



Canadian Council
of Ministers
of the Environment Le Conseil canadien
des ministres
de l'environnement

Regional Strategic Environmental Assessment in Canada

Principles and Guidance

**PN 1428
ISBN 978-1-896997-84-1 PDF**

The Canadian Council of Ministers of the Environment (CCME) is the major intergovernmental forum in Canada for discussion and joint action on environmental issues of national, international and global concern. The 14 member governments work as partners in developing nationally consistent environmental standards, practices and legislation.

Canadian Council of Ministers of the Environment
123 Main St., Suite 360
Winnipeg, Manitoba R3C 1A3
Phone: 204-948-2090
Email: info@ccme.ca
Website: www.ccme.ca

Reference listing:

CCME. 2009. Regional Strategic Environmental Assessment in Canada: Principles and Guidance. Canadian Council of Ministers of the Environment, Winnipeg, MB.

Ce rapport est aussi disponible en français.

ACKNOWLEDGEMENTS

The initial draft of this report was prepared by Bram Noble and Jill Harriman of Aura Environmental Research and Consulting, Ltd., for the Regional Strategic Environmental Assessment Sub-Group of the CCME Environmental Assessment Task Group.

Thanks are extended to four expert reviewers for their constructive comments and suggestions on the foundational documents on which this report is based, and to the 29 reviewers who provided comments on a draft public version of this report.

CONTENTS

1.0 Introduction	5
1.1 Purpose of this document	5
2.0 Regional Strategic Environmental Assessment	6
2.1 Definition	6
2.2 Objective	7
3.0 Background to Regional Strategic Environmental Assessment	7
3.1 Ambitious and restrictive environmental assessment	8
3.2 Toward a more strategic approach	9
4.0 Opportunities and Benefits of Regional Strategic Environmental Assessment	10
4.1 Substantive benefits	11
4.2 Procedural benefits	11
5.0 Guiding Principles for Regional Strategic Environmental Assessment	12
5.1 Nature of a strategic approach	12
5.2 When to apply regional strategic environmental assessment	13
5.3 Core principles	14
5.4 Methodological principles	14
6.0 Process to Conduct a Regional Strategic Environmental Assessment	16
6.1 Develop a reference framework	17
6.2 Scope the regional baseline	17
6.3 Identify regional stressors and trends	18
6.4 Identify strategic alternatives for the region	18
6.5 Assess cumulative effects for each alternative	18
6.6 Identify a preferred strategic alternative	20
6.7 Identify mitigation needs and management actions	20
6.8 Develop a follow-up and monitoring program	21
6.9 Implement the strategy, monitor and evaluate	21
7.0 Transparency and Accountability	23
7.1 Public participation	23
7.2 Documentation and reporting	24
8.0 Definitions	26
9.0 Supporting References	27

1.0 INTRODUCTION

Regional strategic environmental assessment (R-SEA) has been identified as a key area of interest by the Canadian Council of Ministers of the Environment. An inherently proactive and futures-oriented approach, R-SEA is a means to ensure that planning and assessment for a region support the most *desired* outcomes rather than the most likely ones.

R-SEA is envisaged as a means to assess the potential environmental effects, including cumulative effects, of strategic policy, plan and program alternatives for a region. In doing so, R-SEA can support the preparation of a preferred regional development strategy and environmental management framework, and inform subsequent project-based **environmental assessment** and decision processes.

Why propose R-SEA at this time? The current state-of-practice of environmental assessment in Canada demands it. First, **strategic environmental assessment** has been slow to evolve, and its value-added to regional environmental planning and decision-making has not been fully realized. Second, understanding and addressing cumulative environmental effects at broader regional scales is a prerequisite to ensuring the sustainable development of the **environment**, but cumulative effects assessment has occurred at a rudimentary level and largely within the constraints of project-level **environmental impact assessment**. Third, it is an opportune time to explore the relevance of R-SEA given the current emphasis on regulatory improvement, both domestically and internationally, the upcoming review of the *Canadian Environmental Assessment Act*, provincial environmental assessment initiatives, and current efforts to improve the practice of SEA federally.

With an unprecedented need for the integration of sustainability principles in the development of regional policies, plans and programs, the timing is right to set a foundation for R-SEA as a means to support the development of strategic, sustainable initiatives on a regional scale.

A number of R-SEA -type undertakings are now underway or planned at federal and provincial levels, but there is no consistent framework to aid collaborative inter-departmental and inter-jurisdictional work on the subject. In response, in February 2008, the Canadian Council of Ministers of the Environment Environmental Assessment Task Group commissioned the report “Strengthening the Foundation for Regional Strategic Environmental Assessment in Canada.” This report establishes the R-SEA concept and core principles. A second report, “Regional Strategic Environmental Assessment (R-SEA): Methodological Guidance and Good Practice”, was commissioned shortly after in July 2008, to provide methodological and procedural guidance on R-SEA. Together, these reports describe the emergence and development of the R-SEA concept in Canada, and provide a framework for its application.

1.1 Purpose of this Document

The purpose of this document is to foster a shared understanding of and approach to R-SEA at the federal level and across jurisdictions in Canada. This document is an abridged version of the above-mentioned foundational R-SEA reports.

The intent in establishing a common R-SEA process is not to add an additional layer of environmental assessment, but to integrate the silos and current understanding and knowledge of regional, cumulative, and strategic environmental assessment in a consolidated framework.

2.0. REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT

The need to better assess and manage the **cumulative environmental effects** of human development activities is well established; however, there are constant and consistent messages that **cumulative effects assessment** and management in its current form in Canada is simply not working. The traditional approach to environmental assessment in Canada has been to address the symptoms or outcomes of individual **project** impacts, mitigating them until they are deemed acceptable, rather than also grappling with broader regional environmental change and the cumulative effects on **valued ecosystem components**.

