

CANADIAN ENVIRONMENTAL ASSESSMENT RESEARCH COUNCIL

ANNUAL REPORT

1987-1988

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**CEARC'S ANNUAL REPORT
1987-1988**

The Canadian Environmental Assessment Research Council (CEARC) is a **12-member** council established by the Minister of the Environment in January 1984. The Council promotes research into the issues and topics associated with environmental impact assessment (EIA) and the broader environmental planning and resource management contexts in which assessment activities are undertaken: and advises on ways to improve the scientific, technical, and procedural basis for EIA. Members drawn from various levels of government, university and the private sector are appointed by the Executive Chairman of the Federal Environmental Assessment Review Office (FEARO) for a three-year term. CEARC reports to the Executive Chairman of FEARO, who administers the Council's annual research fund of \$500,000.

Focus of Council

CEARC has been promoting and supporting research on EIA associated with the following research themes:

- (a) developing new approaches to integrating environmental assessment with strategic (or regional) planning and development control;
- (b) improving scientific rigour in the application of ecological and social sciences to impact analysis and interpretation;
- (c) improving the effectiveness of procedures for clarifying and incorporating social values in impact evaluation: and
- (d) identifying alternative means for strengthening policy and institutional frameworks for linking the above elements.

Within these broad research themes, specific research programs have focused on social impact assessment, cumulative effects assessment, mitigation and compensation, audit and evaluation, mathematical modelling, risk analysis, and environmental health. In addition, the Council has funded graduate student research on topics relevant to environmental assessment and a set of priorities developed by CEARC.

COUNCIL OPERATIONS

Membership

A number of changes in membership occurred in the 1987/88 fiscal year. Four new members were appointed in January 1987, three members left Council at the end of their term in March 1987, six members completed their term in March 1988, and an additional five members were appointed in January 1988 to join Council in the coming fiscal year (see Appendix 1).

The Council chairperson for 1987-1988 is Fred Roots, Science Advisor to the Department of Environment. Andre **Marsan**, of A. **Marsan** and Associates, completed his appointment as vice-chairperson and was replaced by Katherine Davies of the City of Toronto, Department of Public Health, and Richard Hoos of Amoco-Dome Petroleum, Calgary, Alberta, each appointed for a two-year term.

New terms of appointment were adopted for members during the past year. Members are now appointed for three years or nine meetings. Members are not eligible for reappointment for at least one year following their retirement from the Council.

Meetings

The full Council met three times during 1987-88 in Ottawa, Toronto, and Mont Ste-Marie, Quebec. Joint meetings with the Canadian Environmental Advisory Council (CEAC) and the federal and provincial Environmental Impact Assessment (EIA) Administrators were held in conjunction with the meeting in Toronto in September 1987. CEARC also met with representatives of the local EIA Community in Toronto. Presentations and discussions focused on EIA research in Ontario, and specifically dealt with recent approaches to public hearings.

Council met with CEAC again in December 1987 to discuss reform of the Environmental Assessment and Review Process (EARP). Based on that meeting both Councils agreed to develop separate but complementary reports to FEARO that reflect their particular interests and mandates. These reports formed part of the background material for the National Consultation Workshop on the reform of EARP held in Ottawa in March 1988.

Meetings and workshops held in conjunction with Committee projects are discussed under New Program Initiatives.

Publications

Much of the work completed during the first three years of CEARC was published by the end of 1987-88 (see Appendix 2 - CEARC Publication List). By year-end, six reports had been published and distributed with two others nearing the final publication stage.

CEARC has published the following background papers and reports since the last Annual Report:

Acres International Ltd. 1986. Funding of Environmental Impact Assessment Research in Canada. Canadian Environmental Assessment Research Council. Background Paper. 40p.

Acres International conducted a survey in 1986 to identify the current and potential funding sources for environmental impact assessment (EIA) and social impact assessment (SIA) research in Canada. The study assesses the potential for co-funding of EIA and SIA research and recommends ways to maintain a current directory of agencies supporting this type of research in Canada.

