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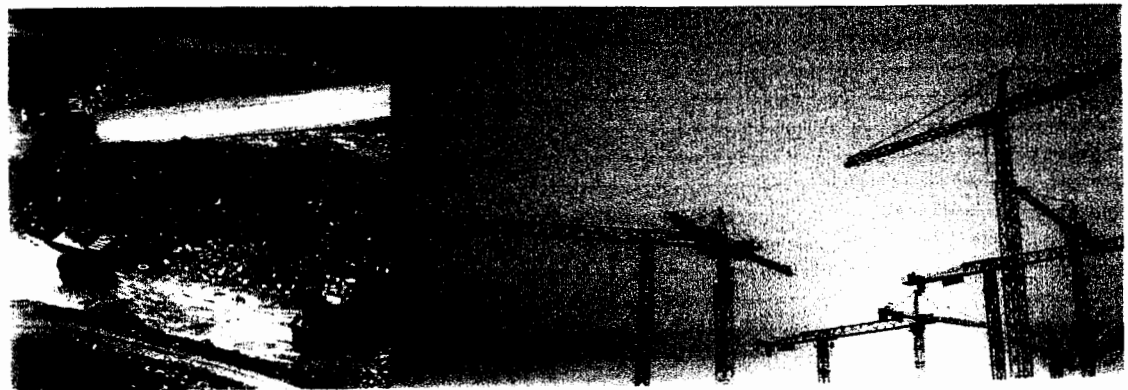
Second Edition

Environmental Impact Assessment

Practice and Participation



Edited by **Kevin S. Hanna**



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Chapter 1

Environmental Impact Assessment: Process, Setting, and Efficacy

Kevin S. Hanna

Environmental impact assessment is, in its simplest form, a planning tool that is now generally regarded as an integral component of sound decision making. . . . As a planning tool it has both an information gathering and decision making component which provides the decision maker with an objective basis for granting or denying approval for a proposed development.

—Mr Justice La Forest, *Friends of the Oldman River Society v. Canada* (1992)

This is a book about the processes and practice of environmental impact assessment in Canada. Environmental impact assessment (EIA or EA) is arguably one of the most influential and consistent aspects of environmental regulation and policy in North America. It is worth noting here that various terms have become synonymous with EIA—for example, *impact assessment* and *environmental assessment*—and they are used somewhat interchangeably throughout this book. *Environmental impact assessment* is best defined as a process for identifying and considering the impacts of an action. As the quote above suggests, EIA is about making better-informed decisions. Environmental impact assessment is not about rejecting development; rather it is about making sure that development proceeds with full knowledge of the environmental consequences. The Canadian Environmental Assessment Agency defines environmental assessment as a process that

1. identifies possible environmental effects,
2. proposes measures to mitigate adverse effects, and
3. predicts whether there will be significant adverse environmental effects, even after the mitigation is implemented.

As an approach to environmental management, as a system, and as practice, EIA has evolved in significant ways over the last few decades. The Canadian setting in

particular represents the lasting influence of EIA, the diversity of issues now addressed by EIA processes, and the more complex definition of environment that many public agencies must now consider. The federal and provincial governments in Canada each have their own EIA system, and as the later chapters in this book illustrate, despite some common ingredients these systems can vary substantially in what they cover and to whom and what they apply.

Before we explore the detailed discussions of process and application as well as the jurisdictional case studies, a brief review of the context and basic process of environmental impact assessment is in order. This is what this chapter provides. In the Foreword, Bruce Mitchell notes the contributions made by Canadians to the field of impact assessment and situates the book in the context of EIA teaching and research. This introductory chapter provides fundamental information about what EIA is and what an EIA system consists of; here I discuss the ideal EIA process, the planning setting, and the pervasive question of EIA's efficacy as environmental management. The succeeding chapters provide detailed explorations of process, the evolution of Canadian EIA, analyses of methods and approaches, case studies, and illustrations of EIA as practised by Canada's provincial and federal governments.