In those cases where regionally based and cumulative effects assessment initiatives have occurred, they frequently have not occurred explicitly within the context of a strategic framework. As a result, environmental assessment beyond the individual project has often lacked a futures-oriented focus, providing limited direction to subsequent planning and development decision making; defaulted to project-based environmental assessment processes; or focused on describing the current state of the environment, rather than also on trends projection, scenario building, and discerning desirable futures.

After more than thirty-five years of environmental assessment practice in Canada, there is now a shared understanding that an explicitly regional and strategic approach to environmental assessment is required – an approach that addresses the cumulative environmental effects of human development actions and provides direction for planning and development decision making beyond that which is possible in project-based impact assessment.

2.1 Definition

In order to support a more spatially relevant and strategically oriented framework for environmental assessment, this document presents a re-conceptualization of the relationship between the assessment of cumulative environmental effects in a region and strategic environmental assessment. Based on merging the principles of regional cumulative effects assessment and strategic environmental assessment, Regional Strategic Environmental Assessment (R-SEA) is defined as:

a process designed to systematically assess the potential environmental effects, including cumulative effects, of alternative strategic initiatives, policies, plans, or programs for a particular region.

Environment, and environmental effects within the context of R-SEA, is broadly defined to include both biophysical and human components and their interactions.

In this regard, R-SEA is more than simply expanding the boundaries of impact assessment to encompass a broader geographic area; it represents a different way of approaching the interrelationships between environment and development decision-making. Inherent to R-SEA is that the assessment of cumulative environmental effects is not an add-on component, but rather fully integrated into the assessment and decision-support process.

R-SEA is about informing the development of strategic initiatives, policies, plans or programs for a region, and thereby facilitating an opportunity for more informed and efficient downstream project-based environmental impact assessment and regional environmental management initiatives.

Emphasis is on ensuring the sustainability of a region and a desired level of environmental quality, both biophysical and socioeconomic, rather than solely on impact mitigation. R-SEA allows for an early, overall analysis of the relationships between alternative futures for a region and the potential cumulative effects that may emerge from those futures.

2.2 Objective

R-SEA is designed to systematically evaluate the cumulative effects of multi-sector land and resource uses and surface disturbances under different future scenarios. The focus is on creating images of the future state of development, natural change, and cumulative change in a region, asking “what if” questions concerning alternative development options. The focus is on *informing* the development or evaluation of alternative strategic policies, plans, or programs for a region and then comparing those alternatives based on their potential for cumulative environmental change, and in consideration of various socio-economic, environmental, and planning objectives.

The overall objective of R-SEA is:

to inform the preparation of a preferred development strategy and environmental management framework(s) for a region.

In this regard, R-SEA is intended to:

- improve the management of cumulative environmental effects;
- increase the effectiveness of project-level environmental impact assessment; and
- identify preferred directions, strategies and priorities for the future management and development of a region.

3.0 BACKGROUND TO REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT

Environmental assessment has evolved considerably since first introduced to Canada in the early 1970s. There is now a collective understanding that environmental assessment must go beyond the evaluation of site-specific, direct and indirect project impacts to also encompass regional perspectives and considerations of the sources of cumulative environmental change, and to do so at the earliest stages of regional policy, plan, and program development and decision making. The need for a more strategic form of environmental assessment in Canada evolved on at least three fronts:

- i. In recognition of the need to promote the development of more environmentally sustainable policies, plans and programs.
- ii. In recognition of the need to focus and streamline project level environmental impact assessments, making them more responsive to policies and programs and ensuring that development actions are set within a broader environmental framework.
- iii. Due to concern about the capacity of project environmental impact assessment to address cumulative effects that occur beyond the scope and scale of the individual project.

3.1 Ambitious and Restrictive Environmental Assessment

Canada is recognized internationally as a nation that has contributed significantly to the development and advancement of regional and strategic environmental assessment. The Cabinet Directive introduced in 1990 requiring federal departments and agencies to consider environmental concerns at the strategic level of policies, plans and programs was seen as the first of the new generation of strategic environmental assessment.

The notion of a regional and strategic approach to environmental assessment in Canada is not new, and pre-dates the Cabinet Directive. Several early assessments, including the Mackenzie Valley Pipeline inquiry (1974-1977), the Beaufort Sea hydrocarbon review (1982-1984), and the Atomic Energy of Canada Limited's nuclear fuel waste management concept (1988-1994), were deployed as area-wide reviews, public review panels, and concept-based assessments. Similar area-wide and strategic approaches characterized many provincial environmental assessment reviews at that time, including Saskatchewan's Churchill River Basin study, and the Bayda Inquiry into whether uranium mining should continue in the province.

In the early 1990s, however, environmental assessment in Canada (both federally and provincially) emerged with a strong project orientation. The move to make environmental impact assessment more consistent and legally enforceable under the *Canadian Environmental Assessment Act* also resulted in a narrowing of its scope and application. At the federal level, for example, broader regional and concept-based reviews became largely divorced from the formal environmental impact assessment process and a more focused and restrictive process emerged.

In the years following the introduction of the *Canadian Environmental Assessment Act*, project environmental impact assessment continued to develop, but it also underwent some significant rethinking of both the tool itself and its objectives. This was in large part due to a growing awareness of sustainability principles and increasing recognition of the need to assess and manage the cumulative environmental effects of development activities.