Grima, A.P., P. Timmerman, C.D. Fowle, and P. Byer. 1986. Risk Management and EIA: Research Needs and Opportunities. Canadian Environmental Assessment Research Council. Background Paper. 18p.

This background paper presents research needs and opportunities suggested by the application of risk concepts to EIA. The results of a workshop on risk management and EIA and subsequent meetings and discussions are used to define the various aspects of risk management and how these concepts can be applied to EIA.

Munro, D.A., T.A. Bryant, and A. Matte-Baker. 1986. Learning from Experience: A State-of-the-Art Review and Evaluation of Environmental Impact Assessment Audits. Canadian Environmental Assessment Research Council. Background Paper. 48p.

This report is based on a review of the relevant literature on post-development evaluation and on 10 follow-up studies (audits) of EIAs commissioned by Environment Canada. Audits and evaluations were found to be useful in improving EIAs and environmental management.

Krawetz, N.M., W.R. MacDonald, and P. Nichols. 1987. A Framework for Effective Monitoring. Canadian Environmental Assessment Research Council. Background Paper. 92p.

This report develops an analytical framework that can be widely applied to evaluate the effectiveness of approaches to social impact assessment monitoring. The framework is based on a review of the literature, extensive consultation with various stakeholders and verification using case studies.

Peterson, E.B., Y.H. Chan, N.M. Peterson, G.A. Constable, R.B. Caton, C.S. Davis, R.R. Wallace, and G.A. Yarranton. 1987. Cumulative Effects Assessment in Canada: An Agenda for Action and Research. Canadian Environmental Assessment Research Council. Background Paper. 63p.

This study presents a conceptual framework for the components of cumulative effects, an examination of some Canadian experiences in CEA, and a list of the most significant cumulative effects issues currently facing Canadians. A review of CEA and an examination of the scientific and institutional aspects of CEA in Canada are provided.

Sonntag, N.C., R.R. Everitt, L.P. Rattie, D.L. Colnett, C.P. Wolf, J.C. Truett, A.H.L. Dorcey, and C.S. Holling. 1987. Cumulative Effects Assessment: A Context for Further Research and Development. Canadian Environmental Assessment Research Council. Background Paper. 91p.

This report summarizes consultations with researchers and managers in Canada and the United States who are involved with environmental assessment procedures. Current practices for identifying and assessing cumulative effects and an analytical framework for evaluating case studies are discussed. A synopsis of the Canadian and U.S. experience with CEA is presented and recommendations are made for improving the assessment of CEA in Canada.

Canadian Environmental Assessment Research Council. 1988. The Assessment of Cumulative Effects: A Research Prospectus. 14p.

This report summarizes **CEARC's** approach to possible research activities in the field of cumulative effects assessment (CEA), drawing on the results of commissioned research and workshops sponsored by CEARC. The current practice of CEA in Canada and elsewhere is evaluated and directions for further work to improve the assessment and management of CEA are provided.

RESEARCH PROJECTS

The determining factors in choosing research projects come from a careful balance of the particular interests or expertise of Council members and the priorities of CEARC clients.

Health

A workshop co-sponsored by CEARC and the Canadian Public Health Association in conjunction with five other agencies was held in May 1987 in Ottawa to discuss the involvement of health issues in environmental impact assessment in Canada. One of the objectives of the workshop was to identify the approaches and mechanisms for achieving a greater involvement of public health professionals in EIA and to facilitate participation and cooperation between the EIA and health communities. The workshop, attended by approximately 40 participants representing both health and environmental professions, was successful in gaining support for the assessment of health effects.

CEARC further examined the extent to which health effects are incorporated into EIA procedures in Canada through a national survey conducted under contract by Jennifer Simon of the University of Toronto. Respondents to the survey indicated that they would include health effects in EIAs where appropriate; however, few provincial governments and federal ministries have procedures and mechanisms to ensure that health issues are identified and addressed adequately. Overall, it was found that health effects are considered in EIA but with different approaches according to jurisdictions and the scope of the project. The results of this survey will be submitted for publication to a public health journal. Review comments from provincial EIA Administrators are being incorporated into the paper prior to publication.

