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STRATEGIC ENVIRONMENTAL ASSESSMENT AND SUSTAINABLE DEVELOPMENT

by

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ABSTRACT

The systematic evaluation of the environmental implications of public policy rarely takes place, despite the fact that problems are often the result of failure at the strategic level. Piecemeal and ad hoc efforts have proved insufficient to advance sustainability. It is becoming evident that formal mechanisms are needed to hold decision makers accountable and foster more sustainable practices. One such tool that has received growing attention is Strategic Environmental Assessment. Strategic Environmental Assessment (SEA) is used to evaluate the potential environmental impacts of proposals going to Cabinet for decision. This study compared and contrasted three environmental assessment processes to test which would result in more informed decision-making and ultimately influence more sustainable development. This thesis also compared and contrasted two separate strategic environmental assessment case studies to further support or disprove the hypothesis.

The study concluded that, of the three assessment processes compared, Environment Canada's revised SEA process, contributed most to more informed decision making and ultimately, more sustainable development. However, the study had some limitations, related to process, including small sample size, the lack of direct communication with the assessment officers, and the short duration of the study. The study identified two challenges: the need for greater public participation in Federal level decision-making, and the need for mechanisms to overcome institutional barriers to the application of SEA to policy, plan and program proposals.

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DEDICATION

I dedicate this thesis to my parents, John and Shirley Follen, and sister, Melissa. Thank you for making me sustainable.

CHAPTER 1 - STUDY BACKGROUND

This thesis will analyze the capabilities of three related environmental assessment processes, as well as how their respective contributions to more informed and robust decision making leads to more sustainable development. This hypothesis will be proven or negated in two ways. First, a literature review will be conducted to consider the characteristics of sustainable development and the criteria for more informed decision-making and secondly, through comparative analysis. This analysis will compare three environmental assessment processes and two Strategic Environmental Assessment case studies. These comparisons aim to support or disprove the outcomes of the literature review and ultimately support or discount the hypothesis that one assessment process has greater capacity than the others as a means to achieving more sustainable development.

The larger problem being investigated in this thesis is how to protect the earth's environment through better planning and federal-level policy, plan and program proposal development. A model or assessment process needs to be established to provide decision-makers with the necessary details to make more informed decisions (Andre and Gagne, 2000). An effective process for appraising sustainability is not only being sought by the Federal government, but also by other provinces and municipalities and the international community (Sadler, 1996).

What is Strategic Environmental Assessment?

Environmental assessment is an important planning and decision-making tool. It is an systematic information gathering process used to identify and understand the effects of proposed projects on the bio-physical environment (air, water, land, plants and animals) as well as on the social and economic environments of the people to be affected (Canadian Environmental Assessment Agency, 2002a). Building on this, Strategic Environmental

Assessment or SEA, is defined as a systematic, comprehensive process of evaluating the environmental effects of a policy, plan or program and its alternatives (Therivel and Partidario, 1996). The SEA process builds on existing tools that are used to provide policy, plan and program developers with a simple and straightforward approach to the development and assessment of their proposals (Therivel and Partidario, 1996). SEA is designed to be the next generation of environmental impact analysis or EIA, and its development draws heavily from the experiences of project level assessment. The two assessment processes, though similar, should not be confused (Therivel, Wilson, Thompson, Heaney and Pritchard, 1994). The primary differences between SEA and project environmental assessment resides with the context in which the assessment is conducted, as well as the objectives (Thissen, 2000). The following section explores some of these differences and their relevance to informed decision-making.

The interrelationship between strategic and project level assessment processes is important and can be demonstrated through a pyramid diagram (see Figure 1.1). The diagram illustrates the tiered decision-making hierarchy between the processes. The outcomes of the development and assessment of policies can be applied to the subsequent development of programs. These programs then flow into plans, which eventually influence projects. This process works much the same way in reverse, with the design and outcome of projects having the potential to influence policy, programs and plans, as indicated by the arrow.

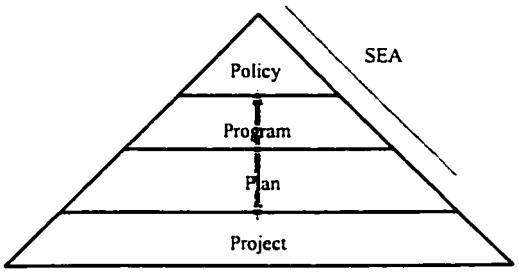

Figure 1.1 Environmental Assessment Pyramid Diagram

This interrelationship is also important in terms of the outcome and evaluation of proposals and their assessments (Partidario and Clark, 2000;Therivel et al, 1994). Due to the conceptual nature of policy, plan and program proposals, it is not always feasible to observe their actual impacts on the environment, as is the case of project implementation. Therefore, the outcomes of a complete assessment and evaluation of an SEA will only become substantive when implemented as a project, often much further in to the future (Dalal-Clayton and Sadler, 1999). As such, the consistent and coordinated application of both processes may result in more sustainable development.

What is Sustainable Development?

The idea of sustainable development has been around since Malthus conducted his work in the late 1700s on the cycle of exponential population growth and the overexploitation of resources (Environment Canada, 2002). Since then, the World Commission on Environment and Sustainable Development (the Bruntland Commission) defined sustainable development as, 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission for Environment and Development (WCED), 1987). In other words, development should be conducted in a manner that satisfies human needs and improves the quality of human life, while at the same time, does not compromise environmental health or deplete natural resources beyond their capacity to renew and replenish (Commissioner of the Environment and Sustainable Development (CESD), 1998).

Sustainable development, in this context, then requires the anticipation and prevention of negative impacts (Bruhn-Tysk and Eklund, 2002). Among other requirements, the achievement of more sustainable development involves the balanced integration and consideration of environmental, social and economic factors, also known as the 'three pillars' (United Nations

Conference on Environment and Development (UNCED), 1992). By considering and integrating all three factors during the development of proposals, it may be possible to achieve sustainable development (Bond, Kirkpatrick, Lee, Curran and Francis, 2000). Other attributes of sustainable development can be described through a variety of more specific criteria. Though many examples of such criteria exist, this analysis will use the Bellagio principles of sustainable development as a reference point. In November 1996, an international group of measurement practitioners and researchers from five continents came together at the Rockefeller Foundation's Study and Conference Center in Bellagio, Italy to review progress and to collect insights from practical ongoing efforts (International Institute for Sustainable Development (IISD), 2003a). The result of this meeting was the Bellagio principles which were unanimously endorsed. These principles, which can drive decision-making, assessment and more sustainable development, are summarized in Table 1.1 below:

Table 1.1 The Bellagio principles of sustainable development

Principle	**Assessment of progress toward sustainable development should:**
1. GUIDING VISION AND GOALS	• be guided by a clear vision of sustainable development and goals that define that vision
2. HOLISTIC PERSPECTIVE	• include review of the whole system as well as its parts • consider the well-being of social, ecological, and economic sub-systems, their state as well as the direction and rate of change of that state, of their component parts, and the interaction between parts • consider both positive and negative consequences of human activity, in a way that reflects the costs and benefits for human and ecological systems, in monetary and non-monetary terms
3. ESSENTIAL ELEMENTS	• consider equity and disparity within the current population and between present and future generations, dealing with such concerns as resource use, over-consumption and poverty, human rights, and access to services, as appropriate • consider the ecological conditions on which life depends • consider economic development and other, non-market activities that contribute to human/social

Principle	Assessment of progress toward sustainable development should:
	well-being
4. ADEQUATE SCOPE	• adopt a time horizon long enough to capture both human and ecosystem time scales thus responding to needs of future generations as well as those current to short term decision-making • define the space of study large enough to include not only local but also long distance impacts on people and ecosystems • build on historic and current conditions to anticipate future conditions where we want to go, where we could go
5. PRACTICAL FOCUS	• an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria • a limited number of key issues for analysis • a limited number of indicators or indicator combinations to provide a clearer signal of progress • standardizing measurement wherever possible to permit comparison • comparing indicator values to targets, reference values, ranges, thresholds, or direction of trends, as appropriate
6. OPENNESS	• make the methods and data that are used accessible to all • make explicit all judgments, assumptions, and uncertainties in data and interpretations
7. EFFECTIVE COMMUNICATION	• be designed to address the needs of the audience and set of users • draw from indicators and other tools that are stimulating and serve to engage decision-makers • aim, from the outset, for simplicity in structure and use of clear and plain language
8. BROAD PARTICIPATION	Assessment of progress toward sustainable development should: • obtain broad representation of key grass-roots, professional, technical and social groups, including youth, women, and indigenous people - to ensure recognition of diverse and changing values • ensure the participation of decision-makers to secure a firm link to adopted policies and resulting action
9. ONGOING ASSESSMENT	• develop a capacity for repeated measurement to determine trends • be iterative, adaptive, and responsive to change and uncertainty because systems are complex and change frequently • adjust goals, frameworks, and indicators as new insights are gained • promote development of collective learning and feedback to decision- making
10. INSTITUTIONAL CAPACITY	• clearly assigning responsibility and providing ongoing support in the decision-making process • providing institutional capacity for data collection, maintenance, and documentation • supporting development of local assessment capacity

How Can SEA Contribute to More Sustainable Development?

As previously stated, sustainable development is viewed as a key framework or goal for the protection and security of future generations. This challenge can be addressed through effective assessment and planning tools such as SEA to prevent future degradation of the natural environment and the mismanagement of natural resources (George, 1999). With a growing Canadian population and increased industrial activity, the need to consider the long-term outcomes of our activities is paramount. This need is also reinforced through Canada's international obligations to such commitments as Agenda 21 (Environment Canada, 2001a). At the United Nations Conference on the Environment and Development held in Rio de Janeiro in 1992, more than 178 governments adopted Agenda 21(UNCED, 1992). Agenda 21 is a comprehensive plan of action for governments to pursue more sustainable development. (Quarrie, 1992). Countries were faced with the challenge of identifying how they intended to implement the Agenda 21 commitments in order to achieve sustainable development.

Environment Canada's response to this plan of action is clearly stated in the department's sustainable development strategy:

> Sustainable development is about how we meet the needs of people today, without compromising the ability of future generations to meet their needs. It is not an end point, but rather an approach to decision making. It recognizes that social, economic and environmental issues are interconnected, and that decisions must incorporate each of these aspects if they are to be good decisions in the longer term. It is an approach that will help us to achieve a healthy environment, a prosperous economy, and a vibrant and just society for current and future generations. (Environment Canada, 2001a)

This strategy's commitment to integrated and informed decision-making raises a challenge. As will be discussed further in the literature review of this thesis, there are many experts who agree that SEA is well suited to address this challenge (Stinchcombe and Gibson, 2001; Therivel and Partidario, 1996; Therivel and Mina, 2002; Partidario and Moura, 2000). SEA is designed to be

an integrated and holistic problem-solving tool. The SEA process has certain qualities that enable it to contribute to more informed decision-making (Thissen, 2000). For example, the SEA process has the advantage of flexibility and early application before irrevocable decisions are made. This enables other options to be considered in the development and assessment of a proposal including ones which may foster more sustainable outcomes (Environment Canada, 2000; Dalal-Clayton and Sadler, 1999). Most importantly, SEA can influence decision-making at the highest level in Canada: Cabinet (Hazel and Benevides, 2000). This presents an opportunity for long-term consideration and the shaping of national policy and programs which can have significant impacts on the environment, society and economy. According to the 1999 Report of the Commissioner of the Environment and Sustainable Development (CESD, 2002), the policies and programs of the federal government have a much greater impact on sustainable development than their operations. For example, the greenhouse gas emissions from the federal government's own operations represent less that 0.5 percent of the total Canadian emissions, yet the government has policy levers that can strongly affect the remaining 99.5 percent of the sources (CESD, 2002). Application of a review procedure to policy, plan or program proposal is seen as an important step in applying sustainable development more broadly than just at the project level.

A History of SEA in the Canadian Federal Government

This section will provide a brief overview of the evolution of environmental assessment procedures in Canada, and how these events have led to the current status of policy assessment.

The Federal government has practiced environmental assessment for over twenty years (see Table 1.1) with SEA emerging relatively recently.

Table 1.1 Timeline of significant SEA developments in Canada

1984	Release of the 1984 Environmental Assessment and Review Guidelines Order (EARPGO)
1988	Review of EARPGO
1990	The government of Canada announced a package of reforms to the existing federal Environmental Assessment and Review Process (EARP)
1994	Amendments to the *Canadian Environmental Assessment Act* (CEAA) were introduced prior to the proclamation of the 1990 Cabinet Directive
1995	The office of the Commissioner of the Environment and Sustainable Development was established
1998	Canada's Commissioner for Environment and Sustainable Development conducts an audit of Canada's environmental assessment progress
1999	The 1990 Cabinet Directive was strengthened, by clarifying the roles and responsibilities of the departments.
2000	Environment Canada developed its first SEA manual in February: 'Strategic Environmental Assessment at Environment Canada - How to conduct environmental assessments of policy, plan and program proposals'
2001	Environmental Assessment Branch produced and circulated a department-wide electronic communiqué on SEA
2003	Development of a revised SEA process and tool kit which intends to address some of the gaps from the previous process including the need to address sustainable development issues.

