PHILOSOPHY AND THEMES FOR RESEARCH

JANUARY, 1986

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Cat. No. En 107-3/4-85

ISBN O-662-54233-9

TABLE OF CONTENTS

CANADIAN ENVIRONMENTAL ASSESSMENT RESEARCH COUNCIL

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INTRODUCTION

In January, 1984, the federal Minister of the Environment announced the formation of the Canadian Environmental Assessment Research Council (CEARC) as a body to advise on ways to improve the scientific, technical and procedural basis for environmental impact assessment (EIA). This was in recognition of the need to provide a focus for research on these topics and to stimulate the interest and support of other research funding agencies.

The overall objective of CEARC is to contribute to the quality of the natural and social environment in Canada by:

(a) advising on the need for and adequacy of research related to environmental impact assessment;

(b) reviewing and commenting on the use of scientific information about the environment and the place of environmental impact assessment in planning and development; and

(c) encouraging new ideas and research directed towards improving the concept, practice and effectiveness of the assessment of social and environmental impacts.

The purpose of this document is to articulate the. basic themes and priorities which will guide Council's approach to developing and implementing a research agenda over the coming years. The document is intended to introduce CEARC and act as a means of opening dialogue with others interested in making environmental impact assessment a more effective tool for decision-makers.

A PERSPECTIVE ON ENVIRONMENTAL ASSESSMENT

Environmental impact assessment, as a formal process, is a component of planning which takes account of the ecological and related social implications of development activities. From its origins as a narrowly-focussed, procedural step in the approval of specific projects, EIA has been gradually evolving into an integral part of a more comprehensive management process. The exact nature of impact assessment, however, is still very much a matter of debate since it is interpreted in a variety of ways depending on the conceptual and institutional frameworks in which people are operating.

To the applied scientist, impact assessment should follow the scientific method of hypothesis formulation, prediction and testing, requiring the application of rigorous methodologies and analytical techniques. However, not all issues influencing development planning can be reduced to scientific dimensions and not all questions can be addressed through the formulation of hypotheses.

Some of the general public may perceive the environmental assessment process as an exercise in public consultation and a means for addressing social issues. The results of scientific studies may be considered only in the context of potential changes to individual and community values. For those affected by development, EIA offers a much-needed opportunity to question the social acceptability of possible negative side effects and to influence development decisions.

To the decision-makers, whether in government or the private sector, EIA should provide a measure of the potential changes in environmental and social conditions resulting from development proposals, set out in terms that can be related to the economic and other factors influencing project decisions.

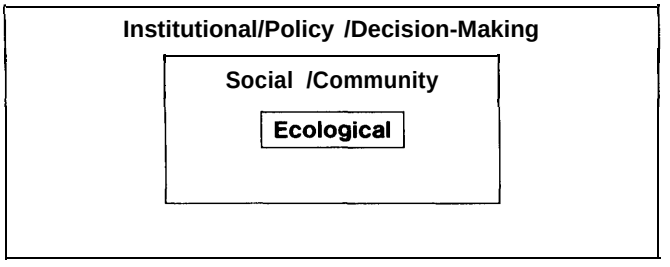
New and innovative approaches are required whereby these potentially diverging needs and perceptions can be incorporated into the decision-making process in a fair and equitable manner. The integration of the biophysical and social aspects of planning, which is required if EIA is to achieve its maximum effectiveness, poses serious challenges to all parties involved in the process.

It will be difficult, however, to achieve such integration without proper institutional frameworks and policy contexts. Development planning cannot achieve its greatest effectiveness without appropriate consultation and mediation mechanisms, or where there is a policy vacuum with respect to regional planning or resource management. Consideration of these broader contexts is necessary to provide the basis for linking natural systems, social values and development initiatives in an integrated planning process. The achievement of this linkage in a practical and open way is the ultimate objective of EIA.

A ROLE FOR RESEARCH

A focussed research programme will contribute in a substantial way to the development of improvements in the concept and practice of EIA. Research on environmental assessment should be directed towards increasing our understanding of the environmental and social consequences of development, and towards improving our ability to forecast and manage

effects of development to meet the stated social goals. Such research requires the development and application of knowledge from natural and social sciences within institutional and decision-making frameworks. The interrelationships can be illustrated by the following diagram:



It is fundamental to the notion of environmental assessment research that improvements have to be made to all three of the above components and their interrelationships if the overall EIA process is to be substantially improved. But to focus on any one component or area without recognizing and incorporating its relationship to the other two, while potentially important and useful, is not the orientation of Council. Indeed, one of the challenges facing CEARC in developing a research agenda is to break out of the discipline- or sector-oriented approach so commonly employed in funding research, and to think in terms of an integrated management framework.