EIA initially garnered a flourish of scholarly interest in the 1970s, an interest that lasted into the early 1990s, when other environmental issues and scholarly trends came to overshadow impact assessment. Since the 1980s, EIA has quietly evolved into one of the more consistent and unquestionably powerful instruments for environmental management in Canada. It now informs virtually all public project and program development at the federal and provincial levels, and in some Canadian jurisdictions, major private-sector undertakings have also been subject to it. Moreover, environmental impact assessment has become an increasingly complex policy area. Beyond its initial focus on technical exercises and studies, EIA now seeks to incorporate consideration of cumulative impacts, health, social, and economic impacts, and public participation as requisite elements in its application. This is evidenced in the chapters that follow.

The Setting

It is best to begin with an understanding of where EIA is situated in policy- and decision-making processes. Environmental impact assessment is ideally embedded in planning. Planning might be seen as having several faces—the process of preparing a program or policy, of determining or deciding a course of action, or of simply implementing development. Development actions are a product of planning, and it is the action that has been most commonly subject to EIA. In the EIA lexicon, an action is referred to as an undertaking or a project. Actions can be physical projects, such as constructing a hydroelectric dam or a highway, or non-physical projects and policies, such as creating a social welfare program or raising the price of postage. Planning suggests a proactive process for addressing a goal or need; it suggests actions that involve forward or strategic thinking. But as Gibson and Hanna (in chapter 2) note, EIA has not always been applied pro-

actively in Canada. In the not-so-distant past, EIA has tended to be applied as an afterthought—when it was applied at all. But this has changed, and we can now say that EIA, in the Canadian context, is part of proactive policy and planning for numerous public and private entities.

If planning is an ongoing process, or continuum, that includes not just goal setting, evaluation, and plan formulation, but also fine-tuning the resulting action, then there is an evident role for EIA. Impact assessment is preferably a planning tool, one that fits into a larger process or model of decision making and environmental management. But this is not always the case, and in some jurisdictions EIA may only come into play after the development decision is made.

Perhaps the planning process can best be conceptualized through the use of the *rational comprehensive planning (RCP) model*—despite the discomfort of some planning theorists and even the debates within EIA scholarship about EIA's relationship to the RCP model. While there has been evolution and innovation in the ways that planning theorists describe planning both as a practice and as a process, the RCP model remains of enduring importance. It has been my experience in government that RCP represents, albeit in many modified forms, the way that many public and private entities like to think they plan, or at least the way they like others to think they plan. The rational comprehensive planning model, or approach, has four basic elements:

1. Goal setting
2. Identification of alternatives
3. Evaluation of means
4. Implementation of the decision (Hudson 1979)

Other models and theories have evolved around the RCP model. In many respects, these have largely sought to make the RCP model more comprehensive, more detailed, and more capable of dealing with issues of greater complexity. This evolution represents the growing recognition that environmental, social, and economic issues are inherently complex and interwoven. Friedmann (1987), for example, presents the RCP model in terms of an expanded decision-making model with seven stages largely attuned to the evaluation of policy alternatives:

1. Identifying goals and objectives
2. Identifying alternatives for meeting the goals and objectives
3. Predicting consequences and impacts that could be reasonably expected to flow from each alternative
4. Evaluating and considering the consequences and impacts with respect to the goals and objectives
5. Making the decision
6. Implementing the decision
7. Monitoring the impacts and consequences of the decision and responding to them

If it is indeed to be comprehensive, the RCP model requires substantial information, time, and resources. The process would also seem to require objectivity and broad consultation with those likely to be affected by the undertaking. Forester (1987) notes that the application of the RCP model assumes that practitioners, planners, and decision makers have access to six basic ingredients:

1. A well-defined problem
2. A full array of alternatives to consider
3. Full baseline information
4. Complete information about the consequences and impacts of each alternative
5. Full information about the values and preferences of those affected
6. Adequate time, skill, and resources to analyse and consider the above

