

Environmental Impact Assessment of Policies in Canada: A Beginning

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INTRODUCTION

Environmental considerations have become part of the contemporary political agenda. It is now generally accepted that long-term prosperity depends on the maintenance of environmental quality. The United Nations' World Commission on Environment and Development (WCED)¹, better known as the Brundtland Commission, warned that the deterioration in the natural environment is already imposing limits on development. Environmental considerations, therefore, must be integrated into economic decision making in order to ensure that decisions taken **now** will not compromise the environmental capital needed for future prosperity. This integration is already happening in a limited way through traditional environmental impact assessments (EIAs) of construction projects related to energy development, transportation etc.. As such, Project EIA is one of the few mechanisms directed at encouraging the integration of environmental factors into policy formulation, planning and decision making for economic development in Canada. Project EIA is a mechanism which is necessary but not sufficient for adequate protection of the environment.

The principle and necessity of sustainable development were well articulated in 1987 by the Brundtland Commission. The Canadian response was presented in 1987 by the National Task Force on Environment and Economy.* That report was a first attempt at identifying possible principles and processes aimed at changing the **way** government and industry approach environment and economic linkages which

* The encouragement and financial support of CEARC (Canadian Environmental Assessment Research Council), the Government of Alberta (Provincial Graduate Scholarship Fund), The Faculty of Environmental Design (University of Calgary) and The University of Calgary for the research and preparation of this paper are gratefully acknowledged.

¹ World Commission on Environment and Development. (1987). Our Common Future. New York: Oxford University Press.

² National Task Force on Environment and Economy. (1987). Report of the National Task Force on Environment and Economy. Ottawa: Minister of Supply and Services.

would be applicable to the Canadian context. In endorsing the report, governments have agreed to address the environmental consequences of federal and provincial programmes, legislation and policies.³

There is a growing recognition of the potential of the environmental impact assessment process as both a planning and a management tool. This expanded scope is reflected in the Canadian Environmental Assessment Research Council's (CEARC) revised definition of EIA:

EIA is a process which attempts to identify and predict the impacts of legislative proposals, policies, programmes, projects and operational procedures on the biogeophysical environment and on human health and well-being. It also interprets and communicates information about those impacts and investigates and proposes means for their management.⁴

CEARC's definition of EIA could be said, more realistically, to constitute a statement of objectives for a developing EIA process. All jurisdictions in Canada have formal means for introducing environmental considerations into project development. However, the procedures are confined almost exclusively to the assessment of construction projects and no systematic assessments are made of the environmental impact of government policies and programs, such as free trade policy,⁵ tax policy, regional development policies, forestry and agricultural policies.⁶

³ Some recent developments at the federal government level such as the enlarged responsibilities of the Minister of the Environment, Lucien Bouchard, in sitting on key cabinet committees and changes in operational practices, albeit largely only in the form of applying brief environmental checklists against decisions at the programme level, are encouraging.

⁴ CEARC. (1988). Evaluating: Environmental Impact Assessment: An Action Prospectus. Ottawa: Minister of Supply and Services.

⁵ Although not a formal assessment of the Free Trade Agreement, Professor Thompson has presented an insightful analysis of the possible environmental consequences of freer trade in Thompson, D.A.R. (1989). "Environmental Protection and Renewable Resource Management Issues in Freer Trade Negotiations". Environments. Vol. 20 No. 1.

⁶ Science Council of Canada. (1988). Environmental Peacekeepers: Science, Technology and Sustainable Development in Canada. Ottawa.

The required concepts and methods for the environmental assessment of policies have not been sufficiently developed. Although the term “EIA of policy” is appearing throughout the current EIA literature and despite the acknowledgement of the need for it (at least, in certain circles), its meaning remains ambiguous. Still missing are an appropriate conceptual framework; a body of guiding principles; and a set of tested methods that enables lessons of practice to be translated into different contexts.

This paper examines the Environmental Impact Assessment of policies as an assessment process which provides an objective and public feedback mechanism to decision making. Also presented are (a) a discussion of the difficulties in establishing a new practice; (b) a proposed model for the development of appropriate methodologies; (c) an examination of the similarities and differences between Project EIA and Policy EIA and (d) three proposed categories into which policies may be classed for assessment.

FEEDBACK VS DIRECT INVOLVEMENT

To date, discussion of the environmental impacts of policies has had a tendency to concentrate on how to ‘integrate environmental considerations directly into decision making’. This is certainly a long-term goal and there are strategic planning models designed specifically for public administrations which describe approaches to solving that type of problem. These approaches include foresighting activities, goal setting, strategic planning, operational management, and evaluation and feedback.⁷

The work of the Brundtland Commission, The MacDonald Commission, The National Task Force on Environment and Economy and others have explicitly identified the need for this integration and have proceeded to outline a strategic vision which is essential to the achievement of sustainable development. Politicians are quickly realizing at least the ‘political’ necessity to respond to this challenge and many have publicly stated their commitment to this goal.*

⁷ **Walter, S. and Choate, I? (1984). Thinking Strateecially: A Primer for Public Leaders. Washington, D.C.: The Council of State Planning Agencies. p. 20-21.**

⁸ **A case in point here is the recent initiative by the Bush administration to introduce a major White House package on clean air. Moderate Republicans see a political breakthrough possible for the environment - and their political future in Congress. See Lewington, Jennifer. (1989, June**

Realistically, however, true integration will be accomplished slowly in a system that gradually responds to forces acting on many fronts. This systemic evolution will involve both organizational and operational changes and, more importantly, changes in the attitudes, values and expertise of the people who make up the system. The process of moving decision making in a new direction will be slow: what will help to expedite it is explicit identification of the environmental impacts of those decisions.