The need to consider the cumulative environmental effects of development was reinforced by a number of additions to and revisions of the *Canadian Environmental Assessment Act* in 1995, that gave explicit recognition to cumulative effects assessment and to the use of regional studies as supporting tools for project environmental impact assessment.

Recent reviews of the state of environmental impact assessment in Canada, however, indicate that the process is failing significantly with regard to assessing and effectively managing cumulative environmental effects. Practice has been narrowly scoped, confined within the spatial and temporal boundaries of individual project assessments, and divorced from the broader regional planning and environmental management context.

Notwithstanding its sustainability mandate, environmental assessment, and in particular the assessment of cumulative environmental effects, has unfolded in isolation of the regional and strategic frameworks required to make it a meaningful component of planning and development decision making in support of sustainability.

3.2 Toward a more Strategic Approach

Procedurally, project-based environmental assessment is concerned about the most likely impacts of a proposed development, and finding ways to mitigate those impacts so that they are deemed acceptable; it does not ask whether the proposed undertaking is the most appropriate form of development or whether the cumulative environmental effects of such development are in conflict with broader regional environmental goals or desired future conditions.

This is not to say that cumulative environmental effects should not be considered at the project level, but that advancing the assessment and management of cumulative environmental effects in Canada demands a more regional and strategic approach than what can be achieved through project-based environmental assessment applications and frameworks.

In practice, elements of an integrated regional and strategic approach to environmental assessment are evident (albeit informal) in various models of land use management and resource planning. Challenges remain, however, concerning the lack of methodological and procedural guidelines for R-SEA. Until now, there has not been a consolidated framework for directing its development and practice.

Influential events in the development of regional strategic environmental assessment

- 1984 ▪ *Environmental Assessment and Review Process Guidelines Order* defined ‘proposal’ as including any initiative, undertaking or activity for which the federal government has a decision-making responsibility.
- 1990 ▪ Bill introduced to establish the *Canadian Environmental Assessment Act*; policies, plans and programs not included within the scope of the proposed *Act*.
 ▪ Policy requirement for strategic environmental assessment is established in the *1990 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*.
- 1991 ▪ Federal government reform package introduced Canada’s first initiative in the development of a system of strategic environmental assessment: *Environmental Assessment in Policy and Program Planning: A Sourcebook*.
- 1992 ▪ *Canadian Environmental Assessment Act* receives legislative approval; section 16(1) requires proponents to consider the cumulative environmental effects of their projects, and section 16(2) emphasizes the role and value of regional studies outside the *Act* in the consideration of cumulative effects.
- 1995 ▪ Federal Environmental Assessment Review Office procedural guidelines released for assessing policy, plan, and program proposals.
 ▪ Amendments to the *Auditor General Act* requiring that all federal departments and agencies prepare a sustainable development strategy.
 ▪ Federal government releases *Strategic Environmental Assessment: A Guide for Policy and Program Officers*.

- 1999
 - The Canadian Environmental Assessment Agency releases its guidelines to implementation of the Cabinet Directive on strategic environmental assessment; section 2.1.1 emphasizes the value of strategic environmental assessment in considering the potential cumulative environmental effects of proposals.
 - Agency releases practitioner guide to cumulative effects assessment.
- 2000
 - Frameworks for regional environmental effects assessment appears in the Agency's research and development priorities for 2000-01.
- 2001
 - Bill C-19 to amend the *Canadian Environmental Assessment Act* is introduced.
- 2004
 - Cabinet Directive on strategic environmental assessment updated.
- 2007
 - The Canadian Environmental Assessment Agency identifies strategic environmental assessment, in particular the integration of regional and cumulative effects assessment, as a research and development priority for 2007-08.
 - Minister of Environment's Regulatory Advisory Committee, Sub-committee on strategic environmental assessment, commissions report on the state of strategic environmental assessment models, principles and practices in Canada.
- 2008
 - Canadian Council of Ministers of the Environment, Environmental Assessment Task Group initiates a project to develop a regional strategic environmental assessment framework for Canada.

4.0 OPPORTUNITIES AND BENEFITS OF REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT

There are a number of opportunities and potential benefits associated with the implementation of R-SEA in Canada. R-SEA provides an opportunity to contribute to regional sustainability goals by:

- analyzing, identifying and managing cumulative environmental effects at a more appropriate, regional scale;
- considering strategic alternatives early in decision making, ideally before irreversible development decisions are taken;
- informing subsequent project environmental impact assessment providing opportunities to streamline the review process; and
- establishing the context and direction for preferred regional environmental management plans and frameworks.

R-SEA in Canada is still in its early stages of development and is largely untested. However, the anticipated benefits of an R-SEA approach are a combination of the benefits already demonstrated in regional cumulative effects assessment and strategic environmental assessment practices.

4.1 Substantive Benefits

- Integration of environmental and broader sustainability considerations in regional policies, plans, and programs.
- A broader, regional focus and a long-term perspective for development and decision-making.
- Ensures that cumulative effects are analyzed at the appropriate scale and tier of environmental assessment, and captures the potential cumulative effects of developments that may neither individually nor collectively be subject to formal project-level environmental impact assessment.
- Contributes to the discussion of alternative sustainable future scenarios and key environmental goals and objectives for a region.

4.2 Procedural Benefits

- Opportunity to improve regional databases and create mechanisms for information sharing.
- Facilitates state-of-the-region environmental monitoring and reporting.
- Saves time and resources by avoiding early on, rather than mitigating, cumulative environmental effects.
- Allows project-based performance assessment by establishing regional environmental targets, limits, and thresholds against which to monitor and evaluate subsequent development and management actions.
- Provides early indication of public interest in regional environmental issues.