Social Impacts

CEARC activities in the area of social impact assessment (SIA) took the form of two workshops held in early 1987. The first, entitled "Negotiation in EIA Processes," was held in Toronto in February 1987. The second, "Socio-economic Impact Monitoring," was held in Montreal in March 1987.

A status report on the Council's SIA research activities is being prepared. It will inform the impact assessment community of the Council's progress in addressing its **SIA-related** research priorities, and of its future research directions.

Cumulative Effects

CEARC awarded contracts to **ESSA** and to Western Ecological Services to analyse the extent to which current Canadian environmental planning procedures and institutional frameworks are dealing with cumulative effects assessment (CEA) and to recommend priorities for more detailed research. Background Papers have been published based on both of these studies. Council **also** published a research prospectus on cumulative environmental effects, The Assessment of Cumulative Effects: A Research Prospectus.

The preparation of a reference manual for CEA was contracted to Pat Lane & Associates of Halifax, Nova Scotia.

Additional work on CEA is described under Demonstration Projects, below.

Monitoring

A proposal by Maritime Testing Ltd. and Hardy Associates entitled "Selection of Environmental Effects Monitoring Programmes for Use in Environmental Impact Assessment and Management" was co-funded by CEARC, Environment Canada, and the federal Department of Supply and Services (DSS). This study examined ways to improve environmental impact monitoring to provide early warning of project impacts on terrestrial vegetation.

NEW PROGRAM INITIATIVES

In 1987, CEARC revised its research framework in response to changing environmental concerns and on the basis of results achieved from the research program to date. A new climate of thinking created by the report of the World Commission on Environment and Development (the Brundtland Commission) and the National Task Force on Environment and Economy prompted Council to initiate a new series of research projects aimed at advancing the objective of sustainable development. Work is currently underway on environmental assessment of government policies, the relationship between environmental assessment and economics, and the role of EIA in support of sustainable development. As well, Council's work is moving toward demonstration and extension projects that are intended to test and implement the ideas and findings of the CEARC research activities.

The theme of harmonizing economic development with environmental protection and conservation became a focal point for establishing the following research activities on environmental impact assessment.

EIA and Policy

The need for the systematic evaluation of the environmental, economic, social, and other implications of policy options as identified in the Brundtland Report and the National Task Force on Environment and Economy has led to a contract with the **Rawson** Academy of Aquatic Science to review EIA and government policies in Canada. The pilot study commissioned by CEARC in January 1988 was made up of three parts:

the development of five retrospective case studies on the integration of environmental considerations into government policy;

an overview paper on the implications of these case studies for the integrated assessment of policy; and

a workshop of senior government officials to identify and recommend priority areas for further analysis.

A great deal was learned at the workshop about the adequacy and shortcomings of existing methods of assessing the environmental impact of policies and the ways in which present institutional arrangements hampered or might be used to achieve better environmental awareness and performance.

A report on this **initial** phase of the research will be prepared by the end of 1988 and will include the workshop conclusions, background paper and case studies.

EIA and Sustainable Development

CEARC undertook a study of the relationship between sustainable development and environmental assessment, planning, and management. Regional workshops to address this subject were held in Vancouver and Montreal. A background discussion paper was prepared by Julia Gardner of Westwater Research Centre, University of British Columbia, for use at the two regional workshops to discuss how EIA might be directed in the context of emerging ideas on sustainable development. This included an analysis of the concept and principles for sustainable development and their relationship to current approaches in environmental assessment and management. Commentaries were commissioned from Peter Boothroyd, Brian Clark, Susan Holtz, Ron Jakimchuk, Jeffrey **MacNealy**, William Rees, and Henry Regier to amplify the perspectives contained in the background paper. In addition, an historical review of sustainable development was commissioned from Christian de Laet to support these analyses.