There **are** many different feedback mechanisms which influence government decision making but these are part of a much wider and existing system which includes the interplay of policies of foreign countries, regional interests, industry, media, academe, special interest groups, court rulings etc. All these are factors that interact and influence the formulation of public policy. A clear distinction is drawn between this kind of input to decision-making processes which formulate policies and policy EIAs which are 'after the fact' assessments that recognize both the confidential and normative nature of most policy making. That is, while it is conceivable that there may be a public review of policy before a commitment has been made, as in the case of reviewing Green papers or White papers, it is unlikely that politicians will consent to providing a seat to the public at the Cabinet level of discussion. Not only will elected officials presumably resent any direct interference with their mandate to develop policies for reasons of privilege, there is also a legitimate argument for Cabinet secrecy as a condition for strategic planning.⁹

14). "Acid rain package also a political cure". Globe and Mail. One of the four objectives considered to be fundamental by the present government in Ottawa is the commitment "to preserve Canada's environment" as stated in the Speech from the Throne to Open the Second Session, Thirty-fourth Parliament of Canada. (1989, April 3). p. 1. Prime Minister Brian Mulroney was instrumental in having the resolution of world environmental problems included as a high priority issue in the final communique issued by the leaders of the seven major economic powers at the recent Paris summit. See Ferrabee, J. (1989, July 17). "Mulroney winner on environment". Calgary Herald. A-2. There have also recently been strong expressions of corporate interest in the environment. This interest may be related directly to the realization that there are economic benefits in good environmental management (see "Greening the Profits". (1988, November 7). MacLean's. p. 40-41.), the desire to stave off additional regulation as well as boosting or repairing corporate images with the public (see Howard, Ross. (1989, June 14). "Budding environmental interest found in study of annual reports". Globe and Mail). Further discussion of industry's new perspective on the environment is found in Collison, R. (1989, July). "The Greening of the Boardroom". Globe and Mail Report on Business Magazine. p. 42-55.

⁹ For example, politicians can point to the need for secrecy surrounding the development and release of the budget to prevent individuals from benefitting from prior knowledge.

Policy EIA acts only indirectly on the formulation of policy. It contributes to a learning process through feedback and evaluation and, therefore, influences future decisions. In some instances, it may provide feedback on tentative decisions and in that way may become more directly involved in policy formulation.

The recognition that a policy may be subject to external, public review will also influence the degree to which environmental considerations are included during policy formulation in much the same way that EIA of projects helped to introduce environmental factors into earlier stages of planning for proposed projects.¹⁰ A long-term benefit of policy EIA may well be the encouragement of the effective use of internal audits. As internal audits become more effective, environmental considerations will become increasingly incorporated into planning and, hence, may reduce the need for full EIAs of new policies.¹¹

Figure 1 presents a simplified diagram of an iterative policy-making model which identifies the position which Policy EIA plays in the dynamic of government decision making.

¹⁰ **The U.S. experience with environmental factors and planning for projects since the inception of NEPA has been well documented by Taylor, S. (1984). Making Bureaucracies Think. Stanford University Press: Stanford, CA.**

¹¹ **For a discussion of EIA and strategic planning see Thompson, D.A.R. (1987, November). "Three Converging and Complementary Techniques: Environmental Impact Assessment, Strategic Planning and Uncertainty Management". Proceedings of the Symposium on Interbasin Transfer of Water: Impacts and Research Needs for Canada. Canadian Water Resources Association: Saskatoon, Saskatchewan. p. 217-233.**