The 1984 Environmental Assessment and Review Process Guidelines Order (EARPGO) (Federal Environmental Assessment Review Office, 1984), one of Canada's first approaches to project assessment, provided some provisions for the assessment of federal programs. Following an extensive review of EARPGO in 1988, involving stakeholder and public consultation, the Government of Canada announced a package of reforms to the federal environmental assessment and review process in 1990, as part of Canada's Green Plan (Noble, 2002). These reforms included the new legislation the *Canadian Environmental Assessment Act* and the 1990 Cabinet Directive on the Environmental Assessment of Policies and Programs which marked the birth of SEA. SEA however, is not specifically defined in the *Canadian Environmental Assessment Act.* The federal government chose a non-legislated approach to the environmental assessment of federal policy plan and program initiatives going to Cabinet or an individual Minister for approval. This Directive, formally known as the 'Blue Book' (Canadian

Environmental Assessment Agency (CEAA), 1998), did not present or suggest methodologies to conduct policy assessments, nor did it offer any penalties for non-compliance.

The purpose of the 1990 Cabinet Directive was to ensure that environmental considerations were systematically integrated into the planning and decision-making process (Bregha, Brindickson, Gamble, Shillington and Weick, 1990). This was intended as a process for assessing the potential environmental impacts applied at the earliest appropriate stage of decision-making, commensurate with the social and economic analysis (Government of Canada, 1999). Subsequently, in 1995 the office of the Commissioner of the Environment and Sustainable Development (CESD) was established (Shuttleworth and Howell, 2000). This development was a key influence in the continued debate on whether a legislative requirement for policy EA would be appropriate, given that an accountability structure was in place to drive the need for environmental analysis in the policy development process.

Amendments to the *Canadian Environmental Assessment Act* were introduced prior to the proclamation of the Directive in 1994 (CEAA, 2002b). The familiar issue of whether to provide a legislative amendment to allow the application of the *Act* to policies and programs was further debated. The value of legislation was considered by some as a measure to ensure accountability and to demonstrate a high level of commitment by Parliament. However, it was also contended that it was neither appropriate nor possible to legislate a process for the development of policies (Hazell, 1999). At the time that this was proposed, there was virtually no federal policy assessment experience and much debate ensued over the actual methods to be used. The option for policy assessment legislation did not proceed, and left the departments with the challenge of overcoming institutional barriers to the application of SEA to proposals through other less formal mechanisms.

In 1998, the Canadian Council of Ministers of the Environment committed to a new approach to environmental management in Canada, when all jurisdictions, with the exception of Quebec, signed the Canada-Wide Accord on Environmental Harmonization, under which many sub-agreements are being struck on a wide range of important environmental management issues (CEAA, 2002b). Though this issue of federal-provincial harmonization is beyond the scope of this thesis, it could play an important role in determining the most effective means for ensuring the effective implementation and coordination of sustainable development for Canada. Most significantly, the provinces of British Columbia (Government of British Columbia, 2002) and Nova Scotia (Government of Nova Scotia, 2002) have recently considered integrating the concepts of policy, plan and program level assessment into their environmental assessment Acts. The Ministry of Sustainable Resources Management of British Columbia has recently developed and applied integrated, sustainable land use planning processes to land management, and is currently finalizing a sustainability assessment process (Government of British Columbia, 2002). These approaches to assessing policies, plans and programs provide linkages to the facilitation of information exchange and cooperation between the federal and provincial governments.

In 1999, the 1990 Cabinet Directive was strengthened, by clarifying the roles and responsibilities of the departments (CEAA, 2000b). Cabinet also closed the gap on policy assessment and sustainable development by stating that 'An initiative may be selected for assessment to help implement departmental or agency goals in sustainable development...' (Government of Canada, 1999, p. 2).

Recently, departments have been mandated to prepare, as a result of amendments to the *Auditor General Act*, Sustainable Development Strategies, which outline each department's

commitment to sustainable operation (Government of Canada, 2003). These strategies figure prominently with the Cabinet Directive, as both are driven by sustainable development to seek more integrated and informed decision-making. In an informal survey of federal department sustainable development strategies conducted by the author, it was determined that of the 27 departments reviewed, 15 had mentioned or stated some commitment to the application SEA. There was a greater commitment to integrated decision making with 23 or a total of 26 clarifying the importance and need for more integrated decision-making.

Environment Canada's Environmental Assessment Branch developed its first SEA manual in February 2000 'Strategic Environmental Assessment at Environment Canada - How to conduct environmental assessments of policy, plan and program proposals' (Environment Canada, 2000). This manual outlined the basic process requirements for the implementation of the 1999 Cabinet Directive. Over a three year period, Environment Canada's SEA process was applied to over 60 proposals going to Cabinet or the Minister for decision in the form of a Memorandum to Cabinet (MC) (G.Follen, personal observation, 2002). Recognizing the need for strong leadership, as well as the need to notify the Department of the release of the SEA manual, the Environmental Assessment Branch (EAB) produced and circulated a department-wide electronic communiqué, on behalf of the Deputy Minister (Environment Canada, 2001b). The effectiveness of this process and the final assessments, were recently evaluated and some challenges were considered. This led to the development of a revised SEA process in January 2003 (Environment Canada, 2003) which intends to address some of the gaps from the previous process including the need to address sustainable development issues.

The Need for Anticipatory Approaches

The rehabilitation and reclamation of contaminated lands, aquatic systems and ecosystems costs Canadians and the Canadian government millions of dollars each year, not to mention the secondary, indirect impacts that these effects have had on human health. If policies, plans and programs are not developed and assessed for their environmental impacts and long-term sustainability, the consequences could be substantial, particularly when implemented at the project level (Therivel and Brown, 2000). Past experience has demonstrated that an absence of early and effective planning can ultimately result in adverse environmental impacts, the mismanagement of resources and possible litigation (Lawrence, 1997). If policy assessment is effective in eliminating these kinds of negative impacts, prevention is far less expensive than the cure.

In the absence of a formal approach, such as strategic environmental assessment, there are few other opportunities to integrating environmental and sustainability considerations into policies, plans and programs (Lee and Kirkpatrick, 2001). There is a lack of holistic approaches that can be applied to and function within the Federal policy development and decision-making process (Environment Canada, 2001). Policies change and therefore influence the setting for a project that can ultimately impact the environment. Therefore, the challenge of measuring the impacts of policies can only be substantively tested through implementation at the project level as well as through influences on people and their behavior (Verheem and Tonk, 2000). However, considering the time frame required for such an event to occur (i.e. decades), it is not within the scope of this thesis to rigorously test the full impacts of policies, plans and programs.

Many other countries are pursuing holistic, anticipatory approaches as the means for ensuring that sustainable and environmental considerations are factored into their proposals (Sadler, 1996; Therivel and Partidario, 1996; Kessler, 2000). A select number, including countries under

the European Commission, are also modifying their SEA processes to better address sustainability issues (United Nations, 2003; Kessler, 2000). In Europe, countries such as the Netherlands, Denmark and Sweden have been applying holistic planning at the regional level (Verheem, 2000; Brook, 2000). Presently, the European Union is completing a process to be used throughout all Europe to assess for sustainability. In China, SEA is being used in the design and planning for the 2008 Olympic Games in Beijing (X. Chiang, personal communication, 2002). In this case, SEA assesses various developmental scenarios as well as to seek options for the management of the facilities as well as pollution abatement strategies. South Africa recently released its guide on the application of SEA and has also endorsed a sustainability driven assessment process for the development and assessment of national policy, plan and program proposals (Department of Environmental Affairs and Tourism (DEAT, 2000). South Africa also applied the SEA process to the planning of its 2004 Olympic Bid in Cape Town (Wiseman, 2000). Other countries actively involved in the development and implementation of SEA include the United Kingdom, Australia and New Zealand to name a few (Partidario and Moura, 2000).

Disadvantages and Advantages of Implementing SEA as a Means to Achieving More Sustainable Development

Despite the many apparent advantages of applying SEA to the development and assessment of policy, plan and program proposals, it is important to consider some of the barriers. The application of SEA in the Canadian forum is not without its challenges. In Table 1.2, Kirk Stinchcomb and Robert Gibson (Stinchcomb and Gibson, 2001) list ten challenges to the effective implementation of SEA. The following section will address the four main challenges most relevant to this thesis for SEA to contribute to sustainable development: the time and resources required to comprehend and implement a complex SEA process, limited information

and unavoidable uncertainties, lack of full public participation in decision-making, and institutional resistance to the application of SEA.

Table 1.2 The ten main challenges for strategic environmental assessment for sustainability

Challenge	Summary of main challenges
1. Limited information and unavoidable uncertainties	• compounds problems surrounding ability to anticipate and monitor environmental impacts • practitioners may have to make huge assumptions about the implementation of a proposal • can undermine public support for SEA
1. Boundary-setting complexities	• boundary setting is crucial for focusing an assessment • the large scope of SEA can be problematic based on spatial, temporal and substantive considerations
2. Primitive Methodologies	• SEA methodologies are not yet well developed or widely agreed upon by those involved
3. Difficulties in defining the proper role of public participants and ensuring their effective involvement	• many policy making institutions have limited experience with open public consultation • SEA demands for openness may be seen as an infringement on their powers
1. Coordination and integration of strategic assessment with assessment processes at other levels	• coordination of SEAs and subsequent project level assessments can be problematic
1. Institutional Resistance	• environmental requirements can encroach on the prerogatives of other policy sectors • perception among politicians that SEAs will cause delays, raise costs, and curtail traditional competencies
2. Conflict between integrated assessment and bureaucratic fragmentation	• separate departments tend to be poorly coordinated and the structures generally lack the flexibility for redistributing power and opening new channels for communication
1. Jurisdictional Overlap	• SEA raises a number of difficult jurisdictional and constitutional questions because of its broad spatial, temporal and subject matter scope
2. Limitations of the standard rational planning and policy making model	• the model assumes that public servants act as rational individuals with a problem solving orientation • rarely is there a clear moment when political decisions happen
1. Resistance to integration of strategic assessment in core decision making	• short term goals may prevail over longer term sustainable strategies

The success of SEA is contingent upon the availability of readily accessible and appropriate information (Thompson, Treweek and Thurling, 1995). Information pertaining to current or impending ecological and socio-economic conditions or about the nature, scale and location of future developments does not always exist. The information may be inconsistent, outdated, confidential or inappropriate to the boundaries relevant to the policy, plan or program proposal (Therival and Partidario, 1996). These restrictions compound problems associated with a decision-makers' ability to anticipate and monitor the potential impacts of a proposal. The challenge of predicting these impacts through SEA is further exasperated as a result of the large scale in which SEA operates. Uncertainty is also a challenge for proposal development. Large assumptions may need to be made on how fully and successfully a proposal will be implemented (Dalal-Clayton and Sadler, 1999). It is also extremely difficult to link cause and effect with any degree of certainty since environmental trends are unlikely to be influenced by a specific, individual government policy (Bregha, et al., 1990). The need to account for, rather than eliminate uncertainty, poses an important challenge to strategic environmental assessment (Scott, 1992).

Stinchcomb and Gibson (2001) consider the clear lack of full public participation in the development of SEAs a major drawback. Public participation in the development of policy, plan and program development is in most cases, essential for more informed and balanced decision-making (Firth, 2000). At all levels, there are many advantages to including the public in SEA development. For example, members of the public may have access to local or traditional ecological knowledge which may not otherwise be available, the public can provide new perspectives on a given issue, public confidence in decision-making is strengthened, and public participation promotes democratic goals and values and allows those involved to have a better understanding of policy issues (Dale, 2001). Many policy making circles within the Federal

government have limited experience with open public consultation and will find few incentives to seek greater scrutiny or to have their work subjected to more critical review (Sinclair and Diduck, 2001). However, the 1999 Cabinet Directive states that, 'Departments and Agencies should use, to the fullest extent possible, existing mechanisms to involve the public, as appropriate, and document and report on the findings of the strategic environmental assessment.' (Government of Canada, 1999). This component of the 1999 Cabinet Directive has neither been rigorously explored nor implemented within Environment Canada. Understandably, some proposal decisions are required quickly or must be made in confidence in response to certain secrecy issues and deemed too sensitive for release prior to approval (Partidario, 2000). Lastly, as policy development often lacks immediate and observable impacts on individuals, engaging the public meaningfully presents a major challenge. Regardless, it will be important to seek an approach for greater public involvement to foster more informed decision-making and ultimately, more sustainable development.