5.0 GUIDING PRINCIPLES FOR REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT

Strategic environmental assessment and project environmental impact assessment have very different foci: strategies for future development characterized by a high level of uncertainty, versus proposals and actions that are concrete and objective for the purpose of assessment.

5.1 Nature of a Strategic Approach

A strategic approach is one that offers a foundation on which to base decision-making, and ensures the full consideration of alternative options at an early stage where there is greater flexibility with respect to decision outcomes. A strategic approach to environmental assessment is one that is proactive, asking “what is the preferred option?” and “what is the preferred attainable end(s)?” rather than predicting the most likely outcomes of a predetermined action.

A strategic approach to assessment cannot simply be explained in terms of its tier of application - above the project level; but rather by the relationship between impact assessment and the broader planning process, and by the types of questions being asked. A strategic approach is one that establishes the means of getting from here to there; a pattern of actions; a vision or direction. In other words, a strategic approach to assessment is one that involves the process of defining goals or visions for a region, proposing alternative means for achieving them, and selecting the most desirable approach.

Strategic assessment (e.g. R-SEA)	Non-strategic assessment (e.g. project EIA)
Adopts a strategic and long-term perspective.	The focus is on the execution of a prescribed action with a short- or medium-term perspective.
Focuses on identifying a strategy for action and the means to accomplish goals and objectives.	Focuses on implementing a pre-determined action, to bring closure.
Attempts to build a desirable future, not to “know the future”.	The intervention is known and emphasis is on predicting the outcomes.
Asks “what is the preferred development alternative or direction?”	Asks “what are the impacts of the proposed option and how can they be mitigated?”
Focuses on alternative options and broad scenarios of development.	Focuses on option alternatives and the proposed development scenario.
Operates at the level of PPPs and often abstract strategies.	Operates at the level of projects and concrete development proposals.
Accepts that the strategy or PPP will change due to changing contexts and uncertainties.	Attempts to minimize uncertainty so as to remain consistent with the original proposal.

5.2 When to Apply R-SEA

The opportunities to apply a strategic assessment process are many and varied. Broadly speaking, strategic approaches to environmental assessment are useful when a policy, plan, or program is proposed and requires validation via assessment; or when a policy, plan, program, or strategic direction is needed and an assessment is required to facilitate its development. The latter is the fundamental trigger for R-SEA.

This guide does not prescribe specific lists of activities for R-SEA, as such triggers are likely to be jurisdiction-specific. However, a hybrid screening approach for R-SEA is recommended whereby the types of conditions under which R-SEA should be implemented are described, supplemented by a list of strategic initiatives that should trigger a consideration for R-SEA.

As a proposed set of conditions, R-SEA should be triggered under the following circumstances:

- i. A strategic decision is to be made that will establish a framework and conditions for future development, land and resource use, or management actions in a region.
- ii. There is a proposal to develop a regional plan or strategy concerning resource use, resource allocation, conservation or development.
- iii. There is an application for development in a previously undeveloped region and for which no current regional plan or strategy exists.
- iv. There is an application for development in an already developed region, for which no current regional plan or strategy exists, and that development has the potential to instigate or significantly influence regional cumulative effects processes.
- v. There is a noticed decline in the key natural resources or ecological integrity of a region.
- vi. There is a need to coordinate disparate regional resources, programs, data, management objectives, strategic initiatives in relation to a common regional issue.
- vii. Regional decisions are to be made concerning resource use, development, or land access that is multi-jurisdictional or multi-sectoral in nature.
- viii. The public demands that an R-SEA be carried out.

Based on these criteria, examples of the types of initiatives to which R-SEA might apply include the development of policies, plans, programs, and strategic initiatives associated with the following:

- Marine and coastal zone planning
- Integrated land use planning
- Urban planning
- Conservation and protected areas planning
- Watershed management
- Regional energy strategies and initiatives.

R-SEA is not intended to be an ‘every-day’ appraisal tool. It is likely to be reserved for fairly significant and complex regional planning and strategic decision making contexts. That being said, the extent of time and resources an R-SEA demands will depend in large part on the nature of the region, including such issues as the level of public interest, sensitivity of the biophysical and socio-economic environment in question, and the intent of the application.

5.3 Core Principles

Core principles apply to the R-SEA process in its entirety, regardless of the nature of R-SEA, focus of application, or stage of the process, and are as follows:

Strategic: identifies strategic initiatives, evaluates alternatives, and formulates a strategy for moving forward.

Futures-oriented: focuses on identifying possible futures and the means to shape regional outcomes.

Early commencement: is undertaken at the earliest possible stages of decision making, to inform the development of strategic initiatives, policies, plans, or programs.

Cumulative effects-focused: identifies cumulative effects as the real effects of concern operating at the regional scale.

Multi-tiered: assessment informs, and is informed by, broader regional and multi-regional environmental management and also downstream project assessment and decision-making.

Multi-scaled: primary issues of cumulative effects can be revisited, where needed, not only at different tiers but also at different spatial scales.

Multi-sectoral: encompasses the activities, policies and plans of multiple sectors that may exist in a region or that may influence regional-based processes and decision-making.

Participatory: ensures early and ongoing involvement of relevant stakeholders and interested parties in assessment, monitoring and management.

Opportunistic: provides an opportunity to examine regional development through broader stakeholder debate, and identifies the need to create or modify institutional arrangements for improved environmental management.

Adaptive: treats strategies and PPPs as ‘experiments,’ expecting to modify and adapt them as new knowledge is gained through implementation, monitoring, and feedback.