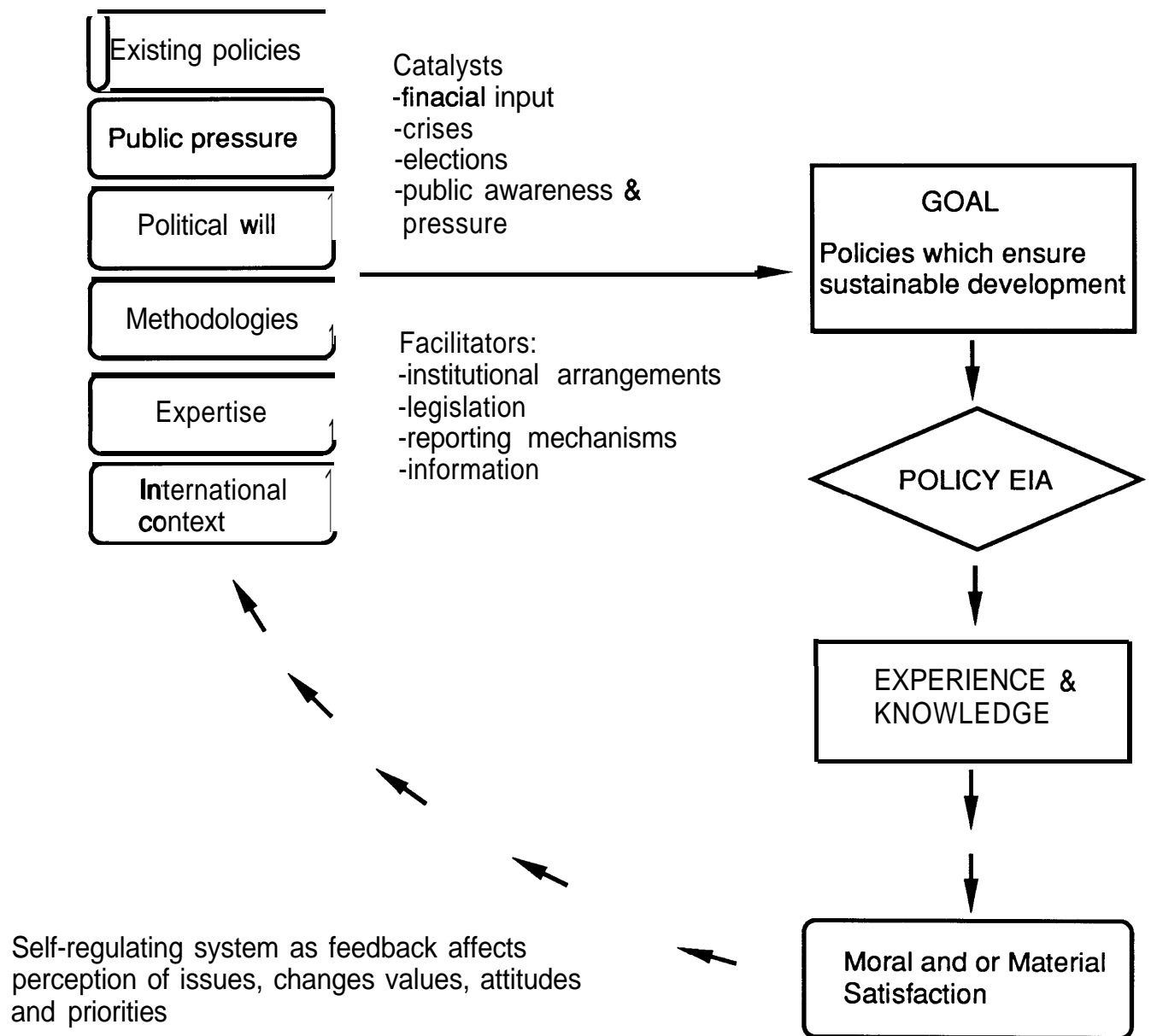


Fig. 1 Iterative Policy-making Model

Represented on the left-hand side is an example of some of the many factors which interact to influence policy formulation. The process of arriving at a decision is essentially an attempt to weigh and balance as many of these often competing factors as possible. The ultimate goal of producing policies which ensure development which is sustainable over the long term will also exert an effect on decision making. A policy results. The policy is then subjected to a Policy EIA which assesses the effects of the policy on the natural resource base or on the ability of governments to manage that resource base. Experience in assessing policies and knowledge about the possible effects of those policies are gained resulting in a degree of moral and/or material satisfaction or dissatisfaction in the general population. The feedback of the information resulting from the EIA affects the perception of issues, changes values, attitudes and priorities of the people involved in the process as well as those who are made aware of the process through media attention. These changes and the resultant pressures then percolate into the decision-making arena.

ESTABLISHING A NEW PRACTICE VS REVIEWING AND REFINING OLD PRACTICES

The need for assessing policies for their environmental impacts has been recognized. This, in itself, is a major step but it is also one that leads into uncharted waters. Although politicians are under considerable pressure to act on the principles of sustainable development, the truth is that we are only now beginning to study the concept and the means to achieve the broad goals which have been identified.

Efforts to conduct environmental impact assessments of policies suffer from two major problems:

(1) The first is that it is not possible to apply a rigorous methodology. Appropriate, well tested methodologies and assessment techniques do not yet exist.¹² Even with

¹² Bridgewater, G.S. and Thompson, D.A.R. (1988). A Search for Canadian EIAs of Policy. Research paper for The Rawson Academy of Aquatic Sciences (Ottawa). This study was conducted to explore the State-of-the-Art of doing EIAs on policy with emphasis placed on specific cases and published literature. The conclusions indicated that while it is recognized that environmental assessment of policies is necessary, the current methodology is not well developed. The literature in the U.S.A. was much larger. However, the focus of EIAs of policies, regulatory standards and development plans was often narrowed to case studies and specific geographic areas resulting in typical project-style EIAs. Although the U.S. EIAs examined ranged from 1971 to 1986, no significant progress in the development of methodology

appropriate techniques, a rigorous analysis may still not be possible because specific details of policies are not forthcoming.

(2) The second problem rests with lack of verifiable data - an inherent problem with forecasting impacts in general and especially so in complex, interactive environments.

There is a need to take action before a consensus on purely empirical grounds can be reached. Lack of methodologies and information place considerable constraints on the endeavour to assess policies for their environmental impacts. However, we must appreciate our position on a learning curve and resist the inactivity that results from believing that the task is almost unimaginably difficult. These early attempts, which will necessarily result in a conceptual level of review initially, will provide the experience from which we can learn and further develop the necessary expertise.

Complex environments and uncertainty about the future coupled with diverse and changing human values and behaviours require an approach to assessing policies which embraces scientific knowledge without being based solely on the scientific paradigm. Clearly, assessments must be objective and based on the best available, scientific knowledge in order to be credible and to contribute effectively to the sound management of resources. However, given that the information base at this point in time is not extensive and that uncertainty about the future will always remain, we must then rely on other faculties in order to reach conclusions about policies.

was observed aside from increased public participation in the process. The field of Technology Assessment may provide a useful body of experience to explore in the attempt to establish Policy EIA. There are some striking parallels in terms of response to public pressure; goals; development of expertise and a knowledge base; iterative methodological approaches; difficulties inherent in complex and futuristic assessments; the intrinsic tension between the aims of sound assessment and effective political action (time); analysis of policy context and options; and educative function. The differences lie mainly in the nature of policy - an ambiguous entity when compared to a specific technology which can be defined in more concrete terms. This area is indicated for further research.

CONCEPTUAL MODEL FOR THE DEVELOPMENT OF METHODOLOGIES

The proposed model (Fig. 2) describes an approach which requires intuition, imagination and judgement as complements to logic and scientific facts. Complex environments cannot be broken down to the component parts to be analyzed without the risk of losing the sense of the whole. Also, it is impractical to attempt that level of detail in policy assessment. The challenge is to learn to recognize whole patterns and how to influence human behaviour to achieve desired outcomes.¹³

¹³ For a discussion of the role of uncertainty the reader is directed to Doern, G.B. and Phidd, R.W. (1988). Canadian Public Policy: Ideas, Structure, Process. Scarborough, Ontario: Nelson Canada. in which it is suggested that uncertainty has scarcely been acknowledged by Canadian political science critics of public policy literature. Uncertainty, as it applies to the development and analysis of public policy, "is created not only by the limits of knowledge, analysis and the lack of causality, but by the difficult political calculus of anticipating how other interests and realms of private behaviour will actually react to policy initiatives". p. 43.