The fourth obstacle for SEA within the Federal government, is overcoming institutional resistance to the application of SEA to policy proposals. Environmental considerations can encroach on the priorities of other policy development sectors. There is a common perception among politicians and bureaucrats that SEA will result in delays, raise policy budgets and curtail traditional competencies (CEAA, 1998).

Despite the challenges of implementing SEA, described above, a wide range of positive benefits have become apparent. The benefits of SEA are best described in Stinchcombe and Gibson's report (2001) titled 'Strategic Environmental Assessment as a Means of Pursuing Sustainability: Ten Advantages and Ten Challenges'. For the purposes of this background chapter, these benefits are summarized in Table 1.3.

Table 1.3 : The ten main advantages of strategic environmental assessment for sustainability

Advantage	Summary of Main Advantages
1. SEA can Establish a Framework for EA and Streamline the Process	• Increased efficiency • Issue pre-identification • Informatic coordination and tiering of assessments
2. Improved Mitigation and Site Assessment	• Formulation of generic mitigation measures to be used at project level • More mitigation options presented • Greater innovation
3. Better Consideration of Fundamental Issues	• Assessment of value debates • Consideration of alternative development options
4. Improved Assessment of Cumulative Effects	• SEA , at the design phase of proposal development can consider synergistic, additive, saturation, direct and indirect impacts
5. Improved Analysis of Alternatives and Need	• SEA can help identify which strategies are likely to be environmentally beneficial and whether one plan is preferable to another • enables assessors to explore the pros and cons of the 'no action' alternative
6. Improved Public Participation	• Improves accountability by allowing external scrutiny of decisions • Civic processes can also educate the community and raise environmental awareness
7. Greater Political Will and a Heightened Profile for the Environment	• Encourages decision-makers to articulate environmental goals which can result in a general increase in political will to take substantive action towards sustainability
8. SEA is Proactive and Broad	• When compared to project level assessment, SEA is more anticipatory than reactive as is the case for project level assessment • SEA presents an opportunity to anticipate and prevent problems and to capitalize on opportunities.
9. SEA Leads to More Sustainable Policy, Plan and Program Proposals	• SEA cam operationalize various concepts of sustainability • Information that directs decisions will be more comprehensive and inclusive • SEA presents the opportunity, through public involvement the consideration of traditional ecological knowledge • SEA is an action forcing devise that compels decision-makers to weigh environmental principles carefully because of legal and procedural requirements.
10. SEA 'Trickles' Sustainability Down	• SEA can introduce sustainability at the policy level, then 'trickle' it down to plans , programs and ultimately to projects.

Stinchcombe and Gibson (2001) describe in their report some of the features of SEA that better position the process to contribute to informed decision making. The conclusions of this report support SEA as a means for ensuring sustainability. Though not exhaustive, the report presents some of the key features of SEA including the further consideration of fundamental and broader context issues, the consideration of cumulative effects (additive impacts, synergistic impacts, induced and indirect impacts, etc), analysis of alternatives and need, improved public participation, the ability to heighten the profile of the environment on the political agenda, proactive and anticipatory, and the operationalization of various sustainability concepts including carrying capacity, natural capital, the precautionary principle, and intergenerational equity. SEA can function as a heuristic devise that can translate sustainable objectives and concepts into the language of politics (Therivel et al., 1994).

This chapter provided a brief history of EA, SEA and sustainable development. It explored some of the ways in which SEA can offer a holistic approach to the assessment of Federal policy, plan and program proposals with the objective of contributing to more informed decision-making. The chapter also points out some of the primary advantages and disadvantages of applying SEA to fulfill this objective.

CHAPTER TWO - LITERATURE REVIEW

In this chapter, a literature review is undertaken to provide background and context for the study and to seek and prioritize areas in need of improvement. The literature review component of this thesis is developed in three parts. First the review will consider Federal government documentation on SEA and sustainable development and the need for more informed decision-making. The second part will review other studies and literature that examine SEA as a means for achieving sustainability. The third part of the literature review will document sources of practical evaluation criteria for determining the effectiveness of SEA as a means for contributing to more sustainable development.

Federal Government Documentation on SEA

In the recent release of Environment Canada's 2001-2003 Sustainable Development Strategy (Environment Canada, 2001), several references were made on the importance and need for integrated and sustainable decision-making,

> The Department is also committed to a more consistent consideration of social and economic impacts in our decision making (such as considering the impacts of our policies on different populations), but needs the tools and training to further this goal. (Environment Canada, 2001a)

The report indicates that research to better understand sustainable development and the relationships among environmental, economic and social conditions would assist in addressing the challenge of integrated decision making. SEA has built in mechanisms to achieve this type of integrated decision-making. Objective 1.3 of the report 'Environment Canada's ability to make integrated decisions is enhanced through new knowledge and decision support tools' (Environment Canada, 2001, p. 7), recommends the development of a pilot sustainability assessment tool for Environment Canada policies and programs by end of 2003. An issue scan

conducted for the Sustainable Development Strategy, concluded that to build on the existing 1999 Cabinet Directive on environmental assessment, further work could be done within Environment Canada and across government to more comprehensively apply SEA to policy related decisions.

The 2001 Report of the Commissioner of the Environment and Sustainable Development to the House of Commons (CESD, 2002) also supported the application of environmental assessment to Federal proposals as a means for achieving more sustainable development. The report stated that environmental assessment is a key tool for preventing environmental harm. The report also referred to Chapter Six of the 1998 report 'Environmental Assessment - A Critical Tool for Sustainable Development which, while acknowledging its importance, criticized the lack of compliance with the 1999 Cabinet Directive (CEAA, 2001) . This 2001 report from the Commissioner builds on the previous 1999 report which stated that the systematic use of SEA can promote sustainability by addressing the cause of environmental problems at their policy source, rather than simply treating them as symptoms or impacts. This suggests the importance of anticipation and prediction in achieving sustainability and the need for better implementation of SEA within the Department. It also establishes a trend towards decision-making which addresses sustainability issues.

SEA as a Means for Achieving Sustainability

The Federal government is not alone in the pursuit of applying SEA as a means for achieving sustainable development. There is a rapidly expanding range of examples of such SEA application. In a report released in June 2002 in the Journal of Impact Assessment and Project Appraisal 'Ensuring effective sustainability appraisal', Riki Therivel and Phillip Mina (2002), draw a solid correlation between the development of an effective sustainability assessment process

and SEA. Therivel states in this report that though SEA takes time and resources, it can provide many benefits in terms of clearer, more robust and sustainable strategic actions. In their report, which appears in the recently published book 'Perspectives on Strategic Environmental Assessment', Riki Therivel and Maria Rosario Partidario (2000), conclude that SEA is increasingly seen as a way to counter the limitations of environmental impact assessment and help promote sustainability. They stress that SEA can bridge the gaps between decision-making and sustainability principles (see Background Chapter). Maria Rosario Partidario and Filipe V. Moura (2000) support this perception that sustainability appraisal can be understood as an integrative approach, hosted in an SEA framework.

Several authors (Therivel and Partidario, 1996; Verheem and Tonk, 2000; Thissen, 2000) suggest that SEA is most effective when it is based on a clear set of principles, and includes comprehensive and step-by-step process guidelines, application of indicators, and an effective follow-up and monitoring process. It should also include the opportunity for public participation, as well as the opportunity to set clear objectives and criteria. Finally, it should also occur early in the decision-making process of policy, plan and program development.

SEA Evaluation Criteria

This section will consider research pertaining to the development and application of SEA evaluation criteria. The conclusions of these studies will be considered in the development of a set of evaluation criteria for this study for the purposes of comparing the three environmental assessment processes and two case studies.

A substantial amount of literature has been developed on the evaluation of SEAs and in pursuit of answering the question of 'What makes an effective SEA' (Sadler, 1996). According to

Marsden (1998), measuring the effectiveness of SEA is dependent on an understanding of the different contexts which underlie the applications to which it is presently applied. Marsden suggests two dimensions of effectiveness: substantive and procedural. The first part is to determine the extent to which SEA performance meets established purposes, goals and objectives, and the second part is to determine how it meets accepted provisions and principles.

Another approach to the evaluation of SEA, (Lawrence, 1997), proposes an explicit distinction between 'quality' and 'effectiveness'. Quality is used to assess the goodness of institutional process, methods and other inputs, while effectiveness is concerned with the consequences and outputs of these. For the evaluation of the quality of SEAs, a distinction is proposed between processes, methods, and documentation or SEA reporting (Thissen and Twaalfhoven, 2001). As such, effectiveness is related to direct and indirect outcomes of the assessment.

In a companion study specifically concentrating on SEA (Thissen and Twaalfhove, 2001), a three-aspect approach is taken to evaluating SEA: adequacy of procedures, requirements, arrangements; operational excellence, referring to the rigor of the analysis, the quality and responsiveness of consultations, and the responsiveness or receptiveness of administrators/ decision-makers; and the relevance and influence. However, it is a challenge to address these criteria, particularly when an evaluation is conducted on a final report, rather than directly through interviews with the original assessment officers. It is often the case that evaluation of an SEA can only be conducted on the final SEA output, the report.

In general, the following conceptual structure for the categorization of evaluation criteria at the level of individual policy analytic activities can be derived (Sadler, 1996):

- input criteria relate to input conditions, i.e. aspects preceding or affecting the analysis
- content criteria related to the content of the analysis i.e. the validity of the analysis methods used, and the variety and relevance of alternatives and objectives that were considered in the analysis
- process-based criteria that relate to characteristics and organization of the analysis process i.e. transparency, resource use, time, money expended
- results criteria relate to the products of the analysis, i.e. the findings of the analysis, including the presentation, relevance and validity of the outcomes
- use criteria relate to who uses which elements of the analysis and for what purposes
- effects criteria relate to the possible effects of the policy analytic activity, i.e. whether the analysis fed the discussion, whether the analysis had any effect on the policy process, policy formulation, decisions taken etc.
- outcomes - post hoc empirical assessment of whether or not it makes a difference (performance measurement)

Table 2.0 provides an overview of the criteria presented by Thissen and Twaalhoven (2001) for the evaluation of policy analytic activities.

Table 2.0 Overview of Criteria Used for Evaluation of Policy Analytic Activities

Input Participation (type and quality of) Formal context of activity Willingness/availability of actors Availability of time Availability of funds Availability of supporting tools Experience / quality of analysts Availability of data and knowledge	**Results or Products** Consistency (Internal) Relevance Presentation Availability Acceptance by parties involved
Content Adequacy of methodology Depth Broadness Validity, credibility Quality of argumentation	**Use** Which elements By who For what purpose

Relevance	
Process Parties involved Extent of cooperation Organization (flexibility, clarity) Working methods Efficiency, productivity Quality of argumentation Relevance	**Effects** Decision/policy content Policy process effectiveness Implementation of policies Benefits to problem situation Individual parties' ideas, arguments, insight Individual parties' well-being Collective insights Shared strategies, commitment Changes in social structure, network

Despite the criteria presented, it may not be feasible to focus on a single set of criteria to be applied widely and unequivocally to evaluate all policy analytic activities (Thissen, 2000). Alternatively, and more appropriately, a subset of a variety of possible criteria may be used in individual cases. Thissen also observes that a majority of SEA evaluations seem to best fit with the so-called traditional policy analysis paradigm, i.e. it is implicitly or explicitly assumed that the provision of more and better science-based knowledge of impact of policy alternatives will be instrumental in improving decision-making. Thissen contends that it is equally important to include an additional analysis of stakeholder and public positions.

For the purposes of this thesis, the criteria used to compare both the assessment processes and case studies will be developed based on Kirk Stinchombe's and Robert Gibson's report, 'Strategic Environmental Assessment as a Means of Pursuing Sustainability: Ten Advantages and Ten Challenges' (Stinchcombe and Gibson, 2001). These criteria establish clear linkages between SEA and achieving sustainable development while providing a basis for evaluating both the quality and effectiveness of an assessment. The criteria for the assessment processes will differ slightly from the criteria used for the case studies to more appropriately fit the respective contexts.

CHAPTER THREE - CONDUCT OF RESEARCH STUDY

This Chapter will discuss the methodology used to complete the study; to compare three environmental assessment processes and to determine which will result in more informed decision-making and ultimately, more sustainable development. The research is divided into two main sections: a comparison of three environmental assessment processes and secondly, a comparison of two case studies which represent the standard context and format for Federally- developed SEAs.

