

ENVIRONMENTAL IMPACT ASSESSMENT:
EFFECTS ON CORPORATE MEGA-PROJECT PLANNING

by

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ABSTRACT

Environmental impact assessment (EIA) is intended to be a means of increasing the level of consideration of environmental factors in planning and decision-making. The ultimate objective of EIA is to prevent needless harmful environmental change resulting from human development activity. EIA, therefore, is a government review process aimed at development proposals from both the public and the private sectors. This study examines how the existence of EIA requirements has affected project planning by private corporations involved in large-scale resource developments.

Two current resource developments in Canada are the Beaufort Sea Hydrocarbon Development and the Northeast Coal Development. The EIA processes being applied to these developments are, respectively, the federal Environmental Assessment and Review Process (EARP) and the British Columbia Coal Guidelines Review Process (CGRP). While the proponents of the two developments are given the responsibility for providing the information upon which the EIA's are based, they must also bear a large proportion of the costs of the EIA processes.

The EIA requirements had limited positive and negative effects on the proponents' project planning. The proponents of the Beaufort development feel that the public review phase of EARP has not contributed substantially to the quality of their project planning and design. This they attribute to their normal high standards for planning and design work, and also to the considerable overlap and duplication in the existing environmental regulatory regime. The main benefits of EARP were

characterized as community-relations and corporate image benefits. The EIA stage of the CGRP did lead to a small number of changes being made to project designs and plans. However, these could not be attributed solely to the EIA, as they may have been made to facilitate negotiation of statutory permits and approvals in the post-EIA stage.

Neither development has been delayed by the EIA requirements. The strong government support for the Northeast Coal Development was demonstrated by Victoria's decision to allow construction to proceed before EIA approval was granted. This was necessary to meet tight project deadlines. EARP has not delayed the Beaufort development because, to date, insufficient reserves of oil have been proved for the proposal to be commercially viable.

Because EIA is not treated in isolation from the proponents' project planning, only rough estimates of the additional costs of EIA were available. While these costs were estimated in the millions of dollars, they represent only a small proportion of overall development costs. It was not possible to determine whether more efficient reviews could have reduced these costs. Comparison of the public and private benefits of the EIA processes was not attempted due to difficulties in identifying and quantifying those benefits.

The two EIA processes did not appear to be an integral part of the proponents' project planning processes. EARP and the CGRP are designed to meet the governments' decision-making requirements, as opposed to industry's planning requirements. They are not, therefore, structured such that they contribute

directly to industry's environmental planning needs. In fact, the degree of integration of EIA into the proponents' planning process does not necessarily reflect their level of consideration of environmental factors. The proponents' normal project planning practices appear to address the same concerns that EIA is intended to address, partly due to corporate policy and partly to meet the requirements of other government regulation.

Despite this, EIA is a necessary component of the present project review and regulatory process. EIA processes provide information for government decision-making, and are important means by which the government and the public attempt to ensure that industry adequately considers environmental factors in project planning. However, steps should be taken by government to integrate EIA and environmental regulation into an ongoing process of impact management, operating through all stages of resource development.

TABLE OF CONTENTS

ABSTRACT	ii
LIST OF TABLES	vii
LIST OF FIGURES	viii
ACKNOWLEDGEMENTS	ix
CHAPTER 1 - ENVIRONMENTAL IMPACT ASSESSMENT	
AND CORPORATE PLANNING	1
1.1 - Research Focus	1
1.2 - Research Objectives	1
1.3 - EIA, Project Planning and Decision-Making: Theoretical Relationships	2
1.4 - EIA, Project Planning and Industry	6
1.5 - Methods	10
CHAPTER 2 - THE FEDERAL AND BRITISH COLUMBIA	
EIA PROCESSES	12
2.1 - The British Columbia Environment and Land Use Committee's Guidelines for Coal Development	12
2.1.1 - The Coal Guidelines in Theory	13
2.1.2 - The Coal Guidelines: Perceived Problems	20
2.1.3 - The Coal Guidelines: Summary	22
2.2 - The Federal Environmental Assessment and Review Process	24
2.2.1 - EARP in Theory	24
2.2.2 - EARP: Perceived Problems	30
2.2.3 - EARP: Summary	36
2.3 - Summary	37
CHAPTER 3 - TWO NORTHERN MEGA-PROJECTS	
3.1 - The Beaufort Sea Hydrocarbon Production Proposal	40
3.2 - The Northeast Coal Development	52
3.3 - Summary	61
CHAPTER 4 - INDUSTRY AND ENVIRONMENTAL IMPACT ASSESSMENT ...	
4.1 - Introduction	63
4.1.1 - Why Should Industry Use EIA?	63
4.1.2 - How Should Industry Respond?	66
4.2 - Industry's Responses to Environmental Issues	69
4.2.1 - Dome, Esso and Gulf	69
4.2.2 - Denison and Teck	72
4.2.3 - Summary	75
4.3 - Dome, Esso, Gulf and the Beaufort Sea EARP	77
4.3.1 - Effects of EARP: Project Delays	79
4.3.2 - Effects of EARP: Additional Costs	85
4.3.3 - Effects of EARP: Benefits	88
4.3.4 - Integration of EARP into Project Planning	90

4.3.5 - EARP: Problem Areas and Possible Improvements	93
4.3.5.1 - The Need for EARP	93
4.3.5.2 - The "One-Shot" Approach to Impact Assessment	95
4.3.5.3 - EIS Guidelines	98
4.3.5.4 - Panel Independence	101
4.3.6 - Summary	103
4.4 - Denison, Teck and the Coal Guidelines Review Process	106
4.4.1 - Delays due to the CGRP	106
4.4.2 - Additional Costs due to the CGRP	113
4.4.3 - Benefits from the CGRP	115
4.4.4 - Integration of the CGRP into Project Planning	116
4.4.5 - CGRP: Problem Areas and Possible Improvements	120
4.4.5.1 - The "One-Shot" Approach to EIA	120
4.4.5.2 - Inexperienced Government Reviewers	121
4.4.6 - Summary	125
4.5 - Chapter Summary	127
CHAPTER 5 - OVERVIEW AND IMPROVEMENTS	131
5.1 - Effects of EIA on Private-Sector Project Planning	131
5.2 - Problems in the Present System	132
5.3 - An Improved Arrangement	134
REFERENCES	141

LIST OF TABLES

<u>Table</u>	<u>Page</u>
3.1 - Key Government Approvals for Beaufort Development	46
3.2 - Provincial Legislation Applicable to Coal Developments in British Columbia	57
4.1 - Beaufort Sea EARP Chronology of Events	81
4.2 - Chronology of Bullmoose Project Review	108
4.4 - Chronology of Quintette Project Review	110

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
2.1 - Schematic Diagram of the Coal Guidelines Review Process	15
2.2 - Coal Development Assessment Procedure	19
2.3 - Schematic Diagram of the Federal Environmental Assessment and Review Process	27
3.1 - Location of the Beaufort Sea Hydrocarbon Development	41
3.2 - Location of the Northeast Coal Development	53
4.1 - Beaufort Sea Proponents' EIS Management Structure	78

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CHAPTER 1 - ENVIRONMENTAL IMPACT ASSESSMENT AND CORPORATE PLANNING

1.1 - Research Focus

The purpose of this study is to determine if, and how, the existence of environmental impact assessment (EIA) requirements has affected project planning by private corporations involved in large-scale resource development projects. The study focusses on two northern mega-projects: the Beaufort Sea Hydrocarbon Development in the western Arctic; and the Northeast Coal Development in northeastern British Columbia.

