-art, and requirements for the next generation of SEA. To date, the Canadian SEA report card might read as follows: has considerable promise, but falling short of its full potential.

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