The three environmental assessment processes selected in this study for comparison include: *An Ecological Framework for Environmental Impact Assessment in Canada* or simply, the Ecological Framework (Beanlands and Duinker, 1983), *Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessment of policy, plan and program proposals* or SEA 1 (Environment Canada, 2000); and, *Strategic Environmental Assessment, and integrated approach to the environmental assessment of policy, plan and program proposals, at Environment Canada* or SEA 2 (Environment Canada, 2003). These processes were selected to demonstrate a transition of methodology over several decades, and to indicate their differences in approaches to environmental and integrated assessment. The case studies selected for comparison were the *Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope* or ERI (Canada-Nova Scotia Offshore Petroleum Board (CNSOB), 2002) and, *the Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary* or KIBS *(Northwest Territories)* (Canada Wildlife Services, 2003). Both case studies involve the management of wildlife and focus on petroleum development. The case studies were selected based on their contextual similarities and, as they did not go to Cabinet for consideration and hence, are not

secret, unlike the majority of other SEAs. As well, the ERI case study was developed based on the Ecological Framework, and the KIBS SEA was developed based on the SEA 2 process. These case studies were also selected to differentiate between shorter-term project based approaches to environmental assessment against a longer-term, holistic and integrated assessment approach.

Several steps were taken to complete the comparisons. The first step involved a review of all pertinent and relevant studies and reports on SEA, including other methodologies used and a set of evaluation criteria and approaches (see Literature Review). In order to provide a basis for comparison, evaluation criteria was developed, based on previous studies. Next, the three environmental assessment processes were reviewed and analyzed. This review sought to characterize each process and identify the major similarities and differences based on the criteria developed. The next stage of the study involved the review and comparison of the two case studies, based on a separate set of criteria. This review of the final SEA reports provided information on the product report and the findings as presented for decision makers. The method described above was chosen in order to ensure an objective, and unbiased comparison of both the assessment processes and case studies.

The evaluation criteria for this study are combined and summarized in Tables 3.0 and 3.1 below. They are based on a combination of criteria applied to previous evaluation studies as well as Kirk Stinchcombe's and Robert Gibson's report, 'Strategic Environmental Assessment as a Means of Pursuing Sustainability: Ten Advantages and Ten Challenges' (2001) and elements of the Bellagio Principles (IISD, 2003a). As such, the criteria selected for this study match the features and qualities which contribute to an effective SEA process and substantive outcome. There are two sets of criteria, for the assessment process evaluation, and for the SEA case studies. For ease of comprehension, the criteria are in the form of questions that are

answered in the tables. In most cases, the criteria are reflected as present or not. As well, more details may be included to provide more specific and detailed observations.

To facilitate comprehension, the criteria were organized into four main groups. These four main groups include *Inputs*, *Process*, *Outputs and Substantive Effects.* The first group, *Inputs*, relates to an evaluation of the assessment framework, its completeness, and capacity to predict outcomes. The second group, *Process*, presents criteria for the evaluation of the internal processes which drive the assessments. The third group, *Outputs*, examine how the processes present the final information that may or may not be useful to decision-makers. Finally, the fourth group, *Substantive Effects*, relate to substantive and real outcomes. For example, how the policy, plan or program ultimately influences project design and implementation. As explained in the 'Background Chapter' of this report, this is the only true opportunity to observe the capacity of SEA to influence more sustainable development. However, as was previously explained, the long lag time between policy, plan and program application and project implementation, may render it impossible to fully appreciate this fourth group of outcomes.

For the SEA case study evaluations, the criteria selected were also divided into four sections. The first group, under the heading '*Inputs*' are criteria that relate to the information used by the proponent to complete their assessment. The second group, '*Content*', relates to the actual information presented in the SEA report. The third group of evaluation criteria falls under the heading '*Outcome*'. This group considers all other variables including the potential for the proposal to result in more sustainable development. The fourth group, '*Implementation*', considers the substantive outcomes of the case studies and the real impacts that the project eventually has. However, as neither the Kendall Island (KIBS) nor the offshore petroleum proposals (ERI), at the time of this study, had been fully implemented, it will not be possible to

observe the outcomes of project level implementation. However, inferences will be made on the potential for these assessments to influence decision-making and project design.

Table 3.0 Comparison of three environmental assessment processes[1]

Comparison of three environmental assessment processes				
Criteria	**Included in process?**			**Other Information**
Methodology	**Yes / No/ Not Applicable**			**Details and Comments**
Inputs	EF	SEA1	SEA2	
Does the assessment process encourage the commencement of the assessment early in decision-making?	yes	yes	yes	
Does the assessment process encourage the consideration of fundamental issues through the consideration of alternative development options?	yes	yes	yes	
Is the process proactive and broad?	yes	yes	yes	
Does the process present an opportunity, through public involvement, the consideration of traditional ecological knowledge?	yes	yes	yes	
Does the process provide an opportunity for the integration of environmental, economic and social factors?	no	no	yes	SEA 2 provides guidance on integration from an environmental perspective
Process				
Does the process encourage the consideration of cumulative effects?	yes	yes	yes	
Does the process encourage the consideration of alternative development options?	yes	yes	yes	
Does the process encourage improved mitigation through the development of generic mitigation measures at the project level?	yes	yes and no	yes	the SEA 1 process does describe the relationship between policy and projects
Does the process require an analysis of alternatives and need by identifying which strategies are likely to be environmentally beneficial and whether one plan is preferable to another?	no	yes	yes	not an objective of the ecological framework
Does the process encourage the consideration of positive effects and enhancement measures?	no	yes	yes	
Does the process encourage the exploration or the pros and cons of the 'no action' alternative?	no	yes	yes	

[1] See Appendix A for individual evaluations

Comparison of three environmental assessment processes				
Does the process require the development and application of sustainability indicators?	yes	no	yes	
Does the process require the development and implementation of a comprehensive follow-up and monitoring process?	yes	yes	yes	
Does the process require the consideration of significance in relation to sustainable development?	yes and no	yes	yes	the ecological framework describes a need for establishing significance, but not necessarily in terms of sustainable development
Does the process present a set of guiding principles?	no	yes	yes	
Outputs				
Did the SEA process establish a framework for project level assessment and ultimately streamline the process?	yes	no	yes	
Does the process encourage greater efficiency through issue pre-identification?	yes	yes	yes	
Did the process encourage the anticipation of problems at the project level?	yes	yes	yes	
Is the process an action forcing device that compels decision-makers to weigh environmental principles because of legal and procedural requirements?	no	no	yes	
Substantive Effects				
Does the process encourage greater political will and a heightened profile for the environment?	no	yes	yes	
Does the process encourage decision-makers to articulate environmental goals which result in a general increase in political will to take substantive action towards sustainable development?	yes	no	yes	
Does the process operationalize the various concepts and principles of sustainable development?	no	no	yes	
Did the process strengthen the opportunity for the trickle-down of sustainability considerations to the project level?	no	yes	yes	
Does the process encourage community education and to raise environmental awareness?	yes	yes	yes	

EF - An Ecological Framework for environmental impact assessment in Canada
SEA 1- Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessments of policy, plan and program proposals
SEA 2- Strategic Environmental Assessment at Environment Canada: An integrated approach to the environmental assessment of policy, plan and program proposals

Table 3.1 Comparison of two strategic environmental assessment case studies[2]

Comparison of two strategic environmental assessment case studies			
Criteria	**Present in Assessment?**		**Other Information**
Inputs	**Yes / No / Unknown**		**Comments / Details**
	ERI	KIBS	
Was the SEA conducted early in the decision-making process?	yes	no	
Did the assessment consider the fundamental issues of development?	no	yes	
Was there an assessment of value debates?	no	yes	
Was there a consideration of alternative development options?	no	yes	
Did the SEA analyze need?	no	yes	
Did the SEA provide an opportunity for public input or participation?	yes	no	
Was the SEA proactive and broad in its scope?	yes	yes	
Content			
Did the SEA integrate environmental, economic and social factors?	yes	yes	
Did the SEA consider the potential cumulative effects?	yes	yes	
Did the SEA consider potential long-term impacts?	yes	yes	
Did the SEA, at the design phase of the proposal development, consider synergistic, additive, saturation, or direct and indirect impacts?	yes	yes	
Did the SEA result in the development and application of sustainability indicators?	unknown	yes	indicators not presented to specifically address sustainability issues
Does the SEA require the development and implementation of a comprehensive follow-up and monitoring process?	yes	yes	
Does the SEA require the consideration of significance in relation to sustainable development?	yes and no	yes	provides consideration of significance, but not in reference to sustainability
Outcome			
Did the SEA pre-identify major issues?	no	yes	
Did the SEA result in greater innovation?	unknown	yes	information not available
Did the SEA formulate generic			

[2] See Appendix B for individual evaluations

Comparison of two strategic environmental assessment case studies			
mitigation measure that could be used at the project level?	yes	yes	
Were more mitigation measure options presented?	no	yes	
Did the SEA identify which strategies were likely to be environmentally beneficial and whether one plan was preferable to another?	no	yes	
Did the SEA attempt to anticipate both positive and negative effects?	no	yes	
Did the SEA consider the potential positive effects and ways to enhance those effects?	no	no	
Was the information presented in the SEA comprehensive and inclusive?	yes and no	yes	environmental scan sufficient - lacking detailed analysis of other impacts and mitigation measures
Did the SEA introduce sustainability as something which should trickle down to the plan, program and eventually the project level?	yes and no	yes	mentions future project related activities but does not offer strategy to ensure trickle down
Implementation			
Did the SEA result in greater efficiency?	unknown	unknown	information not available
Did the SEA result in the coordination and tiering of subsequent assessments?	unknown	no	not clarified in report
Did the SEA result in exploration of the pros and cons of the 'no action' alternative?	yes	yes	
Did the SEA result in increase environmental awareness at the community level?	unknown	unknown	information not available
Did the SEA improve accountability by allowing external scrutiny of decisions?	yes	yes	
Was the SEA able to anticipate and avert potential problems?	unknown	unknown	information not available
Did the SEA encourage decision-makers to articulate environmental goals which resulted in a general increase in political will to take substantive action towards sustainability?	no	unknown	information not available
Did the SEA operationalize the various concepts of sustainability?	yes and no	unknown	sustainability not specifically addressed in reports
Did the SEA compel decision-makers to weigh environmental principles carefully because of legal and procedural requirements?	yes	yes	
Did the SEA result in the establishment of a framework for project design and assessment?	yes	yes	

ERI - Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope

KIBS - Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary

Compare and Contrast the Processes

The following section will describe the three assessment processes and two case studies compared in this study. The original, uncompiled tables above can be found in Appendices A and B of this thesis.

An Ecological Framework for Environmental Impact Assessment in Canada

The Ecological Framework for Environmental Impact Assessment in Canada (Beanlands and Duinker, 1983) (or as it will be referred to in this paper, the Ecological Framework) is not a specific assessment process guide, as are the other two processes that will be analyzed in this study. However, the Ecological Framework does present recommendations that can strengthen both strategic and project level assessment processes. These recommendations will be used for the comparisons of the processes. The objective of developing the framework was to determine the extent to which the science of ecology could contribute to the design and operation of assessment studies and to recommend ways in which this could be achieved. One of the outcomes recognized in developing the framework was that ecological considerations represent only a portion of the total range of factors involved in an environmental impact assessment.

The report was directed at both federal and provincial agencies tasked with administering assessment processes, and others outside government responsible for implementation of environmental assessments. Although assessment processes were improving, there was still a concern that a gap existed between some of the basic concepts and their translation into

scientific studies (Beanlands and Duinker, 1983). This project was the first major effort to examine the technical requirements from the perspective of the applied scientist.

The development of the framework began in June 1980 by the Institute for Resource and Environmental Studies (IRES) at Dalhousie University. It was jointly funded by Dalhousie University, the Federal Environmental Assessment Review Office, Environment Canada, the East-coast and Arctic Petroleum Operators' Association and the Canadian Electrical Association. The project involved the participation of environmental scientists who are responsible for applying and administering environmental impact assessment procedures in Canada.

The report reflects the range of positive and negative perspectives on environmental assessment which prevailed across Canada. At the time, (and to some extent today), there was a general feeling of frustration and lack of direction on the part of many of those conducting assessment studies. The project demonstrated the interest and commitment of most people involved in environmental assessment activities. Though the intention of the report was not to provide guidance on impact assessments, it is still helpful for those assessing proposals for potential environmental impacts. The report also made several recommendations on how to improve environmental assessment. However, the author acknowledges that even if all recommendations were implemented, there would still be many gaps in the assessment process including the need to address risk, cumulative impacts and the socio-economic side of environmental impact assessment. This framework was applied by the Canada Nova Scotia Offshore Petroleum Board (CNSOPB) to the assessment of site exploration options on the Canadian East coast (CNSOPB, 2002) .

Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessments of policy, plan and program proposals at environment Canada.

'Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessments of policy, plan and program proposals at Environment Canada' or SEA 1 (Environment Canada, 2000), was developed in response to the release of the 1999 Cabinet Directive. The purpose of publishing the manual was to provide Environment Canada staff with guidance on how to conduct an SEA, and to inform them on their obligations, roles and responsibilities, and the requirements of the Directive.

The SEA 1 manual was developed in 2000 by the Environmental Assessment Branch, at Environment Canada with contributions from Canada Wildlife Service (CWS). The author was intimately involved in the development of the SEA 1 and SEA 2 (see next section) processes and manuals. The experience from this work has contributed to the development of this study. The process is directed at both Environment Canada staff, as well as proponents external to the Department, who may need to respond or contribute to a federal SEA. The process described in the manual requires staff to meet the minimum requirements of the Directive. The process was developed as a systematic, six-step process, based on several environmental assessment principles. It does not include guidance on integration, consideration of socio-economic effects, nor does it provide guidance on achieving sustainable development.

Strategic Environmental Assessment at Environment Canada, An integrated approach to the environmental assessment of policy, plan and program proposals'

This revised integrated SEA process, released in 2003 (which will be referred to as SEA 2) is in principle, based on the previous SEA 1 process (Environment Canada, 2003). It is a comprehensive and systematic approach to the development and assessment of policy, plan

and program proposals. However, several new features and tools have been added. The revised SEA 2 process was developed in response to a need to better address sustainable development through environmental assessment. The revised process is also an attempt to contribute to the implementation of certain objectives of Environment Canada's Sustainable Development Strategy (Environment Canada, 2003).

In response to a need for a more comprehensive and complete process, the revised SEA process was designed as a toolbox. Some new features of the process include guidance on integrated assessment, new sustainability principles, the obligation to develop a vision, criteria and sustainability objectives, as well as a consideration of proposal alternatives. The SEA vision, criteria and objectives should be representative of both political priorities and public opinion and values. The process also provides information on the development and application of indicators, the use of adaptive management, a follow-up and monitoring framework as well as an overview of other assessment tools that can be applied to augment the SEA process. This SEA 2 process was the main guidance document for the development of the Kendall Island Bird Sanctuary SEA (KIBS).

Comparison of the Case Studies

Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope (ERI)

The Canada-Nova Scotia Off-Shore Petroleum Board or CNSOPB, requires environmental assessments (EA) of all applications for activity authorization (CNSOPB, 2002). All offshore petroleum activities, including collecting seismic information, drilling wells, or installing platforms, must undergo an EA before receiving authorization. The SEA conducted by CNSOPB was based on 'An Ecological Framework for Environmental Impact Assessment in

Canada' (Beanlands and Duinker, 1983). The assessment considered the environmental implications of a possible decision by the CNSOPB to issue exploration rights for currently unlicensed areas of Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope, including Shortland Canyon and Haldimand Canyon. The SEA provided a basic environmental scan of these unlicensed areas and considered the general environmental effects of activities associated with exploration including geophysical (seismic) exploratory drilling programs on the local marine environment. The SEA was prepared to assist the CNSOPB in decision-making related to potential land nominations in the study area and the subsequent Call for Bids, mainly by highlighting sensitive issues. The SEA will be considered during the review of nominations by the petroleum industry to determine if the area is appropriate for hydrocarbon exploration.

Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary (KIBS)

The Mackenzie Delta was the scene of extensive oil and gas exploration activity during the 1970s and early 1980s (Canada Wildlife Services, 2003). Over 150 wells were drilled, which led to significant discoveries of both oil and gas. However, these petroleum reserves have not been exhausted and further extraction is still pending, based on stronger prevailing economic conditions that would justify the expense of bringing these resources to market. Along with these resources, the region also supports many significant, unique and sensitive populations of marine mammals, sea ducks, shorebirds, swans geese and ducks. A portion of the outer Mackenzie delta is considered to be a nationally significant wildlife habitat (Alexander, S.A., Ferguson, R.S. and McCormick, K.J., 1991) and the Kendall Island Bird Sanctuary (KIBS) is situated within this development area. Oil and gas developments would pose certain management challenges, particularly regarding to KIBS. The objectives of the SEA were to assess and consider options for managing oil and gas activity in the KIBS; to incorporate

sustainable development principles into the management policy of the sanctuary; and, to reconcile the perceived dichotomy between development and protection of migratory bird habitat. The SEA was developed in the Northwest Territories by the Canadian Wildlife Services (CWS) of Environment Canada and was prepared to assist senior management in the Prairie and Northern Region of Environment Canada to make an informed decision about how to manage oil and gas development in KIBS. The SEA was conducted based on the SEA 2 process (Environment Canada, 2003).

Special Methodology Considerations

Although a majority of Federally-produced SEAs are submitted to a Minister or Cabinet for consideration, the two case studies selected for this study were not. In situations where SEAs are considered by Cabinet, they become secret documents as per the provisions of Cabinet Confidence and are no longer available for public scrutiny (Treasury Board of Canada Secretariat, 2003a). This greatly reduces the opportunity to review, assess and report on SEAs. However, the case studies chosen for this thesis both reflect the process and content expected in most generic federal strategic environmental assessments. Other SEAs that have been completed and have subsequently been implemented, would have been ideal for this study and would be able to illustrate the substantive effects of the proposal on project development and implementation. Unfortunately, these SEAs are protected through Cabinet Confidence (Treasury Board of Canada Secretariat, 2003b) and could not be used for this study. However, the case studies selected for this study will provide sufficient information for the testing of the hypothesis.

CHAPTER FOUR - RESEARCH STUDY RESULTS

This chapter will first overview the results of the assessment process comparison (see Table 3.0), while the second part of this chapter will summarize the findings of the case study comparison (see table 3.1). Subsequently, an analysis of these findings will attempt to highlight some of the important similarities, differences and advantages and disadvantages, between the processes. A similar approach has been assigned to test the differences and similarities between the case studies. Considering the amount of space available to complete this analysis, not all factors will be addressed in detail.

According to Barry Sadler (1996), strategic environmental assessment processes generally include certain features in order to be able to contribute to more informed and robust decision-making. Some of these features include the establishment of a framework for future project-level assessments, improved mitigation and site assessment criteria, the consideration of fundamental issues, improved assessment of cumulative effects, the analysis of alternatives and need, opportunities for public participation, proactive and broad, and the transfer of sustainability considerations to other levels of decision-making (Stinchcombe and Gibson, 2001). In addition to these qualities, and to further strengthen the capacity of an assessment process to contribute to sustainable development, the process should include the consideration of sustainability indicators, the determination of significance through sustainability criteria, the inclusion of sustainability principles, and the integration of environmental, economic and social considerations (George, 2001).

Environmental Assessment Process Comparison

The Ecological Framework establishes a series of recommendations for environmental assessments conducted in Canada. One of these recommendations is for the early planning

and design of projects that may have an impact on certain valued ecosystems. The Ecological Framework proposes that planning for any project should occur long before irrevocable decisions are made. However, these planning decisions would be made after the decision to develop was made. This clearly narrows the scope of the assessment. Similarly, the SEA 1 and SEA 2 processes both indicate a need for the early integration of environmental considerations in decision-making. However, the SEA 2 process achieves this through recommendations for early screening and issue notification to be completed before the assessment is carried out or for that matter or even before the development of the proposal.

Another important feature addressed by all three processes is the need for the development of mitigation and site assessment criteria. Though each process approaches this step differently, there is a common goal to determine the best approach to ensuring that developmental effects are minimized or avoided completely. This is achieved by SEA 2, which initiates the process by requiring assessors to clearly state their sustainability vision, establish objectives, for the assessment and ultimately to establish a set of criteria which would guide the assessment and proposal development. As previously stated, the sustainability vision and objectives should be based on both political priorities as well as public opinion and values. The ecological framework recommends the need to identify and address mitigation measures. The SEA 1 process requires activities and outcomes to be listed along with approaches to avoiding or mitigating the impacts.

The consideration of fundamental issues is an important facet of any strategic decision-making process (Eggenberger and Partidario, 2000). Once again, it is stated or at least implied in each process, that the primary motivations and drive for the development of a proposal be presented definitively. In theory, the assessment must consider and entertain proposal alternatives which

can ultimately lead to the avoidance of certain undesirable outcomes of development (Saarikoski, 2000).

Cumulative effects cannot be ignored in any assessment aimed at achieving more sustainable development. Individual impacts which are identified as relatively insignificant, may prove to be important when considered with numerous others in the same region under development. All three assessment processes provide some guidance on the consideration of cumulative environmental effects. The SEA 2 process however provides comprehensive guidance on approaches to broaden the geographical range for identifying potential cumulative effects.

Clearly, any development activity is either going to be the result of human activity, or will affect human interests. It is therefore important that the public be involved, at the very least, in the ultimate design of the development if it is to be sustainable. In this way, the public may serve a check and balance for SEA to ensure that SEA is consistently applied to federal proposals. This check and balance system is particularly important in the absence of formalized legislation, such as the *Canadian Environmental Assessment Act*. This Act establishes a legal obligation for completing project level assessments that are open to public scrutiny (Government of Canada, 1992). The Ecological Framework suggests public participation may be introduced and considered during the establishment and evaluation of impact significance. Alternatively, SEA 2 considers proposal 'visioning' to be the most appropriate stage at which to involve the public. For most proposals going to Cabinet for consideration, the only true opportunity for public participation is at the initial stages of development, before the proposal becomes a secret Cabinet document (Treasury Board of Canada Secretariat, 2003a) and before irrevocable decisions are made. This would at least present an opportunity for the public to provide input on what objectives and criteria should lead to the development as well as to establish 'need'.

However, all three processes do not sufficiently address the challenge of overall clarity, openness and public transparency which should be addressed in decision-making that leads to more sustainable development. It is entirely possible that this challenge cannot be addressed by core SEA methodology alone.

All three processes are fundamentally broad and proactive in scope. The Ecological Framework encourages assessment professionals to consider impacts which may occur beyond the scope of the activity being assessed. Similarly, the Ecological Framework also expresses the need for impact prediction and anticipation. However, SEA 1 and SEA 2 take this concept further. In these processes, assessments should commence as early as possible in the decision-making process: at the issue identification stage of decision-making. Also, these two latter processes provide for the consideration of effects extending regionally and even nationally, as necessary. The nature of SEA is to assess policy, plan and program proposals that can affect the entire country.

Distinct differences were also noted among the three processes considered. The fundamental analysis of alternatives and need was not an objective of the Ecological Framework. The framework is intended to address and mitigate project level issues and impacts after the decision to develop has been made. Conversely, SEA 1 and SEA 2 both clearly outline the need for alternatives and needs assessment. Unfortunately, the decision-making machinery of government does not always provide the opportunity to present alternative options. Often, assessments are made on pre-established decisions (Clark, 2000). This does not allow for an opportunity to seek options and alternatives beyond the scope of the assessment such as the no-go or status quo option. However, these options can still be presented in order to demonstrate the potential significance of impacts on a given environment. Overcoming

institutional barriers to the application of SEA to federal proposals is a major challenge for the implementation of the Department's sustainable development strategy, the Cabinet Directive and more specifically, to achieving more sustainable development (Buckley, 2000).

Neither the Ecological Framework nor SEA 1 explicitly clarify the need to transfer sustainability considerations to other levels of decision-making. Despite the clear lack of discussion on sustainability in the Ecological Framework, there is a call for greater communication among stakeholders, the scientific community and the public. It can be assumed that through this process of communication and information transfer, the outcomes of primary assessments may influence and provide input for future assessments. The SEA 1 process illustrates the amorphous relationship between policy, plan and programs and ultimately projects, but does not present a clear mechanism for achieving this information transfer (see Background Chapter). The SEA 2 process, however, through a well developed follow-up and monitoring process that requires a commitment on behalf of the responsible authority (individual or team initiating the proposal), ensures, methodologically, that the outcomes of higher-level assessments, be rolled into the development of future project level assessments. This mechanism can streamline project level assessments, save time and money, and improve overall development efficiency. Unfortunately, there is presently no formal process to guarantee that this occurs. However, a solid commitment to effective and planned follow-up and monitoring may be a first step.