5.4 Methodological Principles

Methodological principles are focused on the operational components of R-SEA, and characterize the underlying approach of R-SEA. R-SEA, being a strategic process of assessment, is largely informed by and based on established strategic environmental assessment methodology. The core methodological principles of R-SEA are as follows:

Integrated: R-SEA should be conceptualized as a framework with its core elements incrementally tailor-made and integrated with the decision-making system in place. In this regard, R-SEA becomes an integral part of, and provides overall guidance to, the development of regional strategies and initiatives.

Focused on alternatives: R-SEA emphasizes the creation and evaluation of alternatives, often in the form of alternative development scenarios for a region. By comparing multiple, alternative development scenarios, decision-makers are able to obtain a vivid picture of the likely consequences of different or courses of action.

Regional VEC-based: Cumulative effects processes are often linked with highly complex global and regional environmental management issues such as climate change or biodiversity. Thus, the concept of a valued ecosystem component in R-SEA must be relevant to a regional scale of analysis, and be represented by broad indicators of ecosystem health and regional environmental change.

Interdisciplinary: R-SEA involves multiple levels of interest, ranging from political decision makers to disciplinary specialists, and various sectors of the public including industry. R-SEA should emphasize a cross-disciplinary approach, one that enables all parties to identify and address common issues and to appreciate where, and in what form, their information is useful to others and at different tiers of decision-making.

Structured and systematic: A methodological framework provides general guidance and is applicable to a broad range of situations and contexts. R-SEA should be flexible to the particular policy and planning context, but there is a continued appeal to ensure that systematic and structured methodological frameworks are employed at the strategic level.

6.0 PROCESS TO CONDUCT A REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT

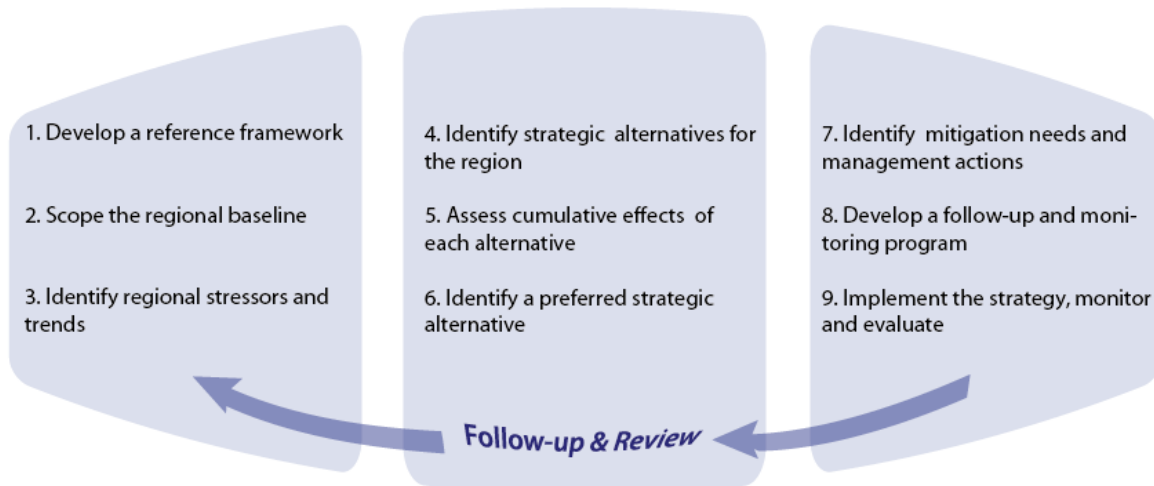
As an assessment process, R-SEA adopts such tasks as scoping; identification and evaluation of alternatives; identification of a preferred option; mitigation; reporting; and monitoring, all in a consistent and systematic form, ensuring open and accountable decision making, and contributing to the improved quality of subsequent decisions. The output of R-SEA does not represent ‘the decision’, but rather the results of a systematic evaluation of options such that a strategic direction can be identified, and informed regional policy, plan, program, and project development decisions can be made.

Specific design for specific application will increase the effectiveness of R-SEA. As such, the framework presented here is not meant to be overly prescriptive. Depending on the nature of the issue at hand, a more or less onerous application of the framework will be desired. The specific tools to be used and resources required will thus vary by application, the complexity of the issues, the objectives to be achieved, and the regional context. In order to ensure a degree of consistency and accountability in R-SEA application, however, a structured **methodological framework** is necessary.

The core structure and components of the R-SEA framework presented in this document are informed by:

- i. Existing research and knowledge concerning strategic environmental assessment methodology in the Canadian context.
- ii. Advances in structured regional and strategic assessment frameworks, guidelines and applications internationally.
- iii. Conceptual frameworks and recent applications in regional cumulative effects assessment.
- iv. Discussions with international cumulative effects assessment and strategic environmental assessment experts and practitioners.

The proposed R-SEA framework is largely untested in Canada, but the utility of a similar strategic framework has been demonstrated in the Great Sand Hills, SK. In presenting this framework, there is an underlying assumption that cumulative environmental effects can be identified and assessed, and that the necessary science and institutional arrangements are available to support the framework.



6.1 Develop a Reference Framework

The reference framework establishes the context for R-SEA. Context refers to the circumstances that have an impact on R-SEA, and also the conditions that have an impact on the outcomes of R-SEA, including: the chosen aims or goals of assessment; the institutional or regulatory environment; expectations about implementation; participants in the assessment process; and the organizations involved.

The objective is to delineate the overall nature and scope of the R-SEA, including:

- The specific question(s) or strategic problems to be addressed.
- Opportunities for tiering to project impact assessment and to other forms of planning and decision-making.
- The various parties and partnerships to be involved in the process and, at least initially, in monitoring and following-up on implementation.
- The likely relevant publics and desired extent of involvement and consultation.
- Developing a terms of reference.