Even though the issues to be addressed by the CEARC research programme are broad ranging, the Council is searching for results which can be tested in the real world of politics, business, science and social interactions. In other words, the CEARC approach has to do with focussing applied research on basic problems.

RESEARCH THEMES AND PRINCIPLES

CEARC has thus set for itself a disctinctive role in the larger community of agencies supporting or promoting research. Since EIA focusses on the interrelationships between information derived from disciplines in the natural and social sciences, the Council's main interests involve cross-disciplinary research efforts. Furthermore, the potential spectrum of research interests is extremely broad, including classical (cause-and-effect) scientific research, technology assessment, socio-economic analysis and evaluation of government services and public policy. However, rather than focus on the individual sectors, it will be CEARC's role to support and promote integrated research in a manner which improves the effectiveness of EIA as part of comprehensive planning and management.

To that end, Council has established the following set of research themes to guide its activities:

(1) developing new approaches to integrating impact assessment with strategic (or regional) planning and development control;

(2) improving the scientific rigour of the application of the ecological and social sciences to impact analysis;

(3) improving the effectiveness of procedures for clarifying and incorporating social values in impact evaluation; and

(4) identifying alternative means for strengthening policy and institutional frameworks for linking the above elements.

In attempting to implement these research themes, CEARC will operate according to the following three principles. First, it will use its limited resources to explore new ideas and approaches and attempt to find major supporters for promising endeavours. Second, it will encourage co-operation with other major funding agencies on matters of mutual interest. Finally, the Council will act as a catalyst for integrative research and attempt to gain the interest and support of other agencies in pursuing its longer-term objectives.

STRATEGIES

CEARC has identified a number of specific methods or strategies it will employ in achieving its objectives. Each of the key strategies can be implemented in a variety of ways, not all of which would be in use at any one time, but which could be brought into play as the circumstances warrant. The strategies and modes of operation are as follows:

1. Improvement of the education base
   - -support university research
   - -offer graduate student fellowships
   - -encourage establishment of centres of excellence
   - -co-operate on EIA-related sabbaticals.

2. Building on current knowledge
   - -state of the art reviews
   - -workshops on selected topics
   - -analysis and application of experience
   - -post-project audits
   - -wide distribution of information.

3. Development and promotion of new ideas
   - -unique or experimental initiatives
   - -sponsor "think tanks"
   - -review and publication of unfunded research
   - -solicitation of research ideas.

4. "Spreading the word"
   - -publication of research results
   - -support for other publications
   - -workshop, seminar and conference proceedings
   - -newsletters.

5. Networking
   - -sponsor technical workshops
   - -develop activity and expertise directories
   - -sponsor and participate in EIA research symposia.

The following section deals with the six principal areas of research interest which arise from the previously stated themes and principles. CEARC's research implementation framework is based upon an application of the strategies to the areas of research interest. An implementation matrix illustrating the approach is set out on the final page of this document.

AREAS OF RESEARCH INTEREST

A well founded applied research program must be comprehensive and take into account the real problems that face the practitioner in the field, whether scientist, administrator or the affected public. Council has identified the following broad areas of research interest which encompass methodological, procedural and institutional dimensions of the problem.

1. Prediction and Monitoring

From scientific and methodological view points, one of the greatest challenges posed by EIA is the forecasting and subsequent monitoring of changes caused by development. Forecasting techniques and monitoring protocols have been developed in a variety of disciplines which could be applied in EIA studies. The main focus of the CEARC research program in this area is to assess significant developments and evaluate their potential application to environmental impact assessment.

2. Risk Analysis and Management of Uncertainty

The determination and evaluation of the risk to human health and welfare from development activities has become a major component of many environmental assessments. There are a number of institutions throughout the world studying risk analysis as it applies to a variety of subject areas, i.e., natural hazards, technology assessment and public health. CEARC will support research in this field that has potential application to environmental assessment, development planning and project management.