The use of sustainability indicators is a key building block in helping ensure that sustainable development is achieved (IISD, 2003b; Environment Canada, 2003). Indicators are how progress towards defined goals and objectives are measured. The SEA 2 process provides extensive guidance on when and how to develop and implement indicators, based on the

principles of sustainable development. Importantly, the SEA 2 encourages the use of these indicators to strengthen follow-up and monitoring. Follow-up and monitoring ensure that the recommendations, mitigation and enhancement measures of the proposal are implemented effectively and also verify the accuracy of the impact predictions. The Ecological Framework and SEA 1 suggest the need for indicators but do not provide extensive guidance on how to develop or apply indicators to an assessment or in the follow-up and monitoring of an assessment. Although a process does not provide indicators specifically tailored to addressing sustainability issues, it does not necessarily mean that it will not contribute to more informed decision-making or sustainable development. Indicators can contribute to ensuring greater public accountability and can offer base-line information in the tracking of a particular effect. In some cases, the public have participated in the monitoring of certain assessment indicators and have provided feedback if environmental effects occur (Partidario and Moura, 2000). The use of indicators is important to all environmental assessment processes.

It is also important to note that all three processes require the consideration of impact significance. The Ecological Framework suggests that the significance of predicted impacts can be determined either through the identification of ecological concerns or on the basis of social importance. In SEA 1, significance is addressed through the consideration of likelihood and magnitude of the effects. The SEA 2 process bases its determination of significance on the implications for sustainable development. This is achieved through a series of questions aimed at addressing specific sustainable development issues that are both generic and site specific. The intention of these questions is to determine the potential significance of anticipated impacts from a sustainability perspective i.e. long-term, equity, integration etc. Conversely, it may be a disadvantage to present a set of generic questions rather than leaving this to the discretion of

the assessment officer. This would provide the opportunity to tailor a set of questions to fit a particular scenario or situation.

Policy failures can often be traced to a lack of mutually compatible central organizing principles, ideas and methods (Dale, 2001). In cases where predetermined and commonly accepted principles are adhered to, sustainable development goals may be achieved. However, these principles are rarely developed or accepted by the proponents or stakeholders. This may present a weakness in all assessment processes. Presently, the principles of sustainable development such as the Bellagio principles discussed in Chapter 1, are formulated by an independent panel of international sustainable development experts. SEA 1 does provide a set of guiding principles for the development of an SEA that will encourage environmental protection. However, these principles are developed further in SEA 2. The SEA 2 process also describes how these principles can be used later to test the overall effectiveness of the assessment after it has been completed. For example, it is suggested that if the assessment incorporates sustainable development principles, then it is more likely to result in more sustainable development after implementation (Verheem and Tonk, 2000).

As previously stated, sustainable development can be achieved in part through the integration of environmental, economic and social factors in decision-making (George, 2001). The Ecological Framework describes a need to include the public in decision-making as a means to establish significance and to provide the opportunity to influence project planning and decision-making. It can be expected that this will contribute to the protection of certain social and possibly economic interests. However, the SEA 2 process is founded on and driven by integrated assessment. Though the assessment defines the need to determine primary environmental impacts, it also encourages assessors to consider indirect impacts on society

and the economy, as a result of the environmental impacts. These indirect impacts may include loss of jobs, the cost of rehabilitation, and human health implications.

The importance of the above listed similarities and differences is that the SEA2 process is better able to consider a wider range of effects resulting from the implementation of a given proposal. The advantage is that it presents a better and complete case for or against a particular development option. The SEA 2 process also has the advantage of better follow-up and monitoring and that theoretically, information and decisions at higher levels trickle down and are integrated or influence subsequent decisions, such as at the project design phase. This can further ensure that the original sustainable development goals and objectives, as established at the policy level, are integrated into project planning and implementation. It is important to note, however, that the weighting of considerations is based on the significance of impacts. Regardless, SEA conclusions are not final decisions; instead, they are advisory contributions to decision making by the relevant authorities (Stinchcombe and Gibson, 2001). Still, no matter how reasoned and persuasive assessments may be, in the final decision-making arena, traditional interests and inclinations may dominate (Holtz, 1992). To avoid this situation, the opportunity for public scrutiny may provide the necessary checks and balances for SEA (T. Manning, personal communication, 2003). This would require greater transparency and openness in federal level decision making. Until certain policy mechanisms are implemented, a key barrier will likely continue to be secrecy in the policy process. This may continue to inhibit monitoring if results or the public scrutiny of policy outcomes.

Case Study Comparisons

Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary (KIBS) and the

Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope (ERI)

An SEA provides certain details in its analysis to contribute to decision-making that will result in more sustainable development. (Therivel and Partidario, 2000) Some of these details include the establishment of a framework for future project level assessments, improved mitigation and site assessment criteria, the consideration of fundamental issues of the proposal, improved assessment of cumulative effects, the analysis of alternatives and need, opportunities for public participation, and the need to be proactive and broad. To further strengthen decision-making, the SEA should also include and apply sustainability indicators, evaluate the significance of impacts through sustainability criteria, be based on sustainability principles and integrate environmental, economic and social considerations.

One of the primary goals for completing an SEA at the policy, program or plan phase is to later influence the planning and implementation of projects when substantive impacts on the environment can occur. The establishment of a framework for future project level assessments is addressed by both SEAs. Both SEAs make recommendations for the avoidance of certain exploration activities as well as offering specific scheduling considerations.

Similarly, both assessments provide some considerations for improved mitigation and site assessment criteria. However, as the objectives of the assessments do not go beyond management considerations, specific mitigation measures were not presented. As should be the case with any SEA, provisions were made for future, detailed assessments at the program

development and planning stages. The absence of specific mitigation criteria could be inherent in the SEA process and needs to be addressed. It may be SEA's role to flag potential downstream environmental issues and impacts, which could be addressed through more site specific mitigation measures.

Not surprisingly, both assessments addressed the potential cumulative effects that could result from several developments within the same area. The ERI SEA considered both the potential environmental and socio-economic cumulative effects resulting mainly from fishing and shipping activities. The KIBS SEA also flagged potential cumulative effects that are addressed through the selection of the preferred management option. It is possible that both SEAs could provide more substantive and site specific details in relation to these cumulative effects.

The ERI and KIBS SEA were conducted relatively early in the decision-making process of their respective developments. The ERI SEA was developed to review and compare potential seismic exploration sites before licenses could be issued. The SEA was also conducted on a regional and sub-regional scale which covers well over 9000 square kilometers. The KIBS SEA, though prepared after the draft management plan had been established, still functions before final developmental decisions were made, at a stage that still allows for the consideration of impact avoidance and mitigation at the project level. The full area considered in the KIBS SEA, the Makenzie Delta encompasses over 20,000km^2.

The ERI SEA did not consider the fundamental issues of offshore oil and gas exploration and development. These issues may have included the problems associated with increased green house gas emissions and climate change resulting from the combustion of fossil fuels. Unfortunately, this SEA does not deal with some of the higher-level policy issues that would

normally be addressed in a Federal-level SEA. However, this broader issue could be considered in a National Oil and Gas development strategy. The KIBS SEA did consider and address some of the fundamental conservation issues that may influence decisions in the North with respect to petroleum extraction and exploration. It would have been of value to weigh the costs of development with other energy alternatives. Once again however, this SEA was developed on a narrower focus than would be appropriate for this type of analysis.

The assessment and consideration of fundamental issues drives the concept of sustainable development by questioning 'need'. The analysis of alternatives and need was not sufficiently developed in the ERI SEA and was addressed to a limited extent in the KIBS SEA. Once again, this may have more to do with the limited scope and objectives of these initiatives. However, by providing some evaluation of need and alternatives, the assessments may have provided a greater insight into understanding the motivations for the options selected. The SEA2 process requires the consideration of proposal purpose through a vision statement and an analysis of alternatives that could be subsequently explored.

A fundamental difference between the two SEAs was public participation. The ERI SEA report was displayed on the CNSOPB web-site for review and comment by both the public as well as government departments with an interest in its development. Conversely, at the Federal level, the involvement of the public in the development of SEAs has to date been limited. The public can play an important role in the establishment of social perspective and impact significance (Dale, 2001). The KIBS SEA, though in the original report, provided an address for public input, but did not establish a formal consultation process. Unfortunately, only the opportunity for public involvement was observed. Information regarding the amount or quality of input and public participation was not available, nor is within the scope of this thesis.

The use of indicators in the development of SEA and project EA is a relatively new and emerging concept. However, as the importance of monitoring and follow-up grows, there is an increasing need for mechanisms to track changes and conditions. The ERI SEA lists several species at risk in its report, which at the project level, could be used for monitoring and follow-up. A formal and strategic process for ensuring this occurs was not presented or considered. However, the KIBS SEA does provide a list of several species and condition indicators that could easily be applied to follow-up and monitoring. These indicators will provide the basis for any need to adapt and modify the project in response to environmental harm resulting from the projects.

The evaluation and estimation of significance is critical in any environmental assessment (Sadler, 1996). Significance is a combined estimate of factors such as magnitude, likelihood, geographical range etc. of the predicted effects and establishes priority for the management or avoidance of these impacts. Significance can be based on both environmental considerations as well as sustainability. Both SEAs attempt to predict the relative significance that the impacts of development will have on the environment in question. The ERI assessment concluded that there would not be any significant environmental effects resulting from seismic exploration. This is a surprising conclusion considering the nature of offshore oil and gas exploration and the number of species that inhabit the region that would be sensitive to this type of disturbance. The KIBS SEA does provide some insight into the magnitude and likelihood of various potential impacts resulting from exploration that could be further explored through subsequent assessments.

As previously discussed, one of the key features of a strategic assessment is the consideration and integration of environmental, economic and social factors into decision making. Both SEAs managed to consider the potential indirect effects resulting from development, on both the environment, and humans and human activity. The ERI SEA acknowledged that the exploration may interfere with local commercial fisheries as well as major international shipping lines. The KIBs also considered the indirect effects of environmental impacts. The positive effects of the development on the local economy was weighed against the potential impacts on the use of other natural resources by locals and the potential costs of reclamation in the event of environmental damage.

Both case studies offer certain advantages and disadvantages. From the comparison, based on the criteria presented in this thesis, it can be concluded that the KIBS case study would provide more information than the ERI SEA and could potentially contribute to more sustainable development. This was achieved through the consideration and the establishment of a framework for future project level assessments, improved mitigation and site assessment criteria, the consideration of fundamental issues of the proposal, the assessment of cumulative effects, the analysis of alternatives and need, and through a proactive and broad scope. The KIBS SEA may have been further strengthened by providing greater opportunities for public participation.

Results

This research demonstrates that more informed decision-making can be supported through the application of a comprehensive, strategic environmental assessment process such as the SEA 2 process.

The results can also be interpreted in another way. Simply because broader information is presented in an SEA does not always mean that more informed decision-making and sustainable development will be achieved. As described previously, SEA does present certain disadvantages. For example, the absence of public participation in Federal Cabinet level decision-making and policy development reduces the opportunity for addressing sustainability issues in decision-making. As well, the lack of a formal transparent process that ensures that the results of an SEA are adequately integrated into decision-making and carefully considered, is also a significant barrier to the ultimate influence of SEA on achieving more sustainable development. The results of the comparison prove the hypothesis correct; the SEA 2 process, based on the criteria used in this study, can support more informed decision-making, and potentially lead to more sustainable development. One of the main reasons for this outcome was that the characteristics of the KIBS case study, which was also based on the SEA2 process, closely matched the qualities and principles of an effective assessment (Therivel and Brown, 2000).

Based on the literature review, this study identified two main challenges for SEA to contribute to more sustainable development: the need for better public involvement in Federal level proposal development and the need to strengthen public accountability for the consistent and thorough consideration of environmental and sustainable development in decision-making. It is also important to recognize that the major differences between the case studies do not, in themselves, imply that the assessments described are deficient. On the contrary, given the different influences on their approaches to assessment and decision-making, it would be surprising if they were indeed identical. However, it is important to seek both their strengths and weaknesses, as will be discussed in the following section on research implications.

The strengths of all three assessment processes have been clearly outlined in this study. It is important to recognize the incremental value added over the two previous assessment processes and that the SEA 2 process draws from over 25 years of EA application and experience. SEA can be a proactive, broadly-scoped assessment tool that can consider the fundamental issues and needs for a particular proposal. However, the challenge to ensure increased public participation in policy, plan and program proposal development and assessment needs to be addressed if sustainable development is to be achieved. As well, institutional resistance to the application of SEA must also be addressed. Legislation of the SEA process is considered by many as the primary direction to achieve greater consistency along with improved openness and accountability.

CHAPTER 5 - RESEARCH IMPLICATIONS

A review of the methodology applied in this study revealed several research implications. These implications may have some influence on the overall outcomes and rigor of the research. This chapter considers these implications briefly, and presents recommendations for improvement.

Sample Size

The case studies selected for this study are fundamentally representative of standard federal SEA in respect to methodology, context and reporting (G. Follen, author's observation, 2003). However, restrictions on the public release of SEAs made it impossible to provide a larger sample of case studies. This may have reduced the ability to extrapolate the results to the overall impact of SEA. Further studies with a broader range of subject matter will be needed in the future, in order to allow for more thorough evaluation.