6.2 Scope the Regional Baseline

Scoping serves to identify the key issues of concern, including valued ecosystem components and their key indicators. At the heart of scoping is a series of decisions to either “scope in” or “scope out” issues and components. This is necessary to bound the assessment, making it possible to carry out R-SEA within the constraints of time and resources, and also to ensure that the process is able to deliver results in a timely fashion to support decision-making.

Because decisions about what is included or excluded are largely subjective in nature, such decisions must be justified and made explicit. An R-SEA cannot include consideration for every element or issue in a region. It is thus important to focus the assessment on relevant valued ecosystem components and issues that are of public and scientific concern.

Scoping establishes the baseline for the region that can be: i) monitored over space and time for the purposes of change assessment, and ii) projected forward, either quantitatively or qualitatively, and used as the future conditions against which alternative options and future scenarios can be assessed for the region.

Scoping entails several stages, namely:

- Identifying key regional issues and concerns.
- Establishing valued ecosystem components and their key indicators to be included in the assessment.
- Determining the spatial and temporal boundaries of assessment, and the required amount and resolution of data.
- Evaluating the current state of valued ecosystem components.
- Identifying, when appropriate and possible, thresholds, management targets, and maximum limits of change for valued ecosystem components.

Scoping follows similar procedures as for any assessment, with the additional principle that valued

ecosystem components, indicators, and issues are interpreted in a regional context and include explicit attention to cumulative environmental effects.

6.3 Identify Regional Stressors and Trends

This is the retrospective phase of R-SEA and is focused on:

- Identifying the primary human drivers of change or disturbance in the region, including changes in policy directions and management approaches.
- Identifying possible external or natural drivers of change.
- Characterizing valued ecosystem component or indicator responses over space and time.

In many cases, cause-effect relationships between past disturbances and valued ecosystem component responses may not be known, and correlation or qualitative associations may be relied upon. Constructing such relationships can be time and resource intensive, depending on the scope and scale of the assessment, but it is an important foundation to understanding and evaluating possible future conditions and alternative scenarios of cumulative change in the region.

6.4 Identify Strategic Alternatives for the Region

Alternatives assessment is at the heart of R-SEA, and any R-SEA must identify and systematically assess a range of alternative options for the regional strategy, policy, plan or program being developed. Included amongst the alternatives is the future baseline scenario, or the alternative of continuing with the status quo, against which other alternatives and scenarios can be compared.

Procedurally, attention is focused on:

- Identifying strategic alternatives or ways to proceed in the region, including the baseline alternative.
- Constructing scenarios of what each alternative will consist of in the regional environment.
- Accounting for the influence of external policies, actions, or natural change.

By constructing and comparing multiple, alternative scenarios, decision-makers are able to obtain a vivid picture of the potential consequences, and cumulative effects, of different courses of action. In doing so, the focus of R-SEA is shifted away from trying to predict effects and toward understanding what conditions are most likely to unfold under different, proposed circumstances.

This phase of the assessment is not about predicting the future; rather, it is about creating a choice of futures by determining alternative possibilities and thereby creating a foundation for strategic planning and shaping subsequent actions. Scenario analysis is particularly useful in defining possible future developments that incorporate consideration of cumulative effects assessment.

6.5 Assess Cumulative Effects for Each Alternative

Assessment is carried out in order to estimate the nature or quality of the potential effects of future scenarios, as constructed under each of the alternatives.

While the ultimate goal is to ascertain the desirability of each future scenario, the focus at this stage

is on characterizing the effects that could result under each scenario, including the future baseline scenario.

In assessing the potential environmental effects of each alternative scenario, including cumulative environmental effects, the objective is to:

- Identify potential effects on, threats to, or changes in the state of valued ecosystem components under each alternative scenario.

There are different ways to approach the assessment of alternative future scenarios. The process will typically include a combination of technical or analytical methods and techniques, and stakeholder-based participatory exercises in which interests and positions are explored and there is opportunity for in-depth discussion and debate about potential effects. The approach that is developed and the particular tools employed will depend upon the goals and objectives of the assessment; available time and resources; the type and quality of data available for the region; and the complexity of the cumulative effects issues under consideration.

Directional impact statements (improving/worsening, etc.) and ordinal scales of impact assessment (large, medium, small, unknown impact) are commonly used when levels of uncertainty are high and the potential for quantification of data is low. Often, simple +/- projections are all that is possible. In other cases, where sufficient baseline data are available, methods that are highly quantitative and capable of processing vast spatial data sets and running multiple scenario iterations while simultaneously considering complex pathways and interactions (e.g. simulation modeling) may provide the most utility.

The assessment should focus on effects and interactions that have the potential to cause significant changes to valued ecosystem components, and on those valued ecosystem components that were characterized during the baseline assessment as vulnerable, irreplaceable, or otherwise more sensitive to change.

-Availability of baseline data - - Assessment time and resources - - Ability to determine cause-effect - - Ability to determine statistical relationships -	↑ increasing	<i>More reliance on:</i> "Technical/ data driven" methods and techniques e.g. Geographic Information Systems spatial / temporal modeling network analysis input-output analysis ecological modeling
	↓ decreasing	"Non-technical/ judgment driven" methods and techniques e.g. Delphi processes multi-criteria evaluation participatory appraisal lessons from similar cases

6.6 Identify a Preferred Strategic Alternative

Once the cumulative effects or condition changes under each alternative scenario are identified, some evaluation of the implications and significance of those effects and condition changes must occur. To identify a preferred alternative or alternatives in R-SEA is to make a strategic choice about the ‘desirability’ and ‘acceptability’ of the future state of the region, the means to achieve it, and about the stressors involved. In identifying a preferred alternative, consideration should be given to the implications of the cumulative effects or outcomes identified under each future scenario.