1.2 - Research Objectives

The specific objectives of this study are:

- to identify the goals and objectives for EIA in the planning and decision-making process.
- to describe the nature and role of EIA in planning and decision-making for two mega-projects.
- to document the effects of existing EIA requirements on the proponents' planning for these mega-projects, and industry's attitudes towards EIA.
- to evaluate industry's use of EIA, based upon criteria required for EIA to be effective.
- to identify problems posed by EIA, as well as means of improving the cost-effectiveness of EIA while maintaining or improving its efficacy.

1.3 - EIA, Project Planning And Decision-making: Theoretical Relationships

EIA is a generic term for a process "designed to identify the environmental effects of a proposed action and predict their magnitude, to interpret and evaluate these consequences in terms of social significance and to communicate those findings to relevant decision-makers" (Rees, 1976:52). Armour (1977) identified two "fundamental purposes of EIA:"

- 1 To assist in making a decision about whether or not to proceed with a proposed course of action and how to proceed, so as

- 2 To prevent or minimize adverse environmental change (p. 10).

The origins of EIA lie in the environmental issues of the late 1960's. At that time public attention was focussed on perceived environmental crises caused by human activities - most notably, the highly visible pollution caused by a rash of coastal oil spills. A new ecological awareness led to demands that the impact of human development activities on the natural environment be considered in the decision-making process (Schindler, 1976). But this public demand was only one factor behind the introduction of EIA. O'Riordan and Sewell (1981) identified four factors: the growing scale and impact of resource developments; poor coordination among regulatory agencies; the failure to consider environmental and social factors in project appraisal; and increased public awareness and protest.

The first institutional response to these pressures occurred in the United States, in the form of the National Environmental Policy Act (NEPA) of 1969 (signed into law January

1, 1970). As resource project assessments historically considered only legality, technical feasibility and economic feasibility (Sewell, 1981), NEPA broke new ground, placing "environmental concerns on a par with technologic and economic considerations" (Ditton, 1973). The Canadian response came almost four years later, when the federal Environmental Assessment and Review Process (EARP) was created by a cabinet directive on December 20, 1973 (Canada. Federal Environmental Assessment Review Office, 1979). In British Columbia, the Environment and Land Use Act of 1971 had established a cabinet committee, the Environment and Land Use Committee (ELUC), to ensure that environmental factors were considered in the development approval process (O'Riordan, 1981). Subsequently, a review process for coal developments in British Columbia was created in the 1976 "Guidelines for Coal Development" (British Columbia. ELUC, 1976).

It is of note that both the federal and the British Columbian reviews are administrative review processes, in contrast to the American legislation. This reflects the hesitancy of Canadian officials to implement an EIA process which, it was feared, would lead to litigation which would tie many proposals up in lengthy, expensive court cases, and reduce the ability of the EIA process to be adapted to meet changing review requirements (Rees, 1979b).

As EIA requirements were established in various jurisdictions, differing views of the relationship between EIA, project planning and decision-making became apparent. Andrews (1973) distinguished three views. First, some view EIA as simply

a new "approval" to be obtained - otherwise unrelated to the planning and decision-making process. Here, EIA consists solely of producing, and receiving approval for, a document - the environmental impact statement (EIS).

A second view articulated by Andrews is that of EIA as a supplementary source of information for planning and decision-making. As mentioned above, project appraisals historically had considered only legality and technical and economic feasibility. Here (the problem having been defined as a lack of information on environmental impacts), EIA is seen as a fourth factor in the planning and decision-making process - separate from, but complementary to, the first three. This view, Andrews suggests, is that held by most federal (United States) agencies.

The third view of EIA is that of "a new thought process for predicting the consequences of alternative actions" (Andrews, 1973:198). Here, existing planning and decision-making processes are considered inadequate for taking environmental factors into account. The perceived solution is "a new concept of planning analysis" whose purpose "is to permit more informed choice ... among a range of alternative actions [including the no-action alternative]" (Andrews, 1973:198). This view shifts the emphasis "from the impact study to the impact assessment process" (Armour, 1979:45). Therefore, the process considers trade-offs between impacts, and can become more political than technical or scientific. While impact mitigation is the concern of the second view, this third view of EIA is concerned as much with the need for a proposed project as with its effects.

The relationship between EIA, planning and decision-making

is also a function of the stage in the planning process at which consideration of environmental effects begins. Most studies agree that for EIA to be effective, it must occur early in the planning and decision-making process: "...the proper time for detailed consideration of the environmental and related social aspects of new proposals is very early in their formulation, in parallel with, and integrated into, the engineering and economic assessments" (Munn, 1979:7). This condition is necessary because the basic properties of projects or programs are decided very early in the design phase (Holling, 1978).

A second, closely related, condition for effective EIA is that the EIA process must be an integral component of planning and decision-making (Munn, 1979). Gladwin and Royston state that "this is necessary because decision points, involving a balance of environmental and non-environmental factors, are scattered from the very beginning to the very end of the planning process" (1975:194). According to these authors, an integrated EIA process is also best able to cope with the evolutionary nature of project planning and design.

In the context of this study, these two conditions for effectiveness of EIA can be applied to the planning and decision-making processes of government and to those of private industry. As will be discussed further in the next section (1.4), the private sector is responsible for a substantial portion of project planning and assessment decisions. Therefore, it is important to consider these two effectiveness criteria in an analysis of their project planning processes.

A brief discussion of key terms and phrases may be useful

at this point. In this study, the phrases "planning and decision-making process" and "planning and decision-making" will often be used. Planning has been defined as providing direction - "the preparation for purposeful action" (Lang, 1977:65). Here, "planning" (or, alternatively, "project planning") will be used to denote the process of developing a proposed action (a resource development project) from the conceptual stage to the point of implementation.

The planning process can, of course, also be visualized as a series of decisions which eventually results in the selection of an appropriate action (that is, the final project design). These decisions are made by industry and by government. In this study, there are two key decision points. One is the decision to submit a proposal to a detailed EIA, and the other is the decision-in-principle on whether or not the proposal should be allowed to be implemented. In Canada, these two key decisions are made by government, not industry (See Chapter 2). So it can be seen that decision-making is an inherent component of planning, and vice versa. Accordingly, the phrase "planning and decision-making" will be used to denote this relationship.

1.4 - EIA, Project Planning And Industry

Industry currently plays a leading role in planning for resource development. In the past, even large-scale projects had been considered "innocent until proven guilty" (Peterson et al., 1974:23). The government's role was that of the regulator - deciding whether industry's actions were of "net benefit" (usually meaning economic benefit) to society. However, as

public awareness of the environment became more sophisticated, this relationship between government and industry was questioned: "Large-scale interventions in the environment [had] begun to be viewed askance, as though perhaps they should be regarded as guilty until proven innocent" (Peterson et al., 1974:23).

One change in the approach to project planning and decision-making, associated with the introduction of EIA, was shifting "the burden of proof to the proponent of a proposal by requiring an a priori account of the environmental acceptability of the proposal..." (Armour, 1977:9). The effect of this philosophical shift is clear: the project proponent (which could be a private company or a government department or agency) must now prove in advance that the proposed action should be allowed to proceed; instead of the government, as regulator, proving that the proposal should not proceed.