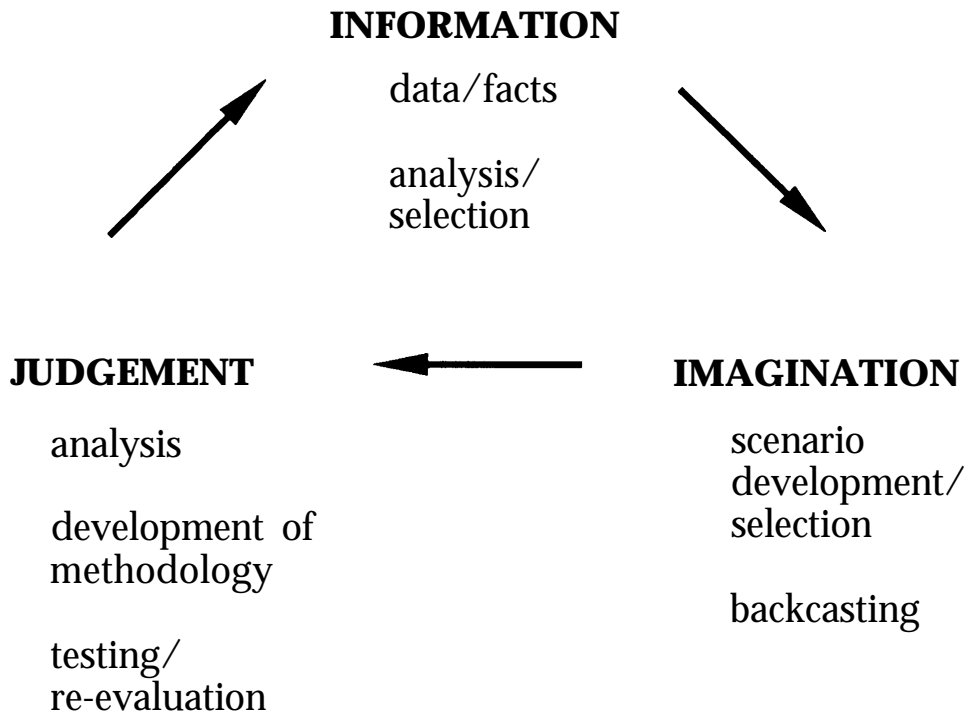


Fig. 2 Creative Design Model for the Development of Methodologies for Policy EIA

To fill in the gaps in the current knowledge base, the model suggests the use of imagination. Imagination can be defined as “the faculty of producing ideal creations consistent with reality”¹⁴ and, as such, includes the dimensions of existing knowledge, insight and design. As applied to the assessment of policies, it may lead to the development of scenarios, the selection of a most desirable scenario and then backcasting to establish the criteria or steps necessary to achieve that scenario.

¹⁴ Urdang, L. (Ed.). (1968). The Random House Dictionary of the English Language. College Edition. New York: Random House

Judgement is an essential element used in conjunction with imagination and can be defined as “the forming of an opinion, estimate, notion or conclusion as from circumstances presented to the mind”? Although, EIA strives to provide an objective analysis, this model explicitly recognizes that values and perceptions are a necessary component of creative analysis. The judgement phase involves the analysis of cases and precedents, the development of methodology, the testing and re-evaluation of the methodology. It is a development and maturation phase. The final step of the first iteration is the feeding of the experience and knowledge gained in the process back into the information base.

BUILD ON EXISTING KNOWLEDGE AND EXPERIENCE

An examination of our experience with conducting Project EIAs illustrates both significant parallels and distinct differences between the two processes and allows us to build on our existing knowledge and experience. Figure 3 illustrates some of the similarities which exist between Project EIA and Policy EIA.

PROJECT AND POLICY EIA - SIMILARITIES

- development over time (5 - 10 years)
- initial investment of resources to establish:
 - baseline data
 - expertise
 - credibility
 - attitudes
- public process(es)
- ‘after the fact’ assessments which provide feedback

Fig. 3 Similarities between Project and Policy EIA

Experience in conducting project EIAs developed gradually over a period of 5 to 10 years to the point where they can now be considered both efficient and cost effective. Initially, the commitment of substantial resources was necessary to establish baseline data. Once established, the baseline data could be used in subsequent EIAs,

¹⁵ Urdang, L. (Ed.). (1968). op. cit.

thus streamlining the process. Similarly, expertise developed and, more importantly, attitudes changed as the benefits of incorporating environmental considerations into the earlier stages of project design were realized. Project and Policy EIA are public processes - both in the sense of public information and public participation. Importantly, both **recognize** the normative and confidential nature of most policy making.

Significant differences exist between Project and Policy EIA (Fig. 4).

	PROJECT EIA	POLICY EIA
BOUNDARIES	Site specific/ Physical characteristics	Political jurisdiction/ Diverse characteristics
PROPONENT	Clearly identifiable	Ambiguous collective
PROPOSAL	Drawings, plans, prototypes, models	Explicit, implicit, no policy, policy conflicts
LEVEL OF IMPLEMENTATION	Constructed or not	Policy statement with or without effective programmes
IMPACT MEDIA		
PRIMARY	Biophysical, socio-economic	Socio-economic, biophysical
SECONDARY	Biophysical	Socio-economic

Fig. 4 Differences Between Project and Policy EIA

These differences include:

(1) the physical boundaries of the assessment - Project EIA involves a specific geographic location with particular physical characteristics while Policy EIA involves the large geographic area with diverse characteristics which falls within a political jurisdiction.

(2) the proponent - who is clearly identifiable, and hence accountable, in Project EIA **is not so** clearly identifiable in Policy EIA. The proponent is rather more of an ambiguous collective. Who is it? The Government? The Cabinet? Individual Ministers? Civil servants who administer or apply a policy? The fact that the government acts as both proponent and assessor presents a potential for conflict. Organizational structures and procedural safeguards will need to be designed to reduce this problem.