At first glance, the RCP model imparts an image of simplicity—the stages provide a rational, deliberate process, one that is easily understood and standard in its application (Hudson 1979). The model also seems to have wide applicability and the potential for the consideration of all the essential issues, alternatives, compromises, and approaches for meeting whatever goals and objectives it is employed to address. Although RCP may at first appear to be an ideal process, it has several limitations. One criticism centres on the key word *comprehensive*. In his early critique of the RCP approach, Lindblom (1973) suggests that the cost of comprehensiveness may often exceed the benefits. In practice, there are limitations on time, on agency resources, and on the information available; in addition, there may not be a concise understanding of the nature of the problem or even a clear indication of goals and objectives. Comprehensiveness requires considerably more of everything than most agencies can realistically provide.

Another criticism flows from the apparent simplicity of the RCP model. Planning as a process or as a set of practice activities in urban, environment, or resource agencies is now seen as being more complex than something limited to the implementation of a rational approach. Planning has been variously described as embodying communicative or deliberative practice— notions that centre understanding on how planners or environment and resource managers interact with one another or with the public, and on the power that they and their agencies have and how they use and express it. Planning has also come to be seen in more activist tones, where the planner seeks to achieve economic, social, or environmental equity—a somewhat halcyon perspective on practice (Hanna 2005). But planning— despite the orations of theorists and even though it may be an institutional, political, and bureaucratic process—ultimately yields a physical outcome. Where a planning process exists, whatever it is composed of, it is the means by which we decide how land will be used and how development will modify our biophysical and social/cultural environment.

So why should we think about the rational comprehensive approach with respect to EIA? There are four basic reasons:

1. The RCP model remains a valid representation of practice because in many modified forms it represents the way most agencies seem to approach planning. The stages outlined by Friedmann can be observed in practice, and each of these stages has come to be composed of many activities or even sub-stages. This increasing complexity reflects agency responsibility, the issues or projects under consideration, and the political social setting within which planning occurs.
2. While criticisms of the unworkable nature of comprehensiveness are valid, the response in practice has been to bound issues—in other words, to limit what constitutes comprehensiveness and to make do with ingredients that may be less perfect than those that Forester (1987) outlines. This can make the model more workable.
3. The RCP model is relevant to EIA because it represents the framework within which EIA is often used as a tool for planning and decision making.
4. And finally, the model is significant because the EIA process itself is based on it in part—as the discussion below illustrates.

Fundamental Principles of EIA

One of the key values of EIA is the chance it gives proponents and decision makers to design and implement an action with the best available knowledge of its impacts and likely performance. The capacity for EIA to provide such information depends largely on the principles and values that inform and guide it both as a system and as part of the policy process. Barry Sadler's (1996) work on evaluating practice and performance in EIA provides a key discussion of the principles and core values of impact assessment, or at least what they should be. Sadler (1996) writes of EIA as having five main guiding principles:

1. **A strong legislative foundation.** EIA should be based on legislation that provides clarity with respect to objectives, purpose, and responsibilities. Application of EIA should be codified, based in law rather than in discretionary guidelines.
2. **Suitable procedures.** The quality, consistency, and outcomes of EIA should reflect the environmental, political, and social context within which EIA operates, and should demonstrate the ability to respond to divergent issues.
3. **Public involvement.** Meaningful and effective public involvement must be present. Not only must those affected and interested be consulted, but their concerns should be able to affect the decision. As Healey (1997) notes, the power of public involvement is in whether or not such involvement has the capacity to affect the decision.
4. **Orientation towards problem solving and decision making.** The context of EIA is inherently practical and applied. Thus, the EIA system should have relevance to issues of importance, it should generate needed information,

and it must influence, and be connected to, the settings where conditions of approval are set and decisions are made.