Interaction and Communication

For logistical reasons, it was not possible to monitor the development of the SEA case studies, or to communicate directly with all assessment officers tasked with drafting the reports. A better understanding of certain aspects of the assessments may have been possible through interviews with the proponents. This element of research should be considered and conducted in future studies in order to gain a more fulsome appreciation and understanding of SEA inputs, process, context and outcomes.

Temporal Considerations

Both the KIBS and ERI SEAs had been completed at least two years before this study was conducted. Because of this, it was not possible for this study to rigorously investigate the

influence that these proposals may have had on future project level activities that would be expected in the next few years, or possibly even decades. However, these observations would be useful in determining the actual or substantive outcomes of SEA and the 'trickle-down' of sustainability considerations to project level assessments and should therefore be tracked.

Recommendations for further study

Further research should be conducted to determine the substantive outcomes of strategic environmental assessment. The study would need to consider and observe the complete life cycle of the assessment process from policy to project and the role that SEA can or does play, in the 'trickle down' of sustainability considerations. This tiering effect was observed in this study, but within a much tighter time frame and did not include implications for project level activities and developments. This element is perhaps the most important aspect of SEA; as it may anticipate and prevent significant project level impacts and contribute to more sustainable development. In addition, research should focus on how to better involve the public in the development of SEAs as well as in Federal level decision making. This research could identify tools, mechanisms and opportunities, that would allow for the open and transparent scrutiny of policy, plan and program proposals.

CHAPTER SIX - RECOMMENDATIONS AND CONCLUSIONS

The recommendations and conclusions of this study draw from both the outcomes of the initial literature review and comparative analysis of the assessment processes, as well as case studies. Though several barriers exist for SEA to contribute to more informed decision making, for the purposes of this thesis, two priority challenges will be explored. In order for Federal-level decision-making to lead to more sustainable development and to achieve its sustainable development objectives, Environment Canada needs to address two important challenges: greater public involvement in SEA and decision-making and the need to overcome institutional resistance to the application of SEA to policy, plan and program proposal development.

Transparency and Public Accountability

Although the number of public consultations for certain federal proposal initiatives have been increasing over the past several years, according to a study by Environics in 1995, 67 percent of Canadians say they have little or no confidence in their political leaders (Environics, 1995). Public participation in strategic environmental assessment is usually regarded as a means of providing information to strengthen decision-making by government and proponents, as well as a means of ensuring that a proposal is acceptable to the public before it is implemented (Brown and Nitz, 2001). What is important is the timing of public involvement. Public involvement can occur at the normative level of planning, strategic level or the operational level. The earlier the involvement occurs, the more influence the public will likely have on fundamental issues such as need, purpose and alternatives (Therivel and Partidario, 1996).

The mechanisms and opportunities for public consultation exist (Health Canada, 2000; Treasury Board Secretariat, 2001; Commissioner of the Environment and Sustainable Development, 2001). The Cabinet Directive does state that ministers have the discretion to

determine the extent and content of any public statement relating to the assessment according to public interest and the specific circumstances of each case, where a statement is required (Hazel and Benevides, 2000) Based on this, the public statement serves to demonstrate that environmental considerations have been integrated into the decision-making process, but not necessarily to provide an in depth account of the assessment undertaken. However, it must be noted that all submissions, discussions, and documents relating to Cabinet and Minister submissions are subject to the rules of Cabinet confidence (Treasury Board of Canada Secretariat, 2003a). Thus, if Cabinet ministers are to accept a single government position on any given matter, they must have complete confidence that they may express their opinions candidly and without fear that their views may be publicly revealed to differ from the final Cabinet decision. Ultimately, good environmental assessment practice requires that the people affected by a potentially adverse impact should be able to participate in the assessment and the final proposal decision (University of Manchester, 2003). This occurs in some countries, in accordance with the Rio Declaration's participation principle (George, 2001), but in many others, it does not. Overall, the decision-making context needs to facilitate the integration of multiple perspectives and experiences (Paci, Tobin, and Robb, 2002). One immediate and relatively simple method of addressing this challenge is through transparent government policy-making processes and increased dialogue.

Recommendation

To address the challenge of encouraging greater public participation in federal level decision making, further studies need to seek effective and timely approaches that do not overly burden the decision-making process. The federal government, and more specifically Environment Canada, should also seek other tools, possibly used by other Federal Departments as well as by other countries, to better involve and educate the public on matters of environmental

concern. Public participation in policy development is not an end in itself, but is also a means for policies to be effectively implemented.

Institutional Resistance to the Application of SEA

The challenge of overcoming institutional resistance to the application of SEA to Federal proposals also needs to be addressed. Recently, several Departments including Industry Canada, Natural Resources Canada, and Transport Canada, have responded to the need to make the application of SEA more consistent through the development and implementation of departmental policy and SEA screening form (Sheehy, 2000). These Departmental polices establish the requirement to complete a brief questionnaire and screening form on the nature and intent of any proposal going further to the Minister or Cabinet for decision. The questionnaires are then submitted to the respective environmental office of the department for review and consideration. These policies and screening forms, when completed as required (before the proposal is developed) should theoretically result in SEA being applied before irrevocable decisions are made. This is important as it allows for other policy options to be considered and thus lead to more sustainable development. At the time of writing this thesis report, Environment Canada had developed a similar policy statement as well as a questionnaire. However, it has not yet been fully implemented. Through the clarification of this and similar departmental policy development processes, SEA can occur early in the decision-making process and thus effectively contribute to more robust decision-making by providing the opportunity to seek and consider alternative policy options and ultimately, more sustainable development.

Recommendation

Environment Canada should complete and implement a pilot screening form in one of its services (i.e. Environmental Protection Service) in order to determine whether the screening form will encourage more consistent application of SEA to policy proposals. If successful over a term of one year, this policy and screening form could be implemented department-wide.

CONCLUSION

This thesis demonstrated, through a combined literature review and comparative analysis, that the application of the revised SEA process (SEA2) is likely to result in more informed decision-making. It should be clarified that although a particular process may not specifically address sustainability issues, that does not necessarily imply that it will not contribute to more sustainable development. This may be the case for the Ecological Framework (Beanlands and Duinker, 1983). However, sustainable development clearly needs to be addressed through better involvement of the public in the development of SEAs as well through the removal of certain internal implementation barriers. If both objectives are achieved some of the benefits will include:

- more informed decision-making that will contribute to more sustainable development
- improved consistency in the application of SEA
- better compliance with the 1999 Cabinet Directive
- greater public awareness of major environmental issues
- achievement of integrated and holistic decision-making objectives, as described in the Department's sustainable development strategy.

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APPENDIX A

Table A-1 Evaluation of 'An Ecological Framework for Environmental Impact Assessment in Canada'

Evaluation of 'An Ecological Framework for Environmental Impact Assessment in Canada'		
Criteria	**Included in process?**	**Other Information**
Methodology	**Yes / No/ Not Applicable**	**Details and Comments**
Inputs		
Does the assessment process encourage the commencement of the assessment early in decision-making?	Yes	a recommendation is made to increase the time available by starting assessment studies as early as possible in the project planning process
Does the assessment process encourage the consideration of fundamental issues through the consideration of alternative development options?	Yes	primarily ecological considerations
Is the process proactive and broad?	Yes	Environmental impact assessments should be required to show clear temporal and spatial contexts for the study and analysis of expected changes in valued ecosystem components
Does the process present an opportunity, through public involvement, the consideration of traditional ecological knowledge?	Yes	A peer review is recommended to provide both scientists and the public opportunities to comment on a given assessment
Does the process provide an opportunity for the integration of environmental, economic and social factors?	No	However, there is an acknowledgment that environmental assessment is inherently an anthropocentric concept. Public values are perception are recognized as important in the determination of significance
Process		
Does the process encourage the consideration of cumulative effects?	Yes	implied within the scoping exercise that all significant impact would be considered
Does the process encourage the consideration of alternative development options?	Yes	through consultation with the public and experts
Does the process encourage improved mitigation through the development of generic mitigation measures at the project level?	Yes	the process recommendations focus on project level assessment
Does the process require an analysis of alternatives and need by identifying which strategies are likely to be environmentally beneficial and whether one plan is preferable to another?	No	the framework recommends measures for modeling development scenarios and conceptualization of the project and the environment

Evaluation of 'An Ecological Framework for Environmental Impact Assessment in Canada'		
Does the process encourage the consideration of positive effects and enhancement measures?	No	
Does the process encourage the exploration or the pros and cons of the 'no action' alternative?	No	However, the framework encourages comparisons with other previous projects and base-line information to be used for future comparisons
Does the process require the development and application of sustainability indicators?	Yes	Indicators were suggested as a means for future monitoring
Does the process require the development and implementation of a comprehensive follow-up and monitoring process?		
Does the process require the consideration of significance in relation to sustainable development?	Yes and no	The framework outlines details on the determination of significance, but not necessarily in terms of sustainable development
Does the process present a set of guiding principles?	No	
Outputs		
Did the SEA process establish a framework for project level assessment and ultimately streamline the process?	Yes	This would be partially accomplished through pre-project experimentation
Does the process encourage greater efficiency through issue pre-identification?	Yes	
Did the process encourage the anticipation of problems at the project level?	Yes	The framework focuses on the development of projects
Is the process an action forcing device that compels decision-makers to weigh environmental principles because of legal and procedural requirements?	No	
Substantive Effects		
Does the process encourage greater political will and a heightened profile for the environment?	No	
Does the process encourage decision-makers to articulate environmental goals which result in a general increase in political will to take substantive action towards sustainable development?	Yes	
Does the process operationalize the various concepts and principles of sustainable development?	No	This was beyond the scope of the framework
Did the process strengthen the opportunity for the trickle-down of sustainability considerations to the project level?	No	
Does the process encourage community education and to raise environmental awareness?	Yes	This would be achieved through consultation with the public

Table A-2 Evaluation of 'Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessments of policy, plan and program proposals'

Evaluation of 'Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessments of policy, plan and program proposals'		
Criteria	**Included in process?**	**Other Information**
Methodology	**Yes / No/ Not Applicable**	**Details and Comments**
Inputs		
Does the assessment process encourage the commencement of the assessment early in decision-making?	Yes	the process encourages the assessment to begin early in the decision-making process
Does the assessment process encourage the consideration of fundamental issues through the consideration of alternative development options?	Yes	see principles
Is the process proactive and broad?	Yes	see principles
Does the process present an opportunity, through public involvement, the consideration of traditional ecological knowledge?	Yes	a brief section describes the need for public consultation and suggests an approach
Does the process provide an opportunity for the integration of environmental, economic and social factors?	No	this SEA process focuses solely on environmental effects
Process		
Does the process encourage the consideration of cumulative effects?	Yes	There are recommendations for the final SEA documentation to identify cumulative effects as part of the development of the Memorandum to Cabinet
Does the process encourage the consideration of alternative development options?	Yes	See principles
Does the process encourage improved mitigation through the development of generic mitigation measures at the project level?	No	
Does the process require an analysis of alternatives and need by identifying which strategies are likely to be environmentally beneficial and whether one plan is preferable to another?	Yes	See principles
Does the process encourage the consideration of positive effects and enhancement measures?	Yes	
Does the process encourage the exploration or the pros and cons of the 'no action' alternative?	Yes	Consideration of status-quo or no go option
Does the process require the development and application of sustainability indicators?	No	
Does the process require the development		Basic guidelines

Evaluation of Strategic Environmental Assessment at Environment Canada: How to conduct environmental assessments of policy, plan and program proposals		
and implementation of a comprehensive follow-up and monitoring process?	Yes	
Does the process require the consideration of significance in relation to sustainable development?	Yes	Process encourages establishment of potential impact likelihood, magnitude, and geographical range from an environmental perspective
Does the process present a set of guiding principles?	Yes	Focus is on process and methology
Outputs		
Did the SEA process establish a framework for project level assessment and ultimately streamline the process?	No	Describes SEA as a means of streamlining project level assessment
Does the process encourage greater efficiency through issue pre-identification?	Yes	As part of the main study approach
Did the process encourage the anticipation of problems at the project level?	Yes	An example is presented on how SEA can streamline project level assessments
Is the process an action forcing device that compels decision-makers to weigh environmental principles because of legal and procedural requirements?	No	
Substantive Effects		
Does the process encourage greater political will and a heightened profile for the environment?	Yes	Achieved indirectly through the application of the process
Does the process encourage decision-makers to articulate environmental goals which result in a general increase in political will to take substantive action towards sustainable development?	No	
Does the process operationalize the various concepts and principles of sustainable development?	No	
Did the process strengthen the opportunity for the trickle-down of sustainability considerations to the project level?	Yes	SEA is described as a means to influencing the planning and development of projects
Does the process encourage community education and to raise environmental awareness?	Yes	Is achieved through public involvement and participation