Attention should focus on systematically evaluating and comparing the cumulative effects and outcomes of scenarios, including the future baseline scenario, based on a number of agreed upon decision criteria, including:

- Implications for the sustainability of the affected valued ecosystem components and the regional environment.
- Potential to exacerbate, improve, or forge new regional cumulative impacts or impact pathways.
- Distributional consequences of change under the scenario with regard to social, economic, and cultural effects.
- Consistency and compatibility with broader policy or sustainability initiatives, including public preferences and priorities.

A variety of existing tools and techniques are available for comparing the outcomes under each alternative scenario, and for selecting a preferred option. These include matrices, out-ranking, goal programming, and multi-criteria evaluation, as well as more participatory approaches such as public surveys, forums, and focus groups.

More than one strategic alternative may be desirable at this phase. Selecting a preferred alternative is an iterative process and may require re-assessing alternatives based on considerations of mitigation and management needs.

6.7 Identify Mitigation Needs and Management Actions

Alternative scenarios may, to varying degrees, consider mitigation and management actions. However, it is also important to consider the merits and demerits of each alternative scenario independent of any proposed mitigation and management action that may or may not be implemented.

The final choice of a preferred alternative demands some explicit consideration of:

- Mitigation requirements and residual effects of the preferred alternative scenario(s).
- Management actions and resources required for implementation or environmental safeguarding.

Even a preferred alternative may result in some potentially adverse effects that need to be mitigated. As such, the need for and types of mitigation should be identified and prescribed and the residual effects identified. This may include, for example, designating ‘exclusion zones’ for highly sensitive regions where no further development is to occur, or identifying ‘best management practices’ to minimize further impacts of change in those areas where development may already exist.

Attention must also be given to management actions, including the resources and institutional arrangements necessary to support the preferred option. Consideration should be given to the feasibility of implementation and whether a supportive institutional environment exists for the preferred alternative. For example, new management frameworks or implementing agencies may need to be established, or current land use or other conflicts in the region may need to be addressed in order to make the preferred alternative a feasible one.

6.8 Develop a Follow-up and Monitoring Program

Follow-up refers to the variety of activities that take place after the endorsement of a preferred regional strategic alternative, including:

- Post-decision effects monitoring of valued ecosystem components and associated indicators.
- Performance evaluation of the strategy and its associated mitigation and management actions based on established ecosystem thresholds, targets, maximum effects levels, and various policy or performance goals and objectives that may have been identified.
- Reporting of the monitoring results and of the strategy's performance to the public.

Follow-up is essential in R-SEA because strategic alternatives are often formulated under considerable uncertainties, are potentially large in the scope of their impacts, and are sensitive to changes in broader social and economic conditions. The overall objectives of follow-up in R-SEA are to understand outcomes of decision taking, and to enable and actively encourage ongoing refinement and improvement of both the strategic alternative and related environmental management actions.

A good follow-up program is focused on ensuring that:

- The R-SEA and the strategic alternative are delivering their intended results.
- Impact mitigation and management measures are working.
- There is adaptation to emergent and external factors that may impede success or trigger the need for reassessment.

6.9 Implement the Strategy, Monitor and Evaluate

Even well-intended strategies are of little value if they are not put to action. In order to facilitate implementation and to enhance the potential for success and acceptability of the preferred strategic alternative, there is a need to:

- Finalize roles and resources for implementation and on-going monitoring.
- Undertake a formal public review process of the proposed strategy, including plans for mitigation and management.

Roles and responsibilities for undertaking the R-SEA were identified at the outset of the process; however, those organizations or agencies that undertake the R-SEA and manage the process are not necessarily those who need to be involved in implementation. Implementation of a strategic initiative requires a level of cooperation and commitment that often extends well beyond the

resources, capacity, and authority of the organization(s) or agency(ies) that are commissioned with the responsibility to carry out the R-SEA in the first place.

Concerns of the public must also be addressed prior to implementation. By integrating public values and concerns early and throughout the R-SEA process, however, lengthy public reviews and costly delays can be avoided at the implementation stage.

Public review of and feedback on the desired alternative is an iterative process and provisions must be made in the timeline of implementation to allow for public response and any further modifications to the alternative that may be required. In those cases where the same authority is responsible for both the R-SEA and final adoption and implementation of the strategic alternative, an additional review by external experts is particularly desirable.

Following public and/ or expert review, a summary of responses alongside any modifications to the strategic alternative should be made available to the public so as to ensure openness and accountability. This demonstrates that the views of the affected publics are taken seriously and integrated, where possible, in the final design of the strategic alternative.

Plans for implementation, including associated management actions, must be sufficiently adaptive to system changes, external and emergent stressors, and responsive to new knowledge gained through monitoring and follow-up processes.

Scheduling a periodic review and reassessment as part of the implementation design process is important to facilitate the necessary adaptations to the preferred alternative, and to position the R-SEA as a “living process” which will continue to influence and be influenced by other plans and management actions in the region.

7.0 TRANSPARENCY AND ACCOUNTABILITY

Transparency and accountability are important to a credible R-SEA process. Transparency and accountability provide greater potential to: improve public trust in the planning and decision making process; enhance the overall credibility of a strategic initiative, policy, plan, or program; avoid or minimize costly delays and confrontations due to public opposition throughout the R-SEA process, and during the implementation of the strategic initiative; mobilize resources and public support for implementation. Ensuring transparency and accountability requires public participation early on and throughout the R-SEA process, and documentation and reporting of both the R-SEA process and its outcomes.