The next step identified by the Council for bringing the concept of sustainable development into the planning and **decision-making** process is to set up demonstration projects and to document case examples of sustainable development. CEARC has identified a need to take its recommendations to the community level. CEARC is supporting a project in Clyde River, Baffin Island, North West Territories to develop a resource management plan for the **bowhead** whale in conjunction with the World Wildlife Fund and the native community there. **CEARC's** role is to support an environmental assessment of the various options for conservation.

EIA and Economy

The EIA and Economy project is intended primarily to investigate the role of EIA and related processes in supporting sustainable development. This will be achieved through gaining a better understanding of environment-economy interdependencies.

The starting point for the investigation is the economic "causes" of environmental and resource deterioration, particularly the widely held view that conservation expenditures represent costs rather than productive investments. A review of the treatment of environmental problems in the economics literature will be followed by an international workshop designed to bring together experts to develop ways and means to achieve sustainable development.

Peter Stokoe of Dalhousie University's School for Resource and Environmental Studies has been contracted to prepare a background report on the complementary aspects of environmental and economic assessments and the opportunities for integrating environmental and economic assessment. The report, which is under review, completes Phase I of the project. Phase II involves an international workshop that will be held in Vancouver in November 1988. The workshop is to review the background report and related work, especially as they bear on the relationship of analytical and arbitrational approaches to assessment of development.

Demonstration Projects

One of the more challenging roles for Council is to provide a link between research and practice. CEARC has initiated projects during this past year to support a transfer of technology from the research community to the assessment practitioners. **As** well, Council is in the process of developing test cases for the ideas and approaches set out in their earlier research and publications.

A workshop was held in Cornerbrook, Newfoundland in February 1988 to discuss integrated resource planning (IRP) with the federal Department of Fisheries & Oceans (DFO) and senior executives of the government agencies in Newfoundland responsible for environment, forestry, parks/recreation, industrial development, and transportation. This initiative was designed to develop and test a process to resolve conflicting resource use in a mock negotiation process.

The workshop, organized by LeDrew Environmental Management Ltd. of St. John's, Nfld, on behalf of CEARC and DFO, asked participants to address resource conflicts as "negotiators" in a watershed where a number of potential conflicts in resource management and exploitation could occur. Participants also provided an evaluation of the process and recommendations for future actions to be undertaken by the province of Newfoundland for integrated resource planning.

A meeting to discuss a cooperative demonstration project of cumulative effects assessment (CEA) in the context of the loss of prairie wetlands was held with representatives of Canadian and U.S. agencies in Fort Collins, Colorado in March 1987. CEARC is proceeding to develop a proposal with their U.S. counterparts for a demonstration of CEA for support under the North American Waterfowl Management Plan.

The Clyde River project (described under "EIA and Sustainable Development" above) has provided CEARC with an opportunity to test the feasibility of integrating principles of EIA and Sustainable Development with the development of a community-level resource management plan for the **bowhead** whale in Isabella Bay, Baffin Island, N.W.T. In cooperation with the native community, DFO and the World Wildlife Fund, CEARC is developing ways to draw upon traditional ecological knowledge of the **bowhead** whale behaviour and habitat, known to the residents of the local community. The information will be used to develop a plan to manage this resource which will allow economic development opportunities in the community of Clyde River.

Graduate Student Research Program

The Graduate Student Research Program was initiated in 1985 to **catalyze** interest in EIA at the graduate research level. Research contracts are awarded to graduate students to undertake EIA research according to **CEARC's** priorities. To date, 46 graduate

research contracts have been awarded since the program began. In fiscal year 1987-88, 10 students were selected from the 39 nominations submitted by universities across Canada. The 35 projects that have been funded by CEARC since its inception, and received are listed in Appendix 3.

From the proposals received to date, there appears to be considerable interest in cumulative effects assessment. The impacts of interrelated activities and overlapping impacts of numerous smaller projects have been the subject of a number of the graduate student contracts. The interest of graduate students in addressing the impacts of smaller projects at the local level has to a certain extent, filled a gap in EIA research.

Selected reports from graduate student research supported by these contracts will be published in the coming year.