This subtle but important shift has had another significant consequence. Shifting the burden of proof to the proponent has also placed much of the planning and decision-making responsibility into the proponent's hands. This is reinforced, to an extent, by the "polluter pays" principle which underlies most environmental regulation theory. Broadly stated, this principle requires that the proponent (or the "polluter") must pay the costs of any impact-mitigation measures deemed necessary by government. Therefore, as the polluter foots the bill for pollution abatement equipment, so must the resource development proponent foot the bill for EIA.

As a consequence, the proponents of the projects being

examined in this study must underwrite certain costs of applying the relevant EIA process. However, the proponents are also given the responsibility for preparing the EIS, typically under guidelines set by government. The EIS is the "main instrument of EIA" (Armour, 1977:10), containing information upon which important decisions are made. Therefore, government decision-makers are relying on information gathered, interpreted and presented by the proponents of a project. It is not unduly cynical to note that the opportunity, at least, exists for the proponent to exercise some discretion over the information and interpretations presented in the EIS. And, although the EIS is reviewed for deficiencies, the ability of time- and budget-constrained government personnel to submit the EIS to a detailed, comprehensive, review of data and interpretations is limited (Livingston, 1981).

As a result, it must be acknowledged that a large proportion of project planning and decision-making occurs hidden from government's view. The ultimate effect of this is not clear, but the important point is that industry plays a powerful role in determining the effectiveness of an EIA process and, consequently, in determining the final impact of resource development on the environment.

Industry's power can be magnified when government policies and programs are not sufficiently sophisticated to deal with the added pressures of new resource development initiatives. For example, in the territories, "...there has been no significant effort to integrate these policy areas [of environmental protection and northern economic development] to guide decision-

making in specific circumstances or in particular development regions" (Rees, 1981a:369). Indeed, the passive role of government in the north is exemplified by the Guidelines for the Beaufort Sea EIS, which ask industry to assume the responsibility of northern development planners, by describing proposed northern development patterns for the next 20 years (Canada. Beaufort Sea Environmental Assessment Panel, 1982a). In such a situation, the discretion (and therefore the power) of industry is increased, as government agencies have no clear indication of government policies and priorities against which to evaluate predicted effects of resource developments.

This suggests, then, that if we hope to realize both resource development (and the associated economic benefits) and wise use of the natural environment, we really could end up depending on the efforts and abilities of industry for both. The way industry views EIA becomes critically important. If the private sector views EIA merely as another necessary approval, and uses only the minimum effort required, the potential effectiveness of EIA at protecting the environment could be reduced. On the other hand, industry may do more than necessary to receive government approval. The obvious question then is, "Why should they?"

For these reasons, this study attempts to document industry's perceptions of the EIA requirements for two key projects, and to determine how and why each company responds to those requirements. Clarifying and understanding the relationship between industry and EIA will allow government policy-makers to refine existing EIA processes in a manner which

is sensitive to the needs and constraints of both industry and society.

1.5 - Methods

Background information on EIA and the two case studies examined in this study was obtained from a review of relevant literature and from interviews and correspondence with persons involved. The information on the effects of EIA on project planning was gathered through interviews and correspondence with industry and government representatives. The respondents were given the opportunity to review an early draft of this study, to ensure that the information they supplied had been presented accurately.

The subjective nature of much of the analysis contained in this study should be recognized in advance. Respondents were generally unable to provide written documentation to support the information they supplied. In some instances, respondents were unwilling to talk "on the record," as they felt it could adversely affect their present or future dealings with government. As a result, one should not accept the information supplied by the respondents as being totally objective. This is not a major concern, however, as the perceived effects of EIA are arguably as important as the actual effects, if indeed there is any difference.

On first reading, this study may appear to be biased toward what some would consider "industry's position." In part, this is because the study attempts to present how the private sector views and uses EIA. Therefore, the primary emphasis is on the

information provided by industry. This information is examined in the broader context of the governments' roles and interests, and those of the public, but those perspectives were not given equal emphasis. For example, while it was recognized that EIA is beneficial to government decision-making and to the public goal of environmental protection, no attempt was made to quantify those benefits for comparison against the costs EIA imposes on industry. This study emphasizes industry's viewpoint, but it is not knowingly biased toward that perspective.

CHAPTER 2 - THE FEDERAL AND BRITISH COLUMBIA EIA PROCESSES

As discussed in the first chapter, Canadian jurisdictions began to implement EIA requirements in project reviews in the early and mid-1970's. The federal EARP, established in 1973, and the British Columbia Environment and Land Use Committee's "Guidelines for Coal Development," issued in 1976, are similar in several ways. Both review processes are coordinated by specially-designated lead agencies; both require the preparation of an EIS; in both processes public involvement is discretionary; and both are based on administrative policy rather than specific EIA legislation (Couch, 1982). However, there are important differences as well.

2.1 - The British Columbia Environment And Land Use Committee's Guidelines For Coal Development

The British Columbia Environment and Land Use Act of 1971 (RSBC 1979, c.110) established the Environment and Land Use Committee (ELUC), a committee consisting of provincial Ministers "representing a range of resource concerns encompassing development, the provision of social services, and the protection of the natural environment" (O'Riordan, 1981:95). The Act gave ELUC the power to "ensure that all aspects of preservation and maintenance of the natural environment are fully considered in the administration of land use and resource development commensurate with a maximum beneficial land use, and minimize and prevent waste of such resources, and despoilation of the environment occasioned thereby" (s.3(b)).

The Committee, chaired by the Minister of the Environment,

is said to be a unique institutional arrangement in Canada; resulting in a "less adversarial forum for decision-making" (O'Riordan, 1981:95). One of ELUC's important functions has been the preparation of guidelines for project assessments. In 1976, ELUC's Guidelines for Coal Development were issued, pursuant to the Environment and Land Use Act, "to ensure that a rational approach to managing land use, environmental and community impacts is undertaken prior to final decisions on coal and related developments being made" (British Columbia ELUC, 1976:3).

2.1.1 - The Coal Guidelines in Theory

The Coal Guidelines represent an attempt to reconcile industry's project planning needs with the government's responsibility to determine that coal developments will be of benefit to the province: "The Guidelines set forth procedures for developers to coordinate their project planning with a staged, streamlined assessment of the environmental, social and economic impacts of a proposed project, which may ultimately lead to fulfilling regulatory requirements under existing statutes" (Couch, 1982:11). The review process is administered by the BC Ministry of Energy, Mines and Petroleum Resources (British Columbia Ministry of Industry and Small Business Development,¹ n.d.a), and coordinated by the Coal Guidelines Steering Committee (comprised of representatives of key government ministries) (BC ELUC, 1976).

The Guidelines detail an assessment process which

¹Cited hereafter as "BC MISBD."

"systematically moves from a general overview of the project to more specific impact assessments and management proposals" (BC ELUC, 1976:4). The Guidelines are not solely "an EIA process": they are a process which incorporates impact assessment as one step in taking a coal mine proposal from the conceptual stage to production. The process is initiated when the developer submits a prospectus, which outlines the proposed exploration and mining programs (See Figure 2.1). The purpose of this prospectus is to bring the project proposal to the government's attention "as early as possible in the developer's planning process to give Government agencies maximum lead time" to review and augment available data (BC ELUC, 1976:6). After the prospectus is reviewed by government agencies, the developer is informed if further study is required before the project may proceed (Couch, 1982). Screening criteria for this decision include the scale of the project, significance and complexity of potential environmental and social impacts, and the degree of "public interest" (O'Riordan, 1981).