7.1 Public Participation

Public participation is now widely accepted, and perceived as beneficial to environmental assessment and decision making processes. The relevant publics and other organizations and institutions should be consulted as early as possible in the R-SEA process, and ideally at the time of or prior to the development of a 'terms of reference' for the R-SEA. Participation at this early stage will serve as a 'litmus test' for public interest; increase the transparency of the R-SEA process; provide an opportunity to identify potentially conflicting values or perspectives in the region; and ensure that those issues that the public deem as important or relevant are addressed in the scoping of the R-SEA process.

Public involvement should continue throughout the R-SEA process, particularly at strategic decision points such as baseline scoping, the development and assessment of alternatives, and prior to a decision being taken on the preferred strategic initiative, policy, plan, or program. The nature and extent of public involvement should be commensurate with the level of public interest, also taking into consideration the potential for land use or resource conflict, known Aboriginal land interests, and the distribution of social costs and benefits associated with the future development of the region.

Elements of successful and meaningful public participation programs

Integrity and accountability: transparency, sincerity of the lead organization, clear process intention, and feedback to participants

Influence: participants have a genuine opportunity to be heard and to influence decisions

Fair notice and time: genuine effort to engage the public and to encourage participation

Inclusiveness and adequate representation: identifying and engaging all of the potentially impacted and interested publics

Fair and open dialogue: a two-way flow of information and open discussion and debate

Multiple and appropriate methods: a staged process that uses multiple tools and techniques to engage the public

Adequate and accessible information: an opportunity to build a high level of understanding of the issues and of the various perspectives and views of participants in order to effectively debate the issues and reach an informed position

Informed participation: participants may need help understanding and interpreting information put before them - access to information, quality of information, and how information is presented affects the quality of a participation process

Source: Stewart, J. and J. Sinclair 2007. Meaningful public participation in environmental assessment: perspectives from Canadian participants, proponents and government. *Journal of Environmental Assessment Policy and Management* 9(2): 1-23.

7.2 Documentation and Reporting

In addition to engaging the public, transparency and accountability in R-SEA requires documenting and reporting in order to: demonstrate how public input affected major decisions; explain how decisions were taken during the R-SEA process; report on the performance of the strategic initiative, policy, plan, or program, following implementation.

Documentation and reporting will vary depending on the nature and scope of the R-SEA application; however, good practice guidance for environmental assessment suggests that, at a minimum, the following documents be prepared and made available to the public for review and/ or comment:

- i. The terms of reference for the R-SEA.
- ii. A report on the R-SEA process and results, that provides a written record of the entire process and findings, from regional baseline scoping to the proposed follow-up and monitoring program.
- iii. A final report, prepared after a decision is made on the preferred alternative, to inform the public on the decision; to document how public concerns and other factors were taken into consideration in making the decision; and to present the plan for implementation.
- iv. Progress and performance reports following implementation of the preferred alternative to inform the public on policy, plan or program performance and on follow-up and monitoring results.

It is recommended that successive public communications be produced over the life of the R-SEA process to keep the public informed as the process unfolds. The extent of on-going reporting will vary depending on the level of public interest and should be guided by the elements of successful and meaningful public participation programs identified above.

8.0 DEFINITIONS

Cumulative Effects Assessment

The process of systematically analyzing cumulative environmental change or the total effects on a valued ecosystem component.

Cumulative Environmental Effects

Effects of an additive, interactive, or synergistic nature that accumulate over space and time.

Environment

Consistent with the Bellagio Principles of sustainable development, environment in this document adopts a holistic perspective and includes the biophysical and the human environment and their component interactions.

Environmental Assessment

A generic term that is often used interchangeably as a qualifier for specific types of impact assessment, such as ‘project-based’ environmental assessment or ‘strategic-based’ environmental assessment.

Environmental Impact Assessment

The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made. Environmental Impact Assessment is focused on project-based proposals and undertakings.

Methodological Framework

A methodology is a higher-order activity—a framework or structure for organizing a process, a way by which SEA is performed, a system of conduct, a series of systematic steps.

Project

For the purpose this document, ‘project’ refers to physical actions, development activities, or physical works on the landscape as per the definition of ‘project’ under the Canadian Environmental Assessment Act and consistent with the notion of a hierarchy of policies, plans, programs, and projects. In some provincial jurisdictions the term ‘project’ is defined in a broad sense and includes plans, programs and schemes.

Regional Strategic Environmental Assessment

A process designed to systematically assess the potential environmental effects, including cumulative effects, of alternative strategic initiatives, plans, or programs for a region.

Strategic Environmental Assessment

The systematic process of evaluating the potential environmental effects of proposed or existing policies, plans, and programs and their alternatives.

Valued Ecosystem Components

Components of the environment (biophysical and human) that are identified as important ecologically, socially, or economically and are the focus of attention in environmental assessment.

9.0 SUPPORTING REFERENCES

Noble, B. and J. Harriman 2008a. *Strengthening the Foundation for Regional Scale Strategic Environmental Assessment in Canada*. Research report prepared for the Canadian Council of Ministers of Environment under contract to Canadian Environmental Assessment Agency. Available from www.ceaa.gc.ca

Noble, B. and J. Harriman 2008b. *Regional Strategic Environmental Assessment (R-SEA): Methodological Guidance and Good Practice*. Research report prepared for the Canadian Council of Ministers of Environment under contract with Alberta Environment. <http://environment.gov.ab.ca/info/library/8181.pdf>