CEARC'S Recommendations on **EARP** Reform

Council prepared a report to FEARO to present a **research-**oriented perspective on the proposed changes to the Environmental Assessment and Review Process (EARP). In preparing this document, CEARC reviewed the results of the first four years of its research activities. The report submitted to FEARO developed two main themes: the importance of having a coherent research program to support the application of EARP; and how research initiated by CEARC can improve the effectiveness of both the technical and administrative components of the process.

Specific recommendations requested that:

a broader definition of "environment" be adopted in EARP to include social, health, economic, and cultural factors;

EARP be extended to cover all private and public sector projects, programs and policies that create significant environmental, health, social, and cultural impacts:

all federal processes including federal initiatives, federal funding, federal lands, crown corporations, foreign aid, regulatory agencies and areas of federal responsibility be included.

there be a more direct link between the federal Department of Environment and Cabinet decision-making so that all government programs and policies support the goal of sustainable development.

APPENDIX 1: CEARC Membership

Members who completed their term on Council in March 1987:

Gerry Glazier
The Nature Conservancy of Canada
Toronto, Ontario

Andrew Hamilton
International Joint Commission
Ottawa, Ontario

Arthur Hanson
Institute for Resource
and Environmental Studies
Dalhousie University
Halifax, Nova Scotia

Members who completed their term on Council as of March 1988:

Audrey Armour
Faculty of Environmental Studies
York University
North York, Ontario

Raymond Brouzes
Environmental Affairs
Alcan Aluminum Ltd.
Montreal, Quebec

André Marsan
A. Marsan and Associates
Montreal, Quebec

Jon O'Riordan
B.C. Ministry of Environment
Victoria, B.C.

Grace Patterson
Ontario Environmental Assessment Board
Toronto, Ontario

Nicholas W. Poushinsky
Ministry of Health
Government of Manitoba
Winnipeg, Manitoba

Members appointed to Council in January 1987:

Gordon Baskerville
University of New Brunswick
Fredericton, New Brunswick

Robert K. Bell
Norplan Consultants
La Ronge, Saskatchewan;

Katherine Davies
Dept. Public Health, City of Toronto
Toronto, Ontario;

Richard Hoos
Environmental & Socio-economic Services
Amoco-Dome Petroleum
Calgary, Alberta;

Members appointed to Council in January 1988:

Charles Ferguson
Environmental Affairs
Inco Limited
Toronto, Ontario;

Susan Holtz
Ecology Action Centre
Halifax, Nova Scotia:

Robert Walker
Saskatchewan Environment and Public Safety
Regina, Saskatchewan;

Peter Boothroyd
School of Community & Regional Planning
University of British Columbia
Vancouver, B.C.

Louise Roy
Environmental Public Interest Groups
Montreal, Quebec

APPENDIX 2: PUBLICATIONS

CANADIAN ENVIRONMENTAL ASSESSMENT RESEARCH COUNCIL

Research Prospectus

1. Social Impact Assessment: A Research Prospectus 1985, 16 p.
2. Philosophy and Themes for Research 1986, 14 p.
3. The Assessment of Cumulative Effects: A Research Prospectus, 1988, 14 p.
4. Evaluating Environmental Impact Assessment: An Action Prospectus, 1988, 10 p.
5. Mitigation and Compensation Issues in the Environmental Assessment Process: A Research Prospectus, 1988, 7 p.

Background Papers

6. Proceedings of the Workshop on Cumulative Environmental Effects: A Binational Perspective, 1986, 175 p.
7. Risk Management and EIA: Research Needs and Opportunities, 1986, 18 p.
8. Learning from Experience: A State-of-the-Art Review and Evaluation of Environmental Impact Assessment Audits, 1986, 48 p.
9. Selected Mathematical Models in Environmental Assessment in Canada, **Michel** de Broissia, 1986, 34 p.
10. Funding of Environmental Impact Assessment Research in Canada, Acres International Limited, 1986, 40 p.
11. A Framework for Effective Monitoring, Natalia **M. Krawetz**, William R. MacDonald and Peter Nichols, 1987, 92 p.
12. Cumulative Effects Assessment: A Context for Further Research and Development, 1987, 91 p.
13. Cumulative Effects Assessment in Canada: An Agenda for Action and Research, 1987, 63 p.
14. The Place of Negotiation in Environmental Assessment, 1989, 87 p.