5. **Monitoring and feedback capability.** The consideration of impacts should not end with approval and implementation; rather the process must have some capacity for ensuring compliance, accuracy of impact prediction, and evaluation of project performance. Not only does such a role strengthen EIA, it provides information that can fine-tune the EIA process, provide knowledge of what impacts actually do occur, and measure project performance.

We can expand upon these principles. Senécal and colleagues (1999)¹ developed a list of 'Principles of EIA Best Practice', part of which is a framework for the basic principles that should guide the design, operation, and practice of EIA; these hold that an EIA system should be

- **purposive**—the process should inform decision making and effect environmental protection and community well-being;
- **rigorous**—it should apply the *best practicable* science, employing methodologies and techniques appropriate to the problems under consideration;
- **practical**—it should result in information and suggestions that not only assist with problem solving but can also be reasonably implemented by proponents;
- **relevant**—it should provide sufficient, reliable, and usable information for planning and decision making;
- **cost-effective**—it should achieve the objectives of EIA within the limits of available information, time, resources, and assessment techniques;
- **efficient**—it should impose the minimum cost burdens in terms of time and finance on proponents and participants consistent with meeting the requirements and objectives of EIA;
- **focused**—it should concentrate on significant environmental effects and key issues, that is, those that need to be taken into account in making decisions;
- **adaptive**—it should be adjusted to the realities, issues, and circumstances of the proposals under review without compromising the integrity of the process, and be iterative, incorporating lessons learned throughout a project's life cycle;
- **participative**—it should provide appropriate opportunities to inform and involve the interested and affected publics, and their inputs and concerns should be addressed explicitly in the documentation and decision making;
- **interdisciplinary**—it should ensure that the appropriate techniques and experts in the relevant biophysical and socio-economic disciplines are employed and integrated, including traditional knowledge;
- **credible**—it should be carried out with professionalism, rigour, fairness, objectivity, impartiality, and balance, and be subject to independent checks and verification;

- **integrated**—it should address the interrelationships of social, economic, and biophysical aspects;
- **transparent**—it should have clear, easily understood requirements for EIA content, ensure public access to information, identify the factors that are to be taken into account in decision making, and acknowledge limitations and difficulties; and
- **systematic**—it should result in full consideration of all relevant information on the affected environment, of proposed alternatives and their impacts, and of the measures necessary to monitor and investigate residual effects.

Of course, these principles may seem idealistic, and—like the rational comprehensive model—in practice their application is variable across Canada and indeed internationally. Within the idealistic, hopeful nature of the principles that Senécal and his colleagues articulated, there are also important applied values. First, as I commented above, these principles provide a guide for the design, practice, and operation of EIA, even if hesitantly or partially applied. But equally as important, especially within the context of this book, they provide a framework for the evaluation and critique of EIA practice.

Stages in the EIA Process

The practice of EIA centres on a process for considering an action and its likely impacts and outcomes. The process of conducting an EIA can best be conceptualized as involving stages or procedures, and as with the discussions above, I will present these stages here in a somewhat idealistic framework. The following chapters illustrate the variable ways that procedures are defined in different jurisdictions, the methods used, and the considerations and applications actually involved with EIA. Preferably, EIA begins as early as possible in the planning, project, and decision-making process; it is applied to all development proposals that may cause significant environmental effects; it considers a range of biophysical impacts and relevant socio-economic factors, including health, culture, gender, lifestyle, age, and cumulative effects consistent with the concept and principles of sustainable development; and it provides for the involvement and input of communities and industries affected by a proposal, as well as the larger interested public (Senécal et al. 1999). Effective EIA provides opportunities for public involvement throughout the assessment process, not just at one or two stages, and the results of such consultation should have the capacity to affect the recommendations or decisions of the EIA agency and the proponent. In terms of the specific components, an EIA system will generally have seven stages, each composed of various steps. Different jurisdictions will describe, label, and blend the stages in different ways.