After review of the prospectus, the process moves into Stage I - the preliminary assessment. This preliminary assessment contains six main components (BC ELUC, 1976). First, it outlines the proposed development program - full descriptions of on-site and off-site developments and scheduling of the project's phases. A description of existing natural, social and economic conditions is compiled from existing information. As this should point out information deficiencies, the Stage I report also includes proposed means of obtaining the required information, derived through consultation with the appropriate

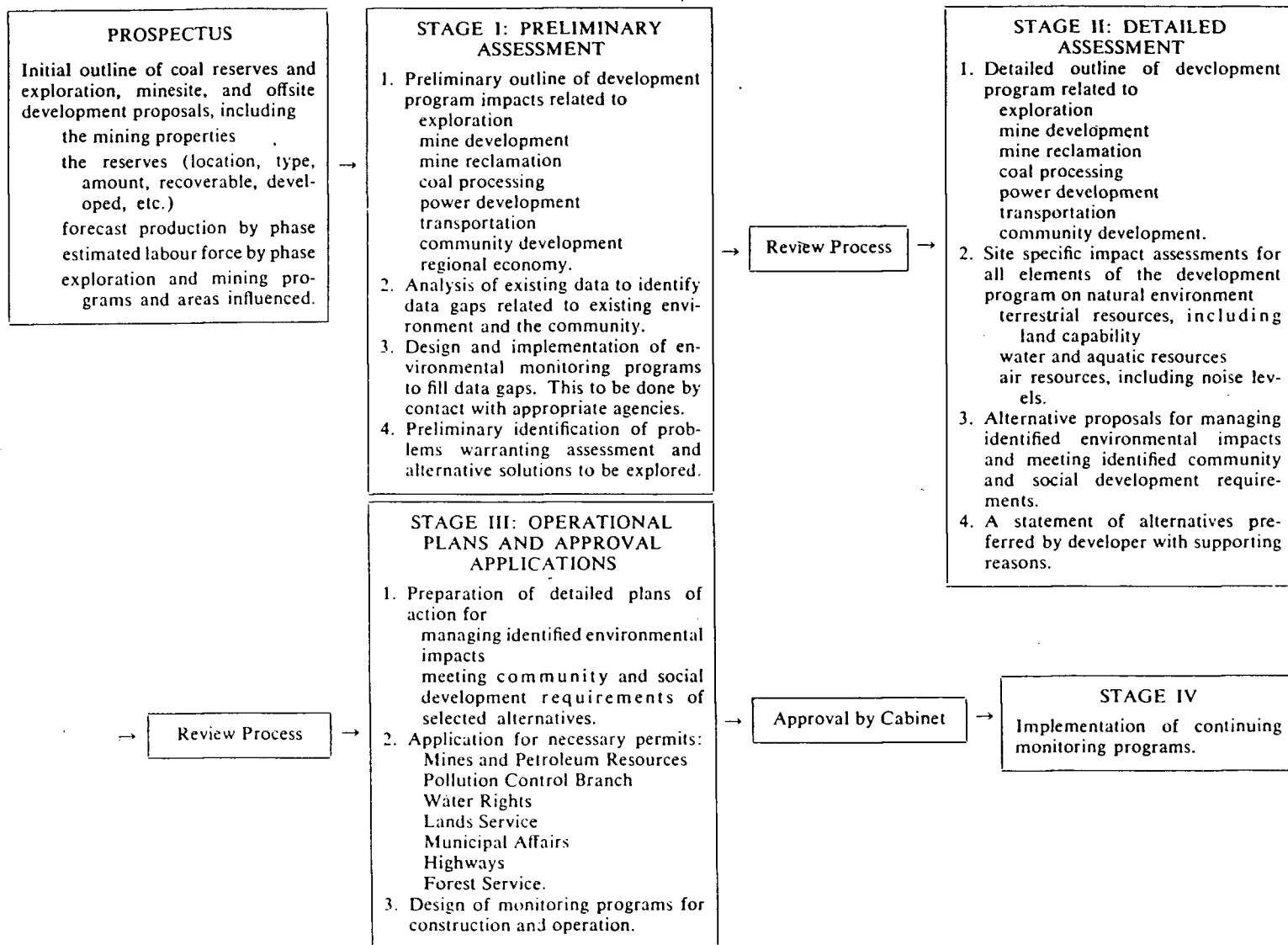


FIGURE 2.1 - Schematic Diagram of the Coal Guidelines Review Process (Taken from: BC ELUC, 1976:5).

agencies. A fourth component of the preliminary assessment is a documentation of major conflicts foreseen between the development and the environment. The developer also provides an economic evaluation of the development, including a preliminary cost-benefit analysis. Finally, the report identifies and examines alternatives for mitigating or avoiding adverse environmental and social impacts, or enhancing existing conditions, and the developer proposes preferred means of managing the effects of the development.

The Stage I report is submitted by the developer to the Ministry of Energy, Mines and Petroleum Resources, and is reviewed by the Steering Committee for compliance with the Guideline requirements. The report is then circulated for review by line agencies and ministries, and the Steering Committee passes on their comments to the developer. Acceptance of the Stage I report indicates that the developer may initiate Stage II studies -- it does not represent approval-in-principle for the development (BC ELUC, 1976).

The Stage II report covers the same general components as the Stage I report, but in much greater detail. The Stage II components are: "detailing of the development program outlined in Stage I; site specific analyses of impacts of the natural environment related to both the minesite and offsite aspects of the development program; analyses of alternative proposals for mitigating identified impacts of the biophysical environment using benefit-cost analysis; the cost-effectiveness of alternative proposals for mitigating or compensating for identified impacts of the biophysical environment;

identification of alternative means of meeting identified community and social requirements; [and] statements of the preferred approach for each aspect of the development" (BC ELUC, 1976:8).

The Guidelines place great emphasis on quantitative economic analysis in Stage II: "Where possible, benefit-cost analyses should be used to compare alternatives designed to mitigate impacts or plan developments in a rational way" (BC ELUC, 1976:8). However, the problems for benefit-cost analysis posed by "intangible" resources are recognized: the Guidelines advise developers to use their judgement (supplemented by advice from the Steering Committee) in identifying significant impacts. The developer is asked to assess, plan for, and make trade-offs among economic, environmental and social concerns, "to produce a balance that maximizes net social well-being in the region of development and to the Province" (BC ELUC, 1976:8).

The completed Stage II report is reviewed in detail in the same manner as the Stage I report. If, after government review, the Stage II report is accepted by ELUC, this represents approval-in-principle for the social and environmental aspects of the mine development. This, in essence, is the end of the impact assessment component of the Guidelines' project planning process.