Information Brochures

15. Canadian Environmental Assessment Research Council, Brochure.

APPENDIX 3 - GRADUATE STUDENT REPORTS

Anestis, Ioannis. Avoidance-Preference Reactions of Rainbow Trout After Prolonged Exposure to Chromium (VI). McGill University, 1986.

Brown, Gordon L. The Effects of Air Pollution on Forests. University of British Columbia, 1986.

Brown, Gordon L. Assessment of the Impact of Ozone Air Pollution on Agricultural Resources of the Fraser Valley, B.C.: Sources of Uncertainty and Risk Assessment Methodology. University of British Columbia, 1987.

Bush, Maureen. Public Participation in Resource Development After Project Approval. University of Calgary, 1987.

Cooper, Judith. Public Participation in the Environmental Assessment and Review Process: The Role of Intervenor Funding. University of British Columbia, 1988.

Gignac, Dennis L. Ecological Tolerances and Niche Structure of Sphagnum along Climate and Pollution Gradients. University of Alberta, 1986.

Hagen, Michael E. Water-Log Handling Impacts on Estuarine Environments: An analysis of the Campbell River Estuary, British Columbia. Simon Fraser University, 1987.

Hundert, Eric. Social Impact Analysis of a Forest Management Program. Dalhousie University, 1987.

Leduc, Catherine. L'impact du drainage souterrain sur la morphologie des cours d'eau: Approche méthodologique d'un problème d'érosion du sol en milieu agricole. Université de Montreal, 1986.

Lucas, Bradley. Shifting the Traditional Framework: Socio-economic Impact Analysis and Toronto's New Stadium. Queen's University, 1987.

Nakashima, Douglas. Native Ecological Knowledge and Environmental Assessment. McGill University, 1988.

Norton, Mervyn. Assessing the Impact Assessment Process of the Ontario Waste Management Corporation. York University, 1986.

O'Fallon, Carolyn E. Biophysical Regulation of the British Columbia Coal Industry: The Kaiser Experience. Simon Fraser University, 1987.

Ouzilleau, François. Prototype d'un **système** expert d'aide à la réalisation d'évaluation des impacts environnementaux. Université Laval, 1988.

Palidwor, Richard. From Air Pollution to Acid Rain: Dilution and the Myth of "Away". York University, 1987.

Phaneuf, Yves. Processus d'EIE et prise de Decision. Université de Montreal, 1986.

Pope, Elizabeth. Using Environmental Impact Assessment to Evaluate Forest Land Use Alternatives in British Columbia. Simon Fraser University, 1986.

Petticrew, Ellen. The Prediction of Sedimentation Patterns in the Littoral Zones of Lakes Supporting Macrophyte Growth. McGill University, 1986.

Reed, Maureen G. Environmental Assessment and Aboriginal Claims: Implementation of the Inuvialuit Final Agreement. University of Toronto, 1987.

Reed, Maureen G. Native Involvement in Environmental Impact Assessment: A Comparison of Institutional Approaches." University of Toronto, 1988.

Riek, Christine. Understanding Uncertainty in Cost-Benefit Analysis and Impact Assessment. University of British Columbia, 1987.

Rochon, Yves. Adaptation de la **méthode** des graphes cognitifs pour l'évaluation de l'utilité de l'information: Le cas des études des **incidences** environnementales. Université de Quebec, 1987.

Shaffer, Francois. Processus de surveillance de l'environnement aquatique de la **Ville** de Sherbrooke. Université de Sherbrooke, 1988.

Shapcott, Catherine. Environmental Impact Assessment and Resource Management: Learning from the Process and Practice of Native People. York University, 1987.

Skinner, Walter, R. Vegetational Responses to Natural and Anthropogenic Change in the St. Clair River Delta. University of Windsor, 1986.