(3) the nature of the proposal - which in Project EIA can be described in terms of drawings, plans, models and prototypes but it is not at all clear that one can assume that a policy is a distinct, easily defined entity. Policies can be explicit statements; implicit (i.e. implied or part of a hidden agenda); policies can be conspicuous in their absence; policies inevitably conflict with other policies and policies in combination can compound effects on the environment.¹⁶

(4) the level of implementation - a project is either constructed or not. A policy can be an explicit statement with or without effective programmes and/or enforcement mechanisms to give it substance.

(5) the medium through which the impacts are translated - in both Project and Policy EIA the primary impacts are translated through biophysical and socio-economic media. Since most public policy has as its 'end' socio-economic goals, the media may more commonly be socioeconomic in Policy EIA. The major difference

¹⁶Doern and Phidd. (1988). *op. cit.* suggest that public policies do not simply exist as statements but that there is an essential need to view policy as an interplay between ideas, structures and processes. They conclude that public policy involves: expressions of normative intent and therefore of ideas, values and purposes; the exercise and structuring of power, influence and legitimate coercion; process, including not only the need to deal with uncertainty but also with equally normative judgements about the legitimacy and fairness of the dynamic processes used to develop policy and a series of decisions and nondecisions. Furthermore, a historical perspective is essential to the understanding of any policy. p. 34.

lies in the media through which secondary or indirect effects are felt. In the case of Project EIA, continued changes in the biophysical environment will have effects on the socio-economic environment; in Policy EIA, the secondary effects largely continue to work through socio-economic media and act on the biophysical environment indirectly.

In cases where impacts are transmitted through social and political systems, it may be more difficult to determine cause and effect relationships than in those systems where cause and effect relationships are physical. In terms of environmental impacts, secondary and tertiary impacts may be more important in Policy EIAs relative to Project EIAs.¹⁷

THREE ASSESSMENT CATEGORIES

Given the complex nature of policies,¹⁸ the variety of functions which they serve¹⁹ and the different kinds of impacts which they cause, it became obvious that there

¹⁷ There has been some academic debate surrounding the legal authority of the Minister of the Environment to include socio-economic impact assessment in the mandate of the Review Panel. (See Elder, P.E. (1986). "Environmental Impact Assessment in Alberta: the Slave River Project". Alberta Law Review. Vol. 24.) Prof. Elder points out that under the existing combination of statute, order in council and cabinet directive, the range of impacts which can be assessed include: pollution, the disturbance of sensitive wildlife habitats, the type and quality of the land to be used for a project and the human element, "in terms of any environmentally-related social consequences of the project". Examination of the EIAs which have been conducted under EARP to date indicates that, in fact, Panels have reviewed a wide range of socio-economic issues. However, this is an area that will need consideration in the design of the legal framework for Policy EIA.

¹⁸ Even those policies which are explicitly stated come in various forms such as white papers, green papers, ministerial statements and speeches, statements or comments in the House or legislature recorded in Hansard, committee reports, press releases or department literature of various sorts. Some policies may be implicit in that they were part of election campaigns or are 'generally accepted' but are not committed to paper in any official form. Furthermore, policies can be vague, general or ambiguous statements which merely indicate a broad general direction or, more rarely, they can be fairly distinct in that they describe what is to be done, how it will be implemented and the timeframe within which the objectives are to be accomplished. In some cases the lack of a policy may cause environmental and resource management problems e.g. lack of a water pricing policy.

¹⁹ Policies have a wide range of goals e.g. stimulate economic development, stabilize certain populations or industries, redistribute wealth via social programmes, reduce trade barriers, promote cultural identity, protect natural resources etc. To achieve these goals, policies work through social, economic and political systems which both directly and indirectly affect the biophysical environment.

could not be one type of assessment which would be universally applicable. Three different categories were developed which allow for (1) an initial conceptual level of review and (2) the eventual development of more appropriate methodologies. Criteria were developed to place selected examples of federal policies within the assessment categories (Fig. 5).

CATEGORY I

Policies having direct impacts affecting

- utilization of natural resources (e.g. forestry, agriculture, water)
- liquid/gaseous effluents
- solid waste

CATEGORY II

Policies having indirect effects on

- the biophysical environment (as above)
- governments' abilities to manage natural resources

CATEGORY III

Policies or policy contexts which act as driving forces behind projects resulting in Project EIAs

- need explicit statement of policy or policy context
- policy must result in a proposed project undergoing an EIA
- identify biophysical impacts related to proposed project

Fig. 5 Three Proposed Assessment Categories for Policy

Category I includes assessment of policies which have direct effects on the biophysical environment. These would include impacts affecting the utilization of natural resources, liquid/gaseous effluents and solid wastes. Examples of federal policies include energy policies, land use policies, agricultural policies, National Parks, the establishment of Ecoreserves and Wilderness Areas etc.

Category II involves the assessment of policies whose effects are not directly related to the biophysical environment and resources but which may affect the government's ability to manage them successfully. These effects on the biophysical environment are indirectly translated through socio-economic media. Analyses of this kind will be much more difficult but are essential to the restructuring of our thinking about economic-environmental linkages. Examples of federal policies which may fall into this category include taxation policies, agricultural subsidization policies,²⁰ unemployment insurance policies, transportation policies etc. For example, taxation policy, specifically the policy of 'deferred taxes', may drive decisions on capital investment which are not related to real resource demands and which, in fact, may discourage investment in research and development and in non-capital alternatives.

Category III involves the assessment of a policy indirectly by working through a Project EIA. The environmental impacts identified in the Project EIA can then be related to the policy or the policy context which resulted in the project. In previous EIAs in Canada, questions of policy context or policies influencing the project or its goals have been raised explicitly but have, for the most part, been specifically excluded from the terms of reference of the Review Panel.

An examination of the 32 Project EIAs which have been conducted under EARP (the Federal Environmental Assessment and Review Process) identified the several broad policy areas which led to the various development proposals (Fig. 6).

²⁰ For an excellent discussion of the indirect effects of agricultural subsidies see Crerar, A. (1988, April). "How to subsidize: Assistance to renewable resource development should be specific to the capability of the land being used" Policy Options.