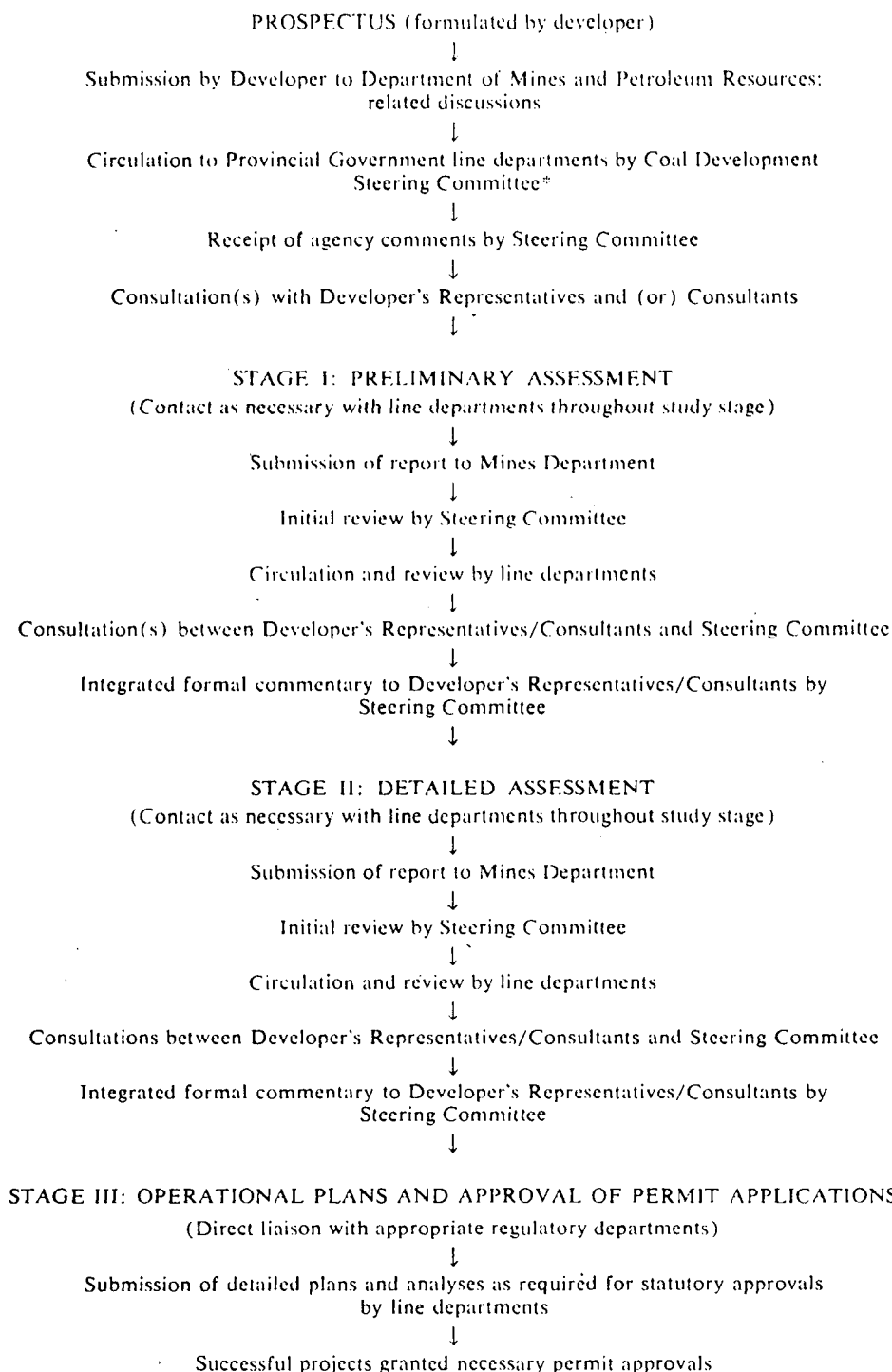
However, before the development can proceed, the necessary permits and approvals required under provincial statutes must be obtained. This represents Stage III in the Guidelines process. In this Stage, the developer obtains pollution control permits, land use permits, water licences, forestry approvals, approval

of the operating and reclamation plans, and a production lease (BC ELUC, 1976). It is at this time that the advantages of this integrated review process become apparent: the Stage I and II requirements "ensure that the appropriate assessments and studies required for project evaluation, awarding of various licences, permits and approvals are systematically undertaken" (BC ELUC, 1976:10). O'Riordan (1981) states that this represents "a more coordinated approach to final project approval" than had previously existed in the province (p.114).

Stage IV of the Guidelines is the project implementation phase. After the required permits, licences and approvals have been granted, the project may proceed through construction to production. During construction the project is monitored to ensure compliance with the terms and conditions of the permits and licences. Once operational, activities associated with the development are monitored through normal government practices (BC ELUC, 1976).

The Guidelines are a process for planning for coal development. Their emphasis is on the orderly progression of a proposal through the steps of project appraisals and approvals. The Guidelines identify the requirements developers will encounter, and recommend ways of dealing with those requirements. The Guidelines also attempt to facilitate the developers' project scheduling (See Figure 2.2). For example, developers are advised that government review of their Stage I submission will require "between one and two months"; and at Stage II, "the review will take a minimum of eight weeks" (BC ELUC, 1976:7-8).

Procedure for Processing Impact Assessments of Proposed Coal Developments



* Consists of representatives of Departments of Mines and Petroleum Resources and Economic Development and the ELUC Secretariat.

FIGURE 2.2 - Coal Development Assessment Procedure (Taken from: BC ELUC, 1976:9).

However, while the Guidelines do attempt to streamline the review and approvals process, they are not an example of the "one-window" approach to regulation. The CGSC does coordinate the reviews at Stages I and II, but Stage III regulatory approvals must be negotiated directly with each ministry or agency -- there is no single clearinghouse for all necessary permits, licences and approvals.

2.1.2 - The Coal Guidelines: Perceived Problems

Although published critical analyses of the Coal Guidelines are scarce, some important problems have been identified. First, the Guidelines emphasize the use of benefit-cost analysis as a means of comparing alternatives. This is somewhat ironic, as the key weakness of benefit-cost analysis lies in the valuation of ecological resources (Rees, 1979a). Not only is there considerable debate over valuation of those ecological resources with some direct or indirect economic value to man, such as scenic recreation areas (Coomber and Biswas, 1973); further problems are presented by what have been termed "non-resources" (Ehrenfeld, 1978) as well as estimating the values of ecological "services" (Westman, 1977). As O'Riordan and Sewell state, the failing of benefit-cost analysis is "its inability to distinguish among objectives other than that of pure economic efficiency and hence in the inflexibility of its approach when confronted with long term environmental and social consequences" (1981:13); they go on to explain that benefit-cost analysis was never meant to do so. In this light, it can be argued that the Guideline's emphasis on benefit-cost analysis is inappropriate.

However, actual reliance on benefit-cost analysis by developers may not be as great as the Guidelines would appear to recommend. For example, the Quintette Coal EIS uses qualitative descriptions of both the magnitude and the importance of the environmental effects of its proposal.

A second, more important, problem is "the lack of a clear linkage between project assessment under the guidelines and overall coal policy" (O'Riordan, 1981:115). O'Riordan explains that while the province does have a coal policy containing general environmental and social objectives, that policy does not consider the consequences of various levels of development. Because the Guidelines are applied to each development in turn (the companies involved in the Northeast Coal Development file separate assessments and applications), reviews of individual proposals cannot assess cumulative impacts in the absence of a clear policy framework. O'Riordan (1981) points out that in the Northeast, the government is conducting a regional assessment of the proposed developments in an attempt to formulate appropriate policies.

Probably the most important shortcoming of the Guidelines is the limited opportunity for public participation in the planning process (O'Riordan, 1981). The Guidelines leave decisions on whether, when, and how to involve the public in the EIA to the discretion of the developer. The Guidelines advise developers to initiate their public consultation process at the end of Stage I, when alternative plans can be discussed. However, developers are often reluctant to hold public meetings until they have firm project proposals (O'Riordan, 1981). After

completion of Stage II, the Steering Committee can recommend that ELUC hold a public hearing before the decision-in-principle is made (Couch, 1982). But, because by this time the developer has settled on a preferred alternative, it is questionable that more general development issues, including alternatives to the developer's proposal, would be considered. The public may be involved in regulatory hearings held at the ministers' discretion (O'Riordan, 1981), but again these would be narrowly focussed on specific issues related to granting the various permits, licences and approvals.