Table A-3 Evaluation of 'Strategic Environmental Assessment, An integrated approach to the environmental assessment of policy, plan and program proposals at Environment Canada

Evaluation of 'Strategic Environmental Assessment; An integrated approach to the environmental assessment of policy, plan and program proposals at Environment Canada		
Criteria	**Included in process?**	**Other Information**
Methodology	**Yes / No/ Not applicable**	**Details and Comments**
Inputs		
Does the assessment process encourage the commencement of the assessment early in decision-making?	Yes	Early integration is encouraged as one of the main principles
Does the assessment process encourage the consideration of fundamental issues through the consideration of alternative development options?	Yes	This is fundamental to the second step of this SEA process
Is the process proactive and broad?	Yes	the process encourage the consideration of regional effects, if appropriate as well as to ensure that effects are anticipated
Does the process present an opportunity, through public involvement, the consideration of traditional ecological knowledge?	Yes	the process suggests the value added from public consultation. In reality, this is still not formally in practice
Does the process provide an opportunity for the integration of environmental, economic and social factors?	Yes	Integration is achieved by considering the direct impacts on the environment and subsequent indirect impacts on the economy and society
Process		
Does the process encourage the consideration of cumulative effects?	Yes	Cumulative and synergistic
Does the process encourage the consideration of alternative development options?	Yes	This is fundamental to step two of the process
Does the process encourage improved mitigation through the development of generic mitigation measures at the project level?	Yes	There is a section which describes the relationship between strategic and project level assessment and the need for information transfer
Does the process require an analysis of alternatives and need by identifying which strategies are likely to be environmentally beneficial and whether one plan is preferable to another?	Yes	Step 6 of the process requires a consideration and evaluation of the pros and cons of each option
Does the process encourage the consideration of positive effects and enhancement measures?	Yes	This is fundamental to the process
Does the process encourage the exploration or the pros and cons of the 'no action' alternative?	Yes	The study approach encourages the use of base-line data and the status quo as the basis for evaluation
Does the process require the development		extensive guidance is provided on

Evaluation of 'Strategic Environmental Assessment, An integrated approach to the environmental assessment of policy, plan and program proposals at Environment Canada		
and application of sustainability indicators?	Yes	the development and application of sustainability indicators to SEA
Does the process require the development and implementation of a comprehensive follow-up and monitoring process?	Yes	The process offers guidance on follow-up and monitoring as well as adaptive management
Does the process require the consideration of significance in relation to sustainable development?	Yes	A set of questions are provided which will assist the assessor determine the significance based on sustainability criteria
Does the process present a set of guiding principles?	Yes	Includes both process-based principles and incorporates principles of sustainable development
Outputs		
Did the SEA process establish a framework for project level assessment and ultimately streamline the process?	Yes	Implied that the information from the SEA should be transferred to the project level through such mechanisms as follow-up and monitoring
Does the process encourage greater efficiency through issue pre-identification?	Yes	This is explained as one of the main benefits of SEA
Did the process encourage the anticipation of problems at the project level?	Yes	
Is the process an action forcing device that compels decision-makers to weigh environmental principles because of legal and procedural requirements?	Yes	The outcome of the SEA should be presented to decision-makers as per the 1999 Cabinet Directive
Substantive Effects		
Does the process encourage greater political will and a heightened profile for the environment?	Yes	In most circumstances, the results of the SEA are presented to Ministers and to Cabinet as described in the guide
Does the process encourage decision-makers to articulate environmental goals which result in a general increase in political will to take substantive action towards sustainable development?	Yes	
Does the process operationalize the various concepts and principles of sustainable development?	Yes	recommendations are also made on the use of sustainability principles in the evaluation of an SEA
Did the process strengthen the opportunity for the trickle-down of sustainability considerations to the project level?	Yes	
Does the process encourage community education and to raise environmental awareness?	Yes	However, this is currently not formally practiced in the SEA process due to secrecy considerations

APPENDIX B

Table B-1 Evaluation of case study: 'Strategic Environmental Assessment of Potential Exploration Rights Issuance for Eastern Sable Island Park, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope (ERI)

Evaluation of case study: 'Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope' (ERI)		
Criteria	**Present in Assessment?**	**Other Information**
Inputs	**Yes / No / Unknown**	**Comments / Details**
Was the SEA conducted early in the decision-making process?	Yes	The intention of the SEA was to consider several potential exploration sites
Did the assessment consider the fundamental issues of development?	No	The assessment considers many issues including water pollution and biodiversity
Was there an assessment of value debates?	No	It did not explore the rational behind the development of oil and gas
Was there a consideration of alternative development options?	No	However, the assessment did consider different development options within a set objective
Did the SEA analyze need?	No	The assessment did acknowledge the need to develop the reserves
Did the SEA provide an opportunity for public input or participation?	Yes	This SEA is a rare example of good, web-based SEA public participation
Was the SEA proactive and broad in its scope?	Yes	The SEA anticipates potential effects
Content		
Did the SEA integrate environmental, economic and social factors?	Yes	There is basic consideration of effects on other industry and various socio-economic impacts
Did the SEA consider the potential cumulative effects?	Yes	The SEA considers other local developments and industrial activities (i.e. shipping lanes)
Did the SEA consider potential long-term impacts?	Yes	The time frame was set within the life span of an issued license
Did the SEA, at the design phase of the proposal development, consider synergistic, additive, saturation, or direct and indirect impacts?	Yes	To some degree these effects were implied in relation to other socio-economic activities such as fishing
Did the SEA result in the development and application of sustainability indicators?	unknown	It will be possible to use some of the information in the SEA towards the development of indicators
Does the SEA require the development and implementation of a comprehensive follow-up and monitoring process?	Yes	Recommendations were made for the establishment of a follow-up and monitoring framework - needs to be strengthened
Does the SEA require the consideration of significance in relation to sustainable development?	Yes and No	Considers significance but not in relation to sustainable development

Evaluation of case study: 'Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope' (ERI)		
Outcome		
Did the SEA pre-identify major issues?	No	
Did the SEA result in greater innovation?	Unknown	New technologies to manage environmental issues were considered
Did the SEA formulate generic mitigation measure that could be used at the project level?	Yes	Recommendations were made for more site specific mitigation measures at the program assessment stage
Were more mitigation measure options presented?	No	Certain areas were deemed too sensitive to development impact and not considered as options
Did the SEA identify which strategies were likely to be environmentally beneficial and whether one plan was preferable to another?	No	Various development options were compared and contrasted
Did the SEA attempt to anticipate positive and negative effects?	No	Only potential negative effects were identified
Did the SEA consider the potential positive effects and ways to enhance those effects?	No	
Was the information presented in the SEA comprehensive and inclusive?	Yes and No	The SEA presented a good scoping of issues, but did provide sufficient detail on mitigation or enhancement measures
Did the SEA introduce sustainability as something which should trickle down to the plan, program and eventually the project level?	Yes and No	However, it was the conclusion of the assessment that no significant impacts would result and any mitigation would be preventative.
Implementation		
Did the SEA result in greater efficiency?	Unknown	It is possible that the assessment may avoid future problems with development in sensitive areas
Did the SEA result in the coordination and tiering of subsequent assessments?	Unknown	Connections were suggested between the various stages of development and assessment
Did the SEA result in exploration of the pros and cons of the 'no action' alternative?	Yes	This was considered on a site-to-site basis
Did the SEA result in increase environmental awareness at the community level?	Unknown	May be accomplished through public consultations
Did the SEA improve accountability by allowing external scrutiny of decisions?	Yes	May be accomplished through public consultations
Was the SEA able to anticipate and avert potential problems?	Unknown	Proposal has not been implemented yet
Did the SEA encourage decision-makers to articulate environmental goals which resulted in a general increase in political will to take	No	

Evaluation of case study: 'Strategic Environmental Assessment of Potential Exploration Rights Issuance For Eastern Sable Island Bank, Western Banquereau Bank, the Gully Trough and the Eastern Scotian Slope' (ERI)		
substantive action towards sustainability?		
Did the SEA operationalize the various concepts of sustainability?	Yes and No	Some concepts were addressed including integration, proactive, broad, longer term decision-making
Did the SEA compel decision-makers to weigh environmental principles carefully because of legal and procedural requirements?	Yes	licensing issues
Did the SEA result in the establishment of a framework for project design and assessment?	Yes	Certain issues were flagged and will be addressed at the project level

Table B-2 Evaluation of case study: 'Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary (KIBS)

Evaluation of case study: 'Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary' (KIBS)		
Criteria	**Present in Assessment?**	**Other Information**
Inputs	**Yes / No / Unknown**	**Comments / Details**
Was the SEA conducted early in the decision-making process?	No	Management was not aware that an SEA was needed until after the decision about how to manage oil and gas in the sanctuary was made
Did the assessment consider the fundamental issues of development?	Yes	The impacts of oil and gas development were presented
Was there an assessment of value debates?	Yes	
Was there a consideration of alternative development options?	Yes	
Did the SEA analyze need?	Yes	
Did the SEA provide an opportunity for public input or participation?	No	However, the National Energy Board, the Department of Indian and Northern Affairs and various non-government organizations were aware of the preferred option
Was the SEA proactive and broad in its scope?	Yes	It was developed to take a proactive approach to managing oil and gas developments rather than a reactive approach as is the past experience
Content		
Did the SEA integrate environmental, economic and social factors?	Yes	social and economic effects were considered as indirect impacts resulting from direct environmental effects

Evaluation of case study: 'Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary' (KIBS)		
Did the SEA consider the potential cumulative effects?	Yes	The preferred option was chosen based on its capacity to manage the potential cumulative effects
Did the SEA consider potential long-term impacts?	Yes	The assessment recognizes the 25 year life-cycle of the project
Did the SEA, at the design phase of the proposal development, consider synergistic, additive, saturation, or direct and indirect impacts?	Yes	It is known that some environmental effects of the oil and gas industry will be long term and irreversible, the preferred option minimizes these impacts by capping the total footprint of the industry in the sanctuary
Did the SEA result in the development and application of sustainability indicators?	Yes	The threshold level of footprint in the sanctuary
Does the SEA require the development and implementation of a comprehensive follow-up and monitoring process?	Yes	
Does the SEA require the consideration of significance in relation to sustainable development?	Yes	
Outcome		
Did the SEA pre-identify major issues?	Yes	Identifies environmental effects of the oil and gas industry, climate change, political history
Did the SEA result in greater innovation?	Yes	
Did the SEA formulate generic mitigation measure that could be used at the project level?	Yes	Maintain a minimum threshold level of footprint. Each new project must not exceed this threshold
Were more mitigation measure options presented?	Yes	Timing and zoning restrictions in the sanctuary
Did the SEA identify which strategies were likely to be environmentally beneficial and whether one plan was preferable to another?	Yes	
Did the SEA attempt to anticipate positive and negative effects?	Yes	
Did the SEA consider the potential positive effects and ways to enhance those effects?	No	
Was the information presented in the SEA comprehensive and inclusive?	Yes	
Did the SEA introduce sustainability as something which should trickle down to the plan, program and eventually the project level?	No	
Implementation		
Did the SEA result in greater efficiency?	No	4 months was spent on its development and still more time will be needed for its sign-off.

Evaluation of case study: 'Strategic Environmental Assessment on the Management of Oil and Gas Developments in the Kendall Island Migratory Bird Sanctuary' (KIBS)		
Did the SEA result in the coordination and tiering of subsequent assessments?	No	The SEA itself will not help coordinate assessments, the management decision made some time ago (the preferred option in the SEA) will. The SEA would have helped if it had been in the initial step in decision-making
Did the SEA result in exploration of the pros and cons of the 'no action' alternative?	Yes	
Did the SEA result in increase environmental awareness at the community level?	No	There is already a great deal of environmental awareness at the community level in the North West Territories
Did the SEA improve accountability by allowing external scrutiny of decisions?	No	But our example / approach is being used as a benchmark for a regional land use planning exercise for oil and gas development
Was the SEA able to anticipate and avert potential problems?	Unknown	That was the intent
Did the SEA encourage decision-makers to articulate environmental goals which resulted in a general increase in political will to take substantive action towards sustainability?	Unknown	That was the intent
Did the SEA operationalize the various concepts of sustainability?	Unknown	
Did the SEA compel decision-makers to weigh environmental principles carefully because of legal and procedural requirements?	Yes	
Did the SEA result in the establishment of a framework for project design and assessment?	Yes	In order not to exceed the threshold level of footprint, proponents will have to design their projects which minimize the development footprint. The establishment of a maximum level of footprint impact will make it easy for EA practitioners to decide whether a project is approved or not.