REVIEW OF PROJECT EIA (EARP) - POLICY CONTEXT

- Energy
- Transportation
- Regional Development
- National Parks
- Defence
- “In the National Interest”

Fig. 6 Policy Context for Project EIAs Reviewed under EARP

The majority of the projects were the direct result of energy and transportation policies. Although regional development policy was not explicitly identified as the originating policy in projects such as the Hibernia Development Project²¹, the economics and specific agreements surrounding the project would indicate that, in fact, regional development and not energy development was the foremost objective of the governments involved. Some current Project EIAs, for example, Wood Buffalo National Park TB and Burcellosis Review and the Low Level Military Flying Over Labrador Review, involve National Parks policy and Defence policy.

Operating in concert with the above policy areas are political factors and/or particular programmes supporting policies which influence the economics of project construction such as major tax and financing concessions. These provisions may be especially relevant for energy related developments in Canada in the post-National Energy Programme era e.g. the Lloydminster and OSLO projects, the Alaska Highway Gas Pipeline or developments in the Mackenzie Valley.²²

The last policy area for which I have assigned the term ‘in the national interest’ is a very difficult one to define. Despite the temptation to dismiss it as a guise under

²¹ Federal Environmental Assessment Review Office. (1985). Hibernia Development Project. Report of the Environmental Assessment Panel. Ottawa: Supply and Services Canada.
See also Day, D. (1989, March). “Delayed Development on the Canadian Continental Margin: The Influence of Federal Offshore Hydrocarbon Policy on the Hibernia Project”. The Operational Geographer. Vol. 7 No. 1.

²² Rydant, A.L. (n.d.). “Operational Determinants Influencing Impact Assessments”. Environments. Vol. 16 No. 1. See also Wickens, B. (1989, July 17). “A call for action: criticism over Canada’s use of fossil fuels”. MacLean’s. p. 38-39.

which the government operates when the reasons for its decisions are not immediately apparent, it has, in fact, a subtle and pervasive presence throughout decision making. The national interest embodies the central political ideas, beliefs and goals of the government. These ideas are, in part, explicitly expressed in the Throne Speech but also are carried forward from the basic tenets of Canadian federalism. The justification for the Arctic Pilot Project was not the benefit from an economical, energy recovery point of view. It was felt to be 'in the national interest' to develop Canadian expertise in year-round arctic transportation? In this case, reference was made to a particular policy; in other cases, for example, the Banff Highway Project²⁴ and the CP Rail Rogers Pass Development²⁵, the justification was much more vague.

Figure 7 provides examples of some of the linkages between policy-project-effects which can be made using a Category III type of assessment.

²³ **Federal Environmental Assessment Review Office. (1980). Arctic Pilot Project (Northern Component). Report of the Environmental Assessment Panel. Ottawa: Supply and Services Canada.**

²⁴ **Federal Environmental Assessment Review Office. (1979). Banff Highway Project (East Gate to km 13). Report of the Environmental Assessment Panel. Ottawa: Supply and Services Canada.**

²⁵ **Federal Environmental Assessment Review Office. (1983). CP Rail Rogers Pass Development: Glacier National Park. Final Report of the Environmental Assessment Panel. Ottawa: Supply and Services Canada.**

POLICY	PROJECT	EFFECT
National Energy Policy Nuclear power development	Point Lepreau I	Nuclear waste disposal
National Energy Policy (Permits/ Income Tax Act)	Eastern Arctic Offshore Drilling	Insufficient timeframe for environmental studies
National Energy Policy Peak demand energy supply	Wreck Cove Hydroelectric	Excising National Park land/fisheries/habitat
National Energy Program Energy self reliance	Lower Churchill	Fisheries/land use issues/herbicide use
Transportation (Aviation)	Boundary Bay	Airport expansion - land use issues i.e. agriculture/habitat/ residential development

Fig. 7 Linkages between Policy, Projects and Effects

The National Energy Policy is an umbrella policy with several policy objectives: one of which is the support and development of the nuclear energy industry. This particular policy lead to the construction of the Point Lepreau Nuclear Power Plant in New Brunswick without the resolution of the problem of disposal of nuclear waste.²⁶

²⁶ **Federal Environmental Assessment Review Office. (1975). Point Lepreau New Brunswick Nuclear Generation Station. Environmental Assessment Panel Report to the Minister of the Environment. Ottawa: Supply and Services Canada. It is possible to speculate that the policy context for the Point Lepreau Nuclear Power Plant project included both energy and regional development. It is not immediately apparent which policy area was assigned priority**

The National Energy Policy objective **recognizing** the 'need to know frontier resource potential' lead to the proposal for an exploratory drilling programme in the Eastern Arctic Offshore.²⁷ The goal was to stimulate this type of exploration. Other specific policies regarding issuing exploration permits and offering tax incentives affected the timeframe within which the drilling had to proceed - a timeframe which precluded adequate environmental studies.

This type of exercise was carried out in more detail for the EIAs conducted to date under EARP. It is beyond the scope of this paper to elaborate further on that investigation, however, these examples serve to illustrate the type of linkages which can be examined. This approach allows for a retrospective analysis in which some of the many parameters are 'fixed'.

CONCLUSION

Ideally, we would like the government to make the right decisions at the outset. That would require perfect knowledge, infinite options and the infallible use of judgement. Not only are these criteria not met, it is unlikely that the public will ever be privy to Cabinet level discussion. The concept of Policy EIA as a public evaluation and feedback mechanism to government decision making is a valid response to the reality of politics and the complex process of public policy formulation.

We are very early in the process of learning how to conduct Policy EIAs. There is little in the way of literature, experience, established methodologies or techniques. Present systems of analysis and evaluation which are based on economic or scientific models cannot deal with the complex task of assessing policies for their environmental impacts. Mere extrapolation and minor modification of these systems will not be sufficient. We are essentially presented with a 'design problem'.

although the Province of New Brunswick received financial assistance through a programme based on a federal policy (January 1974) to provide funding for the first nuclear power unit built in each province.