Finally, there is no specific legislative authority backing the Guidelines, a condition which is often viewed as a weakness in "administrative" EIA processes. However, as O'Riordan points out, the province can bring pressures to bear on the developer to ensure compliance: "With the broad powers under the Environment and Land Use Act,² combined with the specific regulations under other acts which set conditions for obtaining the necessary development permits, British Columbia has not needed statutory authority to make environmental assessment of major projects necessary" (1981:100).

2.1.3 - The Coal Guidelines: Summary

The Coal Guidelines represent a staged review process which explicitly attempts to integrate environmental concerns into

²The Act (RSBC 1979, c.110) gives Cabinet the power to "make orders respecting the environment, or land use, that [Cabinet] considers necessary and advisable..." (s.6). These orders are deemed to supercede powers granted under other provincial legislation (s.6).

project planning. By providing for early involvement of regulatory agencies and departments in the planning process, the Guidelines seek to streamline the project review and approvals process. While this approach to project assessment may be well suited to the needs of industry and development-oriented ministries, it is a matter of some concern that the opportunity for direct public involvement in the early stages of policy formulation and project planning is absent. Public participation is widely viewed as a prerequisite for effective and equitable EIA, particularly respecting evaluations of intangible resource uses. As public involvement in Stage II is left in the hands of the project proponents, there clearly exist some steps which should be taken to create a more acceptable EIA process from a broader planning perspective.

2.2 - The Federal Environmental Assessment And Review Process

One of the first federal moves towards EIA came in June of 1972, when the federal Cabinet accepted a Department of the Environment (DOE) proposal which required all new federal projects to be screened to determine pollution abatement requirements; those requiring further assessment were referred to DOE (Canada. Federal Environmental Assessment Review Office,³ 1977). This assessment procedure was subsequently expanded to include environmental impacts in general when the federal EARP was created by Cabinet Directive on December 20, 1973 (Canada. FEARO, 1977).

2.2.1 - EARP in Theory

EARP, as established in 1973 and modified in 1977, was intended to be a "means of determining in advance the potential environmental impact of all federal projects, programs, and activities" (Canada. FEARO, 1979:1⁴). The Minister of the Environment, charged with responsibility for EARP (Government Organization Act, RSC 1979 c.13 s.6(1)(a)(ii)), created the quasi-independent FEARO to supervise the process.

The principle objectives of EARP were to ensure that federal departments and agencies: take environmental matters into account throughout the planning and implementation of projects, programs and activities; assess potential

³Hereafter cited as "Canada. FEARO".

⁴Unless otherwise noted, information for section 2.2.1 was taken from this publication.

environmental effects before irrevocable decisions or commitments are made; submit for review all assessments of projects which would significantly affect the environment; and to incorporate the results of assessments and reviews into project design, construction, implementation and operation, giving environmental problems the same weight as socio-economic, engineering and other concerns (Canada. FEARO, 1978). Although aimed explicitly at federal departments and agencies only, federal crown corporations and regulatory agencies were "invited to participate" in the process (Canada. FEARO, 1978).

Because EARP was established by a Cabinet Directive, as opposed to legislation, it has no legal enforcement power (British Columbia. Ministry of the Environment, 1977). However, the Directive requires that all federal departments and agencies implement the process. Following the "polluter pays" principle, the proponent⁵ is required to cover certain costs of applying the process to their proposal (Canada. FEARO, 1978). The federal government pays for baseline studies, the assessment process (EARP's administration), "verification and enforcement" and monitoring. The proponents cover the costs of report preparation (including the EIS), use of government experts required to prepare the reports, and "proponent inspection and reporting" (monitoring). The costs of accelerated baseline studies are shared by the government and the proponent (Canada. FEARO,

⁵The proponent is defined as "a company, province, or other organization which intends to undertake a project, program or activity" which falls under the scope of EARP (Canada. FEARO, 1979:11).

1978).

There are three possible stages to EARP: initial assessment; initial environmental evaluation (IEE); and formal review (See Figure 2.3). The first two stages, known collectively as the screening phase, are conducted by the initiator⁶ "as early in the planning stages as possible," an internal procedure which is described as "self-assessment" (Canada. FEARO, 1979:3). The purpose of this initial assessment is twofold: to determine the environmental effects of the proposal; and to determine the significance of the effects. While technical information is important, "public reaction to a proposal is a major factor in determining significance" (Canada. FEARO, 1979:3). One of three outcomes from this initial assessment is possible. If no significant adverse environmental effects are foreseen, the project proceeds, with the appropriate mitigative measures. If significant adverse environmental effects are foreseen, the project is referred to FEARO for formal review. Or, if the "nature and scope" of environmental effects are uncertain, the proposal may move to the IEE stage.

The IEE (which may be bypassed if the proposal is referred directly for formal review) includes descriptions of the proposal and current environmental and resource uses of the area involved; an outline of potential environmental impacts; and proposed mitigative measures. Alternatives to the proposal are also examined in the IEE. Based on this information, a decision

⁶The initiator is the federal department or agency which sponsors the proponent's proposal. In some cases, the proponent and the initiator may be the same federal department or agency.

SCHEMATIC DIAGRAM OF THE FEDERAL ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

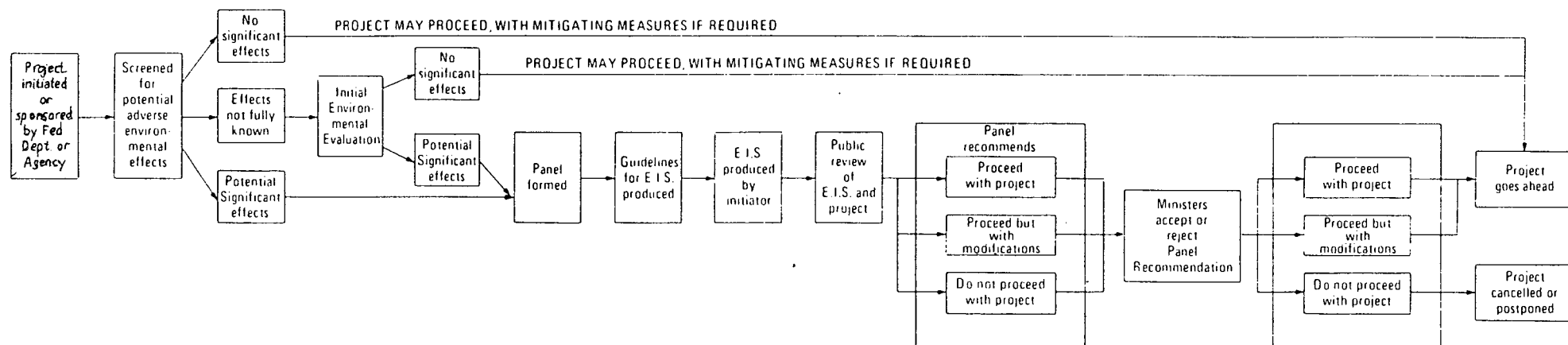


FIGURE 2.3 - Schematic Diagram of the Federal Environmental Assessment and Review Process (Taken from: Couch, 1982: 40).

is made regarding the significance of the environmental effects. If not considered significant, the proposal proceeds, again with appropriate mitigative measures. If considered significant, the proposal is referred for formal review.