Stage 1

The first stage is the *proposal* itself. This is the basic concept of the undertaking. It may be articulated as a need, such as more electricity or more water, and it then

outlines the options for meeting the need, such as the damming of a river. In some jurisdictions, there may be an assumption that when the EIA application is tendered, alternatives have already been considered or will be addressed during other stages of the impact assessment. The proponent, however, may be required to show that alternative means for achieving the project's goals have been considered. The nature of the project, the extent to which the proposal has been developed, and how thoughtfully it has been conceived will have great bearing on the way the EIA evolves. EIA should occur as early as possible in the project life. Some systems have an option whereby proponents can consult with the EIA agency as they develop their proposal. This helps ensure that a more responsive and ultimately acceptable proposal will be tendered to the EIA agency.

Stage 2

Screening occurs in the second stage. It answers the basic question, is an EIA required? Screening is used to determine whether or not a proposal should be subject to EIA and, if so, at what level of detail (Senécal et al. 1999). It is here that it is determined whether the review will entail larger public hearings, an internal agency-based panel review, or a small-scale administrative assessment. EIA systems apply to a broad range of actions, many of which are routine and their environmental impacts negligible. At the screening stage, such undertakings might be quickly reviewed and approved, or given a cursive review to ensure that no larger impact issues are likely. This is a practical need, since in some jurisdictions the majority of actions subject to EIA generally do not require comprehensive assessment and do not warrant the expenditure of EIA resources. When well designed and made conceptually sound, the screening stage can ensure that important and relevant proposals are subject to the assessment scrutiny they require, without subjecting small projects to needless delay and EIA costs. Screening criteria typically include legal requirements (is the undertaking subject to EIA legislation?), scale (does it fall within a size or cost threshold?), the nature of the proponent of the project (is it public or private [in some places all public projects are subject to EIA]? are certain permits required?), the nature of the project (e.g., it may be that all hydroelectric or chemical facilities are subject to EIA within a respective jurisdiction), or a combination of these.

Stage 3

Once it is determined that an EIA will be conducted, *scoping* begins. Scoping is where it is decided what the EIA will address. The issues and impacts that are likely to be important are identified, and the terms of reference for the EIA are established. Since the EIA may be conducted under considerable time and resource limitations, this stage can take on particular importance (Harrop and Nixon 1999). Scoping frames the attention of the impact assessment. Existing baseline data supports scoping, but the scoping stage can also help planners and resource managers

decide what additional or new baseline information is needed. Decisions about stakeholder consultation, methods of assessing and predicting impacts, and additional consideration of alternatives begin with scoping. Some jurisdictions will provide relatively precise lists of what the scope of an EIA will be; others may provide more fluid and discretionary advice, allowing the EIA to be tailored to the circumstances, which for some projects may be largely biophysical and for others mostly social. Public participation should be an integral part of determining the scope of the EIA. It is through such consultation that the EIA system can identify what is important to those who may be affected by the proposed undertaking. As with other elements of EIA practice, there is variation in how the scope of assessment is decided and applied.

Stage 4

After scoping is complete, *assessment of the proposal* begins. It is here that data collection, impact prediction, and evaluation occur. Baseline data may already exist in some form, although not uncommonly it must be expanded and new data collected. Baseline information describes the current environmental (physical, social, and economic) conditions of the area that would be affected by the proposal. It provides the foundation for the assessment and prediction of impacts. Impact prediction also occurs at this stage, and as the term implies, it involves the forecasting of the likely impacts and outcomes of the proposal. Such prediction may address a range of project design and operating scenarios. Likely impacts are also assessed for their significance. As Baker and Rapaport outline in chapter 3, specific methods that have been refined within EIA have become synonymous with the science of assessing impacts.

Significance is a subjective notion determined by the importance that the stakeholders—the proponent, the regulators, and the decision makers—attach to specific impacts. It is also during the assessment stage that mitigation measures are identified and a monitoring or compliance program is outlined. The process of mitigation involves outlining the measures that can be taken to reduce or eliminate the impacts identified. It also provides the proponent with the opportunity to make the project better, to respond to the concerns of those affected, and to improve the likelihood that the proposal will be favourably received by the EIA and other approval agencies. Effective mitigation measures can make a project more likely to be accepted and perhaps even ensure that it is more efficiently implemented.