3. EIA, Management and Decision-Making

As traditionally applied, in a site- and project-specific manner, EIA is often poorly linked to other elements of resource and environmental management which both precede and succeed it. The options for a more effective integration of impact assessment with the overall process of decision-making will be a focus for CEARC research over the longer term.

4. Improvements in Administrative Procedures

The administrative procedures which govern the conduct and the use made of environmental impact assessments are the subject of a considerable body of legal and institutional analysis. CEARC will endeavour to promote research which aims to develop more effective guidelines for EIA. In addition, deregulation initiatives, which are geared at removing cumbersome technicalities while maintaining or improving environmental standards, will also be the focus for comparative research and analysis.

5. Mitigation and Compensation

As a planning and management tool, EIA must include a consideration of the manner in which potential impacts can be avoided or minimized and identify the basis for compensating for the loss or reduction of social amenities. This is an emerging research theme in environmental assessment in which a number of new and innovative ideas are being explored. CEARC will take an active role in supporting further development of these ideas and will promote their trial application in environmental impact assessments.

6. Post Project Evaluation

Some form of systematic audit of the lessons of case experience is necessary in order for these to be extrapolated to ongoing work and for the general improvement of the practice of EIA. The Council places considerable importance on the development of an organized approach to post project evaluation to increase administrative as well as technical performance, and will encourage research and information exchange in this area.

Some of the priority research programmes being undertaken by the Council cut across a number of these areas of interest. For example, the work being done on social impact assessment focusses on developing linkages between the biophysical, economic and social planning processes. It primarily has to do with improving management and decision-making but involves aspects of most of the other areas of research interest. Likewise, the Council has recognized that managing the biological and social effects of multiple developments will require a more comprehensive approach than merely adding together single project assessments. The resulting research programme on cumulative environmental effects involves problems common to almost all areas of interest to the Council.

RESEARCH PRIORITIES

Within the limitations of its resources, it is the intention of CEARC to lend its general support to research and development which falls within the six areas of interest outlined above.

The following criteria govern the Council's selection of research projects. Priority will be given to research which:

(a) addresses issues which reflect the range of research interests summarized above;

(b) reflects the need to identify and fill specific knowledge gaps seriously inhibiting current practice; and

(c) has the potential to yield results which can be applied in the near term.

SUMMATION

CEARC is a new organization. In attempting to develop a comprehensive, unique and relevant research program to improve the practice of EIA it will require the advice and support of many interested individuals. Although this document reflects the current thinking of the Council, it is aware that a research program, like EIA itself, will change with experience. In this context, CEARC would appreciate comments and suggestions which could be incorporated into future research agendas. Any correspondence and inquiries should be directed to the CEARC Secretariat.

CEARC — RESEARCH IMPLEMENTATION FRAMEWORK

AREAS OF RESEARCH INTEREST

STRATEGIES	MODES OF OPERATION	Prediction and Monitoring	Risk Analysis	EIA Management & Decision Making	Administrative Procedures	Mitigation & Compensation	Post project Evaluation
Improvement of Education Base	Research Support Fellowships Centres of Excellence Sabbaticals						
Building on Current Knowledge	State of the Art Reviews Workshops on Selected Topics Analysis & Application of Experience Post-project Audits Dissemination of Information Support Advancement of State of Art	The implementation matrix will be completed annually by indicating the resource commitment to be made to each area of interest, according to each strategy.					
Promotion of New Ideas	Unique or Experimental Initiatives Think Tanks Review & Publication of Unfunded Research Solicitation of Research Ideas						
Spreading the Word	Publication of Research Results Support for Other Publications Proceedings Newsletter						
Networking	Technical Workshops Directories (people, activities, etc.) Symposia on EIA Research						

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*LIST OF CEARC PUBLICATIONS

No. 1-85/SIA SOCIAL IMPACT ASSESSMENT: A RESEARCH PROSPECTUS.
No. 2-85/SIA A COMPARATIVE ANALYSIS OF TWO SOCIAL IMPACT ASSESSMENT STUDIES.
No. 3-85/CEA PROCEEDINGS OF THE USA-CANADA WORKSHOP ON CUMULATIVE ENVIRONMENTAL EFFECTS.
No. 4-85 PHILOSOPHY AND THEMES FOR RESEARCH.

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