The first step of the formal review phase is the formation of an Environment Assessment Panel, which conducts the review on behalf of the Minister of the Environment. Separate panels are established for each review, and are usually comprised of four to eight members. The initiator and DOE have the option of being represented on each Panel - other members may be selected from within or outside the federal public service. The Panels function as independent bodies, reporting directly to the Minister of the Environment. FEARO provides support staff for each Panel.

The first task of the Panel is to prepare guidelines for the preparation of the EIS. The purpose of the guidelines is to ensure that the EIS contains relevant and appropriate information, to enable effective evaluation of the proposal. Where "significant public concern and/or interest has been demonstrated..." (Canada. FEARO, 1979:6), the draft guidelines may be released for review by interested groups and individuals; the comments received may be incorporated by the Panel into the final guidelines. The final guidelines are subsequently passed to the initiator for preparation of the EIS. The guidelines determine the degree to which physical, biological or social aspects of the proposal are emphasized in the EIS.

The EIS, which may be prepared by the initiator or by the proponent (on behalf of the initiating department or agency),

describes the project, its location, the need for it, and "alternative methods for achieving the project other than the one proposed" (Canada. FEARO, 1979:6). The EIS also describes the existing environment in the area, current resource uses, social conditions, and the economic base. The potential effects of the proposal and proposed mitigative measures are identified. The EIS must also identify those impacts which will remain after the mitigative measures have been implemented.

When the EIS is complete, it is reviewed by the Panel and appropriate federal and provincial departments and agencies to determine if the information presented is adequate for the purposes of the formal review. The EIS is normally made available for public review and comment. After receiving comments on the EIS, the Panel may prepare, if necessary, a list of deficiencies, which is forwarded to the initiator, and also made public. When the appropriate improvements have been incorporated into the EIS, it is made available to the public.

After "a certain time" is allowed for public review of the EIS, public meetings are held "as a matter of course." The public meetings are conducted informally - "they are not legal proceedings" (Canada. FEARO, 1979:7) - according to procedures issued by the Panel.⁷ This informal structure is said "to

⁷Although the meetings are not "legal proceedings", and although the government is not obligated to hold these meetings, one legal opinion concluded that the procedures for the public meetings "...must satisfy basic standards of fairness..." (C. G. Watkins, cited in Rees, 1981b:12). If these standards were not satisfied, it could be possible to seek judicial review of the procedures to compel the government to make the necessary changes in their practices for the meetings.

provide the greatest opportunity for individuals or groups to express their opinions" (Canada. FEARO, 1979:7).

Upon receiving public and technical comments, the Panel prepares a report which summarizes the proposal and its potential consequences; and which includes the conclusions and recommendations of the Panel. The Panel may recommend that the proposal: not proceed; proceed as proposed; or proceed with specified modifications and conditions. This report is submitted to the Minister of the Environment, and subsequently made public. The final decision on the Panel's recommendations is made by the Minister of the Environment, in consultation with the Minister responsible for the initiating department or agency (and in some cases, other members of Cabinet).

2.2.2 - EARP: Perceived Problems

Although EARP appears on the surface to be well designed for its specified objectives, many who observe the process in action feel it has failed to meet its expectations. The profusion in the literature of critical analyses of EARP can, in all probability, be attributed to a general dissatisfaction with the process. Indeed, weaknesses and deficiencies have been described at virtually every step of the process. This section addresses many of the fundamental and important problems which have been identified.

The various agencies and departments of the federal government conceptualize a large number of projects, programs and activities every year. By definition, these must all be screened, as EARP "automatically applies" whenever a federal

project is conceived. This places an "immense burden" on the screening phase (Rees, 1981a). As mentioned above, screening is carried out by the initiators. Despite the importance of this phase, "screening procedures have been entirely ad hoc ... [and remain] differentially developed, generally inadequate, and unenthusiastic in implementation" (Rees, 1981a:365).

One study examining the screening procedures of four major federal departments, which initiate many projects annually, found that only one of the four had developed and implemented a systematic screening procedure (Holisko, 1980). Most analyses of the screening phase indicate that "there is little from available evidence to suggest that existing screening procedures are effective in achieving stated (or presumed) objectives" (Rees, 1981a:364). The failure of the screening phase to meet its objectives may be due to relying on the paradox of "self-assessment" (Rees, 1981a).

There has been a troubling lack of consistency in the outcome of screening procedures, even within the same department. One example is the Department of Indian Affairs and Northern Development's (DIAND) screening of offshore hydrocarbon projects in the North. While DIAND referred Norland Petroleum's proposal for a single exploratory well in Lancaster Sound for formal review under EARP (a decision which ultimately resulted that proposal's demise) (Rees, 1979b), the extensive exploratory drilling programs in the Beaufort Sea were never referred, ostensibly because "...the exploration component ... is subject to current government review mechanisms" (Roberts, 1981:2). (These same "review mechanisms" presumably existed for Lancaster

Sound.) While environmental conditions may differ between the two areas, it is still difficult to reconcile such different outcomes from screening such similar proposals.

Several important problems have been identified in the formal review phase. One criticism is that the right of the initiator to appoint a Panel member contributes to "a reasonable apprehension of bias and a potential for conflict of interest" which could undermine public confidence in the process (Rees, 1981a:359).

The Panel must be seen to be independent of the proponent and initiator, to gain public credibility (Lucas, 1981). However, having the proponent represented on the Panel would be "...consistent with the 'better planning' objectives..." of EIA, and "...also facilitates post-assessment follow-up" (Lucas, 1981:164). The relative influence of these two considerations on Panel selection may be related to the intended role of EARP. If EARP is meant to be an objective, disinterested review of a proposal, Panel members would be expected to have no ties to the proponent or initiator. But if EARP is considered to be a planning tool more than a project appraisal process, proponent representation on the Panel could contribute to that function. As EARP is intended to play both roles (Canada. FEARO, 1979), Panel selection will likely continue to reflect what has been described as "the basic tension between the planning and regulatory objectives of environmental assessment processes" (Lucas, 1981:164).

Much attention has been given to the role and importance of the EIS in environmental assessment processes in both Canada and

the United States. Problems identified in EARP's EIS guidelines include rudimentary approaches, uncertain rationale, no guidance on methods to be used, and limited provision for public involvement in formulating the guidelines (Lang and Armour, 1980), and the failure to require consideration of the "no-go" alternative in the EIS (Rees, 1981b).

In comparison to the B.C. Coal Guidelines, EARP is oriented much more toward public involvement. Of course, this has not stopped critics from identifying a number of flaws. The process makes public participation costly, limiting informed participation by concerned groups and individuals; as a result, EARP may not adequately assess local concerns (Lang and Armour, 1980). This raises the issue of whether "outsiders" can adequately consider local social and environmental values (Lang and Armour, 1980). A related problem is FEARO's failure to "develop or enforce consistent rules for the conduct of public reviews" (Rees, 1981a:360).

Even when public meetings are held, the effectiveness of the public participation at communicating local preferences to distant (geographically and, often, culturally) decision-makers has been criticized: "...the only thing that allows this 'process' to justify itself is that it allows northerners the prescribed ritual of consultation" (Gamble, 1982:11). Instead of direct involvement in decision-making, public input goes "...through an intermediate host [the Panel] ... that is neither the affected nor the effecting party, nor is that host accountable for what it does" (Gamble, 1982:16). Many observers, as a result, tend to view EARP as a public consultation process,

rather than a public participation process.