²⁷ Federal Environmental Assessment Review Office. (1978). Eastern Arctic Offshore Drilling - South Davis Strait Project. Report of the Environmental Assessment Panel. Ottawa: Supply and Services Canada.

The suggested information-imagination-judgement design model may provide some insight into approaches to developing the necessary methodologies. The model describes a creative exercise which can help us discover new concepts about things that might be possible in that it assumes strategic planning and working towards a desired future. The imagination element is based on using the past (scientific facts, information, State of the Environment Reporting as it becomes established, rational thought) in new ways while the pragmatic element of judgement includes realistic assessments and a heavy reliance on facts to test the concepts. One advantage to this approach is that it offers a framework for understanding change as a normal process.

As an initial step in the application of the design model, the existing knowledge base (experience with Project EIAs) was examined. Although some significant similarities were suggested between Project and Policy EIA, the differences, which were identified across several parameters, including the boundaries, the proponent, the nature of the proposal, the level of implementation and the impact media, supported the need for new assessment methodologies. The investigation also provided some insight into the nature of those assessments and led to the development of three categories of policies which would allow for an initial conceptual level of review.

The assessment categories reflect the degree of complexity of the policy context and the routes by which the effects of those policies are translated into impacts on the biophysical environment. Policies having direct effects are included in Category I, policies having indirect effects are included in Category II and policies or policy contexts which lead to a specific project proposal that results in a Project EIA are included in Category III. The possibility of linking policy-project-effects in a Category III type of assessment was illustrated using some examples from Project EIAs conducted under EARP. An important component to this type of analysis will be the information generated from the evaluation and monitoring of such projects.

The EIA of policies will not be simple, linear or non-controversial but it is a challenge that must be met. The time may be politically right to act now - to start to take the steps to begin to learn by doing.

APPENDIX

This appendix is intended to supply more detail on the analysis of the Project EIAs conducted to date under EARP, the Canadian Federal Environmental Assessment Review Process. Only project proposals which were subjected to full public hearings were included. The examination represents an attempt to elucidate (a) the policy context within which the project proposal was developed including potential government policy conflicts and (b) the possible negative impacts which the project might ultimately have on the biophysical environment. The analysis was limited to the information provided in the public documentation of the EIAs although, in some cases, further clarification of government policies was sought.

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation

POLICY	PROTECT'	EFFECTS	POLICY CONFLICTS
Development of Nuclear Power Industry - funding for initial installation within each province	Point Lepreau I & II	Nuclear waste (storage, disposal problems) Radioactive effluents (air, water) - effects on marine life, wildlife, human health Occupational health risks Transportation of hazardous materials Conflicting land use Nuclear weapons	Federal funding of rehabilitation of salmon populations
Support export of uranium - ensure domestic requirements - exported uranium to be processed to "most advanced state possible" - create jobs - improve balance of payments	Eldorado Uranium Refineries - Port Granby - Hexafluoride (Ont.) - Corman Park (Sask.)	Excising of prime agricultural land Radioactive waste (storage, disposal) Radioactive waste (storage, disposal) Occupational health risks Excising of agricultural land Radioactive waste (storage, disposal, transportation)	Existing provincial agricultural land policies Existing regional development plan Nuclear Liability Act
(insufficient)			
Provincial policy to provide peak demand energy supply	Hydroelectric Power Project Wreck Cove (N.S.)	Excising of National Park lands Downstream effects on fisheries Loss of wildlife habitat	National Parks Policy DFO - No net loss of fish habitat
NEP - energy self reliance - support renewable energy	Lower Churchill Hydroelectric (Nfld. and Labrador)	Fisheries losses Disruption of landscape due to indiscriminate placement of transmission lines Doubling of herbicide use	DFO - No net loss of fish habitat Unsettled land claims

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation (cont'd)

POLICY	PROJECT	EFFECTS	POLICY CONFLICTS
Northern pipeline development	Alaska Highway Pipeline	Degradation of permafrost <ul style="list-style-type: none"> - surface and groundwater drainage - erosion and mass soil movements Pipeline rupture (seismic activity) <ul style="list-style-type: none"> - explosions and fires Fisheries affected by construction of water crossings, pipe testing Displacement of wildlife during construction Further development of hydroelectric power generation and transmission lines to support compressor stations Toxic materials (storage, disposal) Aesthetic degradation	National Parks Policy (Kluane) International Biological Program Native land claims Dept. of Public Works Policy <ul style="list-style-type: none"> - highways
	Shakwak Highway Project	Hazardous chemicals (storage, transport) Land surface disturbance (borrow pits, flood plains etc.) Over-harvest of fish and wildlife Effects on critical wildlife habitat (Sheep Mountain, Mt. Mansfield) Fisheries (stream crossings) Disturbance of heritage resources Aesthetic degradation	Native land claims
National Energy Policy <ul style="list-style-type: none"> - 'need to know frontier energy resources' 	Eastern Arctic Offshore Drilling	Possible oil spills <ul style="list-style-type: none"> - effects on marine life Low level concentrations of oil <ul style="list-style-type: none"> - effects on marine life Inadequate environmental studies	Canada Income Tax Act <ul style="list-style-type: none"> - tax credit incentives Exploration permit arrangements Lack of a policy on northern energy development Lack of oil spill contingency plan

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation (cont'd)