Stage 5

The task of *preparation, submission, and review* follows assessment, although in practice preparation of the submission should occur throughout the EIA process. At this point, the information that has been collected and analysed is brought together and placed in the EIA report; in essence, this is where the findings of as-

assessment are presented. The contents of the report are usually determined by the regulating EIA agency. In some jurisdictions there will be clear expectations about what the report will contain and how this information will be organized; these expectations may be communicated through agency publications, such as a guide to the EIA process, through pre-consultation with the proponent where the agency's expectations are made clear, or through the formal provision of terms of reference. The report is then tendered to the EIA agency for review and a decision.

Stage 6

While the *decision* may appear to be a simple matter, in practice the decision-making process is complex. The decision in EIA might be better seen as a recommendation. The recommendation might be to approve a proposal as it is or with conditions, reject it in its present form, or reject the concept outright. The decision/recommendation flows from the review, and in some instances it may appear to be the last part of the review. As outlined above, EIA is a tool in the planning process. It contributes knowledge that is used in decision making. Initially, environmental impact assessment was not intended to be the point at which the formal decision about whether or not to proceed with a proposal would occur; rather, it was meant to entail assessing impacts and communicating such knowledge to decision makers. The issue of whether a decision to approve a proposed project is seen to be part of or separate from EIA is problematic, but perhaps it is no longer terribly relevant—some would now hold that EIA has become the place where the decision is in fact made, and some EIA processes now provide formal approvals.

The context for considering the proposal will depend on the jurisdiction, the scale of the undertaking, and the results of screening and scoping. In many instances of lesser public concern, the EIA agency will conduct a review and formulate recommendations within an internal administrative setting; in instances where the undertaking is considered substantial, a public hearing may become the setting for review. As Gertler shows in chapter 5, the hearing process in EIA can be an important place for the interpretation of the range of regulations and acts relevant to a proposal, and the boards that hear EIA applications have played vital roles in the environmental policy and regulatory process, sometimes well beyond their EIA consideration capacity.

A glance at EIA legislation across Canada shows that the product of an impact assessment tends to be a recommendation; the power to make a decision based on the knowledge provided by an EIA more commonly resides at the political level. EIA legislation may give the 'minister' (of environment or whatever agency is responsible for the EIA system or the subject of the proposal) the power to decide. This power is usually exercised as a formal acceptance of the EIA agency's recommendation. In other words, the responsible minister *signs off* on what the agency recommends. For the great majority of proposals reviewed by EIA systems in Canada, the arbiter of whether or not the subject undertaking proceeds, in what form or under what conditions, is the EIA process.

Stage 7

The final stage, and a relatively recent one in the evolution of EIA, is *monitoring and compliance follow-up*. It is one thing to render a recommendation and attach conditions, but quite another to ensure that the proponent complies with the conditions. In some jurisdictions the EIA systems have poor linkages to the agencies that actually enforce conditions of approval and monitor compliance, while in other jurisdictions these links have become stronger. Monitoring not only has an obvious function in supporting compliance, it also provides information that can be used in further assessments to improve EIA efficiency or enhance baseline information.

The Progression of EIA

The last few points I would like to make in this introductory chapter relate to the non-static nature of EIA. There has been overall progress in the application and elements of EIA in Canada. Aspects of this progress include the specialized types of impact assessment, enhancement of public participation and consultation, inter-jurisdictional EIA processes, implementation of sustainability objectives, and the recognition that EIA provides a venue for public learning about environment, community, and governance.