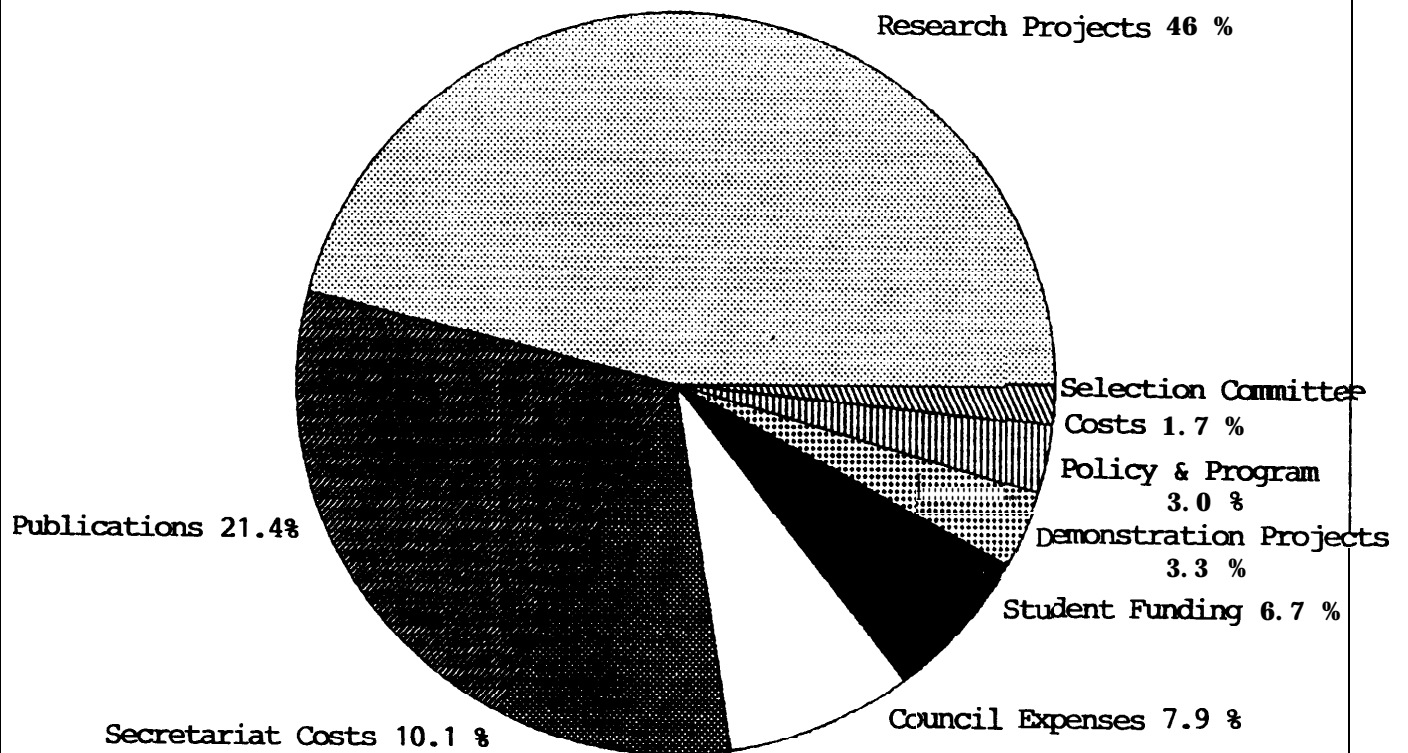
Swerdfager, Trevor M. The Effects of Native Land Claims on Public Participation in Environmental Impact Assessment in the Canadian North. University of Ottawa, 1988.

Weston, Sandra. The Canadian Federal Environmental Assessment and Review Process: An analysis of the Initial Assessment Phase. York University. 1988.

Yap, Nonita T. Risk Reduction and Integrated Risk Management: Learning from the Process and Practice of Native People. Dalhousie University, 1987.

CEARC Expenditures

1987-1988



Total Expenditures: 405,600.00