POLICY	PROTECT'	EFFECTS	POLICY CONFLICTS
<p>National Energy Policy</p> <ul style="list-style-type: none"> - 'need to know frontier energy resources - achieving scientific excellence in Arctic waters - need to assert and maintain sovereignty in the area 	Lancaster Sound Drilling	<p>Possible oil well blowout; possible oil spills (currents, icebergs)</p> <ul style="list-style-type: none"> - marine life 	<p>Lack of policy on northern energy development</p> <p>Lack of policy on northern National Park</p> <p>Canada Income Tax Act</p> <ul style="list-style-type: none"> - tax credit incentives <p>Exploration permit arrangements</p> <p>International Agreements on polar bears, migratory birds</p> <p>International Biological Programme</p> <p>UN World Heritage Site</p> <p>Lack of oil spill contingency plan</p>
<p>National Energy Policy</p> <ul style="list-style-type: none"> - achieving scientific excellence in Arctic waters - pioneering year round arctic transportation 	Arctic Pilot Project	<p>Possible oil spills</p> <ul style="list-style-type: none"> - endanger marine life <p>Possible pipeline rupture</p> <ul style="list-style-type: none"> - effects on wildlife <p>Drainage pattern alteration, sedimentation and soil erosion associated with construction of roads, airstrips, port facilities (dredging)</p> <p>Air emissions</p> <p>Solid waste</p> <p>Impeded caribou and muskoxen (and Inuit hunters') movement due to ruptured ice</p>	<p>EMR - security of energy supply</p> <p>Native land claims</p> <p>Lack of northern development policy or strategy</p> <p>DFO - no net loss of fish habitat</p>

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation (cont'd)

POLICY	PROJECT	EFFECTS	POLICY CONFLICTS
National Energy Programme (NEP) - 'need to know frontier energy'	Venture Development Project	Disruption of fisheries Possible gas well blowouts Gas pipeline rupture Waste - drilling muds, hydrostatic testing fluids etc. Effect of shipping on marine life	Lack of northern development policies or strategy DFO - no net loss of fish habitat
- 'need to know frontier energy resources' - federal tax concessions/expenditure grants - 'in the national interest' - security of supply (independence) - Canadianization - fairness to all Canadians	Beaufort Sea Hydrocarbon	Disruption of traditional lifestyle Marine life affected by construction, drilling and shipping Possible oil spills (events) Marine pollution (chronic) Possible pipeline rupture Impediment to human and wildlife travel due to icebreaking Effects of traffic, noise etc. on caribou	Native land claims Lack of northern development policies or strategy DFO - no net loss of fish habitat
National Energy Policy (NEP) - promotion of search for offshore hydrocarbon reserves - PIP grants to stimulate exploration - refusing permit renewals	Hibernia Development Project	Possible oil spills Possible pipeline rupture (seabed) Effects of shipping on marine life (especially on fisheries) Marine pollution (chronic) from construction, drilling etc.	DFO - no net loss of fish habitat
Atlantic Accord (1984) - mode of offshore development conceded to Nfld. (Regional development project)			

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation (cont'd)

POLICY	PROJECT	EFFECTS	POLICY CONFLICTS
<p>National Energy Policy (NEP)</p> <ul style="list-style-type: none"> - promotion of search for offshore hydrocarbon reserves - PIP grants to stimulate exploration - refusing permit renewals <p>BC government possible lifting of moratorium on offshore exploration</p>	West Coast Offshore Exploration	<p>Possible oil spills and well blowouts</p> <p>Effects of drilling and seismic surveying on marine life</p>	<p>DFO - no net loss of fish habitat</p> <p>Lack of offshore exploration management strategy or plan</p>
<p>National Energy Programme (NEP)</p> <ul style="list-style-type: none"> - energy self-sufficiency 	Norman Wells Oilfield and Pipeline	<p>Further developments</p> <ul style="list-style-type: none"> - oilfields - pipelines - highways - hydroelectric power generation - coal and base metal mining <p>Effects on fisheries and wildlife related to construction and drilling activities</p> <p>Possible oil spills</p> <p>Hazardous materials (storage, disposal, transport)</p>	<p>Native land claims</p> <p>Revenue sharing between GNWT and the Federal Government</p> <p>Lack of NWT development policy or strategy</p>
Transportation Policy	Roberts Bank Port Expansion	<p>Effects on estuarine ecology of construction (dredge fill) and operation of facility</p> <ul style="list-style-type: none"> - fish and wildlife - migratory birds <p>Expansion of mining in East Kootenay (BC) and southwestern Alberta</p>	<p>Lack of Fraser River Estuary Master Plan</p> <p>Lack of regional planning context for port expansion</p>

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation (cont'd)

POLICY	PROJECT	EFFECTS	POLICY CONFLICTS
Transportation Policy - national and international marine transportation Department of Regional Industrial Expansion (DRIE) Policy	Port of Quebec Expansion	Effects on marine life (inter-tidal zones) of construction and operation	DFO - no net loss of fish habitat Regional land use planning
Transportation Policy - highway required 'in the national interest'	Banff Highway	Effects on wildlife and vegetation of - construction - increased vehicular traffic - increased usage of National Park Aesthetic impacts on 'park experience'	National Parks Policy National Energy Conservation Policies
Transportation Policy - aviation safety - use of public airports for private aircraft	Boundary Bay Airport	Effects on wildlife and critical wildlife habitat of - construction and operation of airport - future developments Excising of prime agricultural land	Lack of Lower Mainland region master plan for general aviation Corporation of Delta Development Plan
Transportation Policy - 'in the national interest' to have adequate, safe, economical and efficient railway transportation	CP Rogers Pass	Visual and noise impacts of tunnel ventilation stack Aesthetics of cut and fill operations Erosion and siltation of streams	National Parks Policy

TABLE 1 Linkages between Policy, Project Proposal and Possible Effects Identified in EIA Documentation (cont'd)

POLICY	PROJECT	EFFECTS	POLICY CONFLICTS
	CN Twin Tracking	<p>Construction (stream crossings, river encroachment etc.) affecting</p> <ul style="list-style-type: none"> - fisheries and wildlife - sport, Indian fishing - recreation - heritage resources - soil erosion - other land uses/fragmentation <p>Operation involving</p> <ul style="list-style-type: none"> - potential toxic spills - vibration and noise and dust 	<p>Lack of Thompson-Fraser Corridor Master Plan (including non-transport related activities)</p> <p>National Parks Policy</p> <p>DFO - no net loss of fish habitat</p> <p>Native land claims</p>