Types of EIA

Environmental impact assessment has evolved to include consideration of a range of impacts beyond those that affect just the biophysical environment. This evolution of interests reflects recognition of the complex meaning that the *environment* has and the integrated nature of the impacts of development and of the responses needed to mitigate them. Part of this progression has been the development of distinct impact assessment forms that now address issues such as cumulative, social, and economic impacts, as well as assessment at a strategic level. These forms of impact assessment have developed under the larger rubric of EIA. In some instances they might be applied independently, but in many settings they have emerged as steps or components of a comprehensive EIA system.

Cumulative impact assessment can be described as the analysis of effects that are additive or interactive and result from the recurrence of actions over time. Cumulative impacts are incremental and result when undertakings build on or add to the impacts of previous impacts. In chapter 8, Creasey and Ross examine this form of impact assessment from a case study perspective, based on their experience with the Cheviot mine project in Alberta.

Social and economic assessment is concerned with the impacts of an action on the social and economic constructs of human society. In chapter 7, Pushchak and Farrugia-Uhalde also use a case study approach, specifically a Canadian experience with high-level radioactive waste disposal, not only to look at this type of

impact assessment, but also to explore unique issues surrounding the impacts of development on First Nations communities and the participation of such stakeholders in EIA.

Strategic impact assessment is applied to policies, programs, or plans rather than to the physical action itself. As Noble and Harriman-Gunn outline in chapter 6, strategic EIA is a conceptually and methodologically difficult form of assessment to apply, but it is an increasingly essential form of impact assessment. Strategic assessment also holds promise for advancing sustainability assessment by possibly ensuring that sustainability criteria are considered at the level of conceptual planning (see Gibson and Hanna, chapter 2). Other jurisdictions, notably the European Union, have rapidly advanced the application of strategic assessment, while in Canada its advancement has been hesitant and the benefits not well recognized.

These types of impact assessment represent a progression and evolution in EIA that flows from the complexity of our understanding and recognition of environment, as well as from an increasing sophistication in the way that impacts are envisaged and addressed under the EIA rubric.

Participation and Consultation

One of the tenets of a good EIA system is public participation and broad consultation with those likely to be impacted by the proposal. Participation, like other aspects of EIA, has evolved. We can say that, with a few exceptions, the Canadian tendency has been to strengthen and expand the participatory elements of EIA. Sinclair and Diduck, in chapter 4, provide an overall image of participation in Canadian EIA, noting the progression and hesitancy inherent in making participation meaningful. In chapter 11, using the Mackenzie Valley as a case study, Armitage looks at another aspect of participation—collaboration among affected parties and the need to realize integration in planning. Armitage's focus on the theme of integration brings to light an important, and not always well acknowledged, dynamic in EIA: it is a process that at a very fundamental level requires integrated efforts, knowledge, and application to be effective and inclusive.

Effective EIA

Even though EIA is an established environmental management tool, little is known about its effectiveness. Effectiveness is a long-standing issue in EIA, fundamental to its theoretical development and essential to enhancing its contribution to sustainability. However, systematic evaluations of the actual impacts and influence of EIA on Canadian environmental management are rare indeed. A good portion of the EIA reform we have seen in Canada has focused on making EIA systems function more efficiently. But there is little indication that these efforts have improved EIA as a form of environmental management. Indeed, injecting timelines and reducing budgets and opportunities for participation all in the name of 'efficiency' may inevitably weaken EIA. Regulators, industries, and the public alike increasingly challenge the value of EIA as a tool for development decision making and, even more

so, for better environmental management. And in this respect one of the greatest challenges that EIA may face in the next few years is the argument over the validity and efficacy of EIA as a tool for environmental management.

Arguably, the most significant measure of the effectiveness of EIA is the extent to which it achieves its goal of environmental management (Morrison-Saunders and Bailey 1999; Doyle and Sadler 1996). Cashmore et al. (2004) point out that EIA's indirect influence on environmental management, by stimulating changes in policy and practice, may be more important than its direct role in the decision about a proposed development (see also Caldwell 1993; Bartlett 1986). In other words, EIA does have the potential to contribute to better environmental management through 'a multiplicity of additional, and often interlinked, transformative potentialities' (Cashmore et al. 2008, 1246). Identifying such potential, however, as well as the underlying criteria of what constitutes effectiveness in EIA when examined from a broader environmental management paradigm, is easier said than done. Effectiveness simply means 'to have an effect' (Emmelin 2006), but what is effective in one context and under one regulatory system or resource sector may not be considered so under another. Furthermore, understandings and interpretations of effectiveness may vary from the proponent to the regulator to the general public. We can certainly observe these variations in the Canadian context. In chapter 2, Gibson and Hanna note that the efficiency mantra may limit the efficacy of EIA as a sustainability tool. And Kellar and Hanna (in chapter 10) describe a case where efficiency may well have won over effective EIA in the push to get projects approved in time for the 2010 Winter Olympics.

Inter-jurisdictional Application

In Canada, EIA is applied at the federal and provincial levels, but many environmental issues cross jurisdictional boundaries, both in terms of the location of the undertaking and hence the impacts and in terms of the nature of the impacts. As the nature of EIA and the impacts it considers have become more complex, EIA has in some cases become inter-jurisdictional in its application. This is part of the progression of EIA—the simple reality that two EIA stages may sometimes examine the impacts of the same undertaking and not always reach the same conclusions or recommendations. The Red Hill Creek Expressway (in Ontario), the earlier Oldman River Dam (Alberta), and the Rafferty-Alameda Dam (Saskatchewan) each had substantial provincial involvement and inter-jurisdictional implications, and as Gibson and Hanna show in chapter 2, these projects have been influential in the evolution of Canadian EIA. Fitzpatrick and Sinclair's chapter 9 deals with the Sable Gas Panel Review, a more recent and successful application of multi-jurisdictional EIA within a relatively complex biophysical and political/social setting. While the Sable Gas case study illustrates a relative outlier in federal-provincial EIA cooperation, it does symbolize the hesitant progression towards more jurisdictionally integrated approaches to EIA.

The challenge in advancing inter-jurisdictional EIA systems is ensuring that such models, when they do appear, act to strengthen the application of impact assess-

ment rather than weaken it. In chapter 12, Slocombe, Hartley, and Noonan discuss the influence that Native land claims have had on the application and evolution of EIA in Canada's North and the trend towards devolution of EIA responsibility. These have inter-jurisdictional implications, though with a uniquely Canadian twist, as indeed does the case described by Armitage (chapter 11). In Canada the course of land claims has seen new interpretations of environment and resource use and new visions of local governance. In many key regions of the country, EIA will have to adapt to these changing perceptions. Indeed, in Nunavut, as Rusk and colleagues note in chapter 13, EIA is emerging as the primary venue for natural resource-use planning, not as a parallel process. And in many respects Nunavut may well emerge as an illustration of the ideal application of EIA.

The progress of Canadian EIA has been gradual, complex, and often hesitant. Even so, EIA has become an influential and relatively stable environmental policy tool, even during times when environmental protection has been weakened by governments. Environmental impact assessment has often served as the locus for considering not just the environmental impacts of major developments, but also their broader implications. The chapters that follow provide a current guide to Canadian EIA, the methods employed, the types of assessment practised, and the history and legal evolution. Each of Canada's EIA systems, provincial and federal, is described in terms of how it works, its attributes, and the practices unique to it.

The contributors to this book provide critical and pragmatic illustrations of the practice and process of Canadian environmental impact assessment. While they certainly provide matter-of-fact images of EIA practice and process, they also offer critical insight into the challenges facing EIA in Canada. Together the authors draw on a wide range of knowledge based on their own experience, research, and practice to create a unique analysis of EIA as practised in Canada.

Note

1. The authors developed the 'Principles of EIA Best Practice' for the International Association for Impact Assessment and the Institute of Environmental Assessment, UK.

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