Although EARP was intended to be an integral component of the planning process, it has in fact been "imposed as an overlay on the existing decision-making processes" (Fox, 1979:72), and typically as an "after-thought" (Rees, 1981a). This runs counter to the effectiveness criteria identified in 1.3: that consideration of impacts should occur early in the planning process; and that EIA should be fully integrated into project planning.

The criticisms identified above reflect weaknesses in design and operation which could lead to the failure of EARP to meet its objectives. Other criticisms are related to what observers feel EARP should be, as opposed to what it is. One common criticism of this type is EARP's "lack of legal mandate and procedures" (Rees, 1981b:11). This means that Panels have no subpoena power, participants cannot be required to cooperate, and Panel members may be unwilling or unable to delve into certain issues (Rees, 1981a).

EARP's legal status has another important consequence: because EARP exists only as a Cabinet order, its implementation by administrators is highly discretionary, and "[i]nstant modification is possible, without any necessity for consultation with affected parties, or public scrutiny" (Lucas and Peterson, 1978:75). In addition, "...the public has no 'rights' under EARP. Every aspect of potential involvement is subject to the unfettered discretion of the Minister" (Emond, 1978:229). And Castrilli (1975) points out that agencies like FEARO (and, perhaps more importantly, the other departments and agencies

which are supposed to be screening their own projects) cannot be legally compelled to carry out these administrative review procedures. The end result is that "[t]he success of the entire procedure does not depend on clearly stated rules and policies, but rather on the good will of administrators exercising an undefined 'rule of reason'" (Emond, 1978:28).

EARP is also handicapped by the lack of an explicit federal environmental policy: "...reviews are conducted in a policy vacuum" (Rees, 1981a:370). Indeed, instead of operating under the guidance of federal policy, "EARP in effect has become a de facto policy generator" (Rees, 1981a:371). This lack of a policy framework is partially responsible for the shortcomings identified in using EARP on a project-specific basis (Rees, 1981a).

In some cases, EARP has apparently been shortcircuited for political reasons. One example is the case of Dome Petroleum's activities in McKinley Bay in the Beaufort Sea. An analysis of the application of EARP-related project screening in McKinley Bay concluded that the process was probably circumvented by high-level intervention by senior government officials in Ottawa (Rees, 1980). Similar conclusions were reached in an analysis of the Lancaster Sound EARP. In this instance, the Department of Indian Affairs and Northern Development's decision to grant approval-in-principle to Norland's proposed offshore exploratory drilling was said to have "subverted the intent" of EARP (Davidson, 1981:124). This also reflects a problem related to individual and organizational behavior - there has been a slow acceptance at senior levels of agencies of the need for

environmental evaluation (Canada. Energy, Mines and Resources, 1978).

2.2.3 - EARP: Summary

It can be seen that EARP is lengthy and complex. In part this is due to the scope of its considerations; but also to the degree to which opportunity for public participation is designed into the process (although the effectiveness of this participation is a matter of some debate). EARP presently plays an important role at the federal level: "EARP has become the principle means by which the federal government evaluates the ecological and to a large extent the social, economic, and technical impacts of development projects" (Rees, 1979b:1).

EARP has been subjected to intensive analysis. Weaknesses in the screening phase and inconsistencies in the outcomes of screening reviews leave observers uncertain as to whether the "right" proposals and projects are referred for formal review. And deficiencies have been identified in virtually every aspect of the formal review phase. However, despite these shortcomings, it is impossible to conclude that EARP's weaknesses have (or have not) resulted in any increased impact on the environment.

EARP is intended to be a means of ensuring that environmental concerns are represented in the decision-making process. In this light, EARP has been a partial success. For example, in the Lancaster Sound case referred to above, "...the existence of EARP probably led to an increased consideration of interests than would have otherwise occurred" (Davidson, 1981:133). And FEARO has responded to many of these criticisms

by making a number of changes aimed at strengthening the process. (See 3.1 for discussion of key modifications made for the Beaufort Sea EARP.) However, there remain significant concerns about the long-term adequacy of EARP as a decision-making tool, especially in view of current political perceptions about environmental concerns.

2.3 - Summary

This chapter examined the federal and B.C. approaches to EIA, describing how each process was designed to work, as well as problems which have been identified after implementation of each. While both processes attempt to solve similar problems (namely, the need to fully consider environmental factors in planning and decision-making), the processes differ in approach.

The Coal Guidelines' Stage II EIA appears to be more fully integrated into the provincial government's project review process than EARP is in the equivalent federal process. The information requirements in the Coal Guidelines are intended to satisfy both the impact assessment and the approvals and permitting requirements. Conversely, the information required in EARP EIS's is oriented solely towards the needs of the impact assessment process. Although some information generated for the EARP EIS may (and probably does) prove useful in subsequent applications for regulatory approvals, it would not be so by design.

A second, related, point is that the provincial review process appears to be more streamlined than the federal review process. In theory, project review under the Coal Guidelines

moves from proposal to impact assessment to regulatory approvals in a sequential process. By comparison, the federal review process is disjointed and poorly coordinated. In addition to EARP, major projects face a number of other reviews. For example, the Beaufort Sea Hydrocarbon Production proposal will be reviewed by no less than six federal departments and agencies, including FEARO, DOE, the National Energy Board (NEB), the Department of Indian and Northern Affairs (DINA), the Canada Oil and Gas Lands Administration (COGLA), and the Department of Transportation (DOT) (Dome Petroleum Ltd., 1982; Canada. DINA, 1981). An even greater number of regulatory approvals are required. These numerous reviews function almost independently, and in no apparent logical sequence. Indeed, the only common thread running among the various reviews appears to be their maleability in the face of political pressure (for example, see Dosman, 1975; Bregha, 1979; and Rees, 1980). However, while the Coal Guidelines process does appear on paper to be more streamlined than the complex array of federal review processes, in practice this apparent advantage may not be so clear-cut. And, as pointed out in 3.2, the Coal Guidelines review process is no less maleable under political pressure.

The streamlined provincial process does appear to carry a price: the opportunity for public participation in the review is limited, and occurs primarily at the developer's discretion; while EARP is structured to facilitate public involvement. Again, however, appearances may be misleading. Although the developers are not legally required to involve the public in the impact assessment stages, public-relations and political

considerations may make some public participation likely. And there is a distinction to be made between "public participation" and "effective public participation." While EARP does provide for extensive public involvement, the effectiveness of this public participation (that is, the extent to which the public input is actually considered in decision-making) has been questioned (Gamble, 1982).

Finally, one common characteristic of the two processes, of as great importance as the above differences, is their legal status. Many analysts of the processes have criticized their lack of statutory backing, and have suggested that there may not be adequate incentive for government and industry to comply with the requirements. However, taken in combination with regulatory approvals required under various statutes, there is significant political pressure which could be brought to bear on developers contemplating non-compliance. As stated above, for both political and public-relations reasons, it is in the developers' own interest to comply with these "informal" government requirements.

CHAPTER 3 - TWO NORTHERN MEGA-PROJECTS

Having described the federal and British Columbia EIA and project review processes, we can now turn to two mega-projects currently undergoing review. The Beaufort Sea Hydrocarbon Production proposal and the Northeast Coal Development have price tags measured in billions of dollars, and promise environmental and social changes of comparable magnitude. They are classic examples of the very reason for the existence of EIA: the clash between the economic and social goal of resource development and the social goal of environmental conservation and protection. Both goals are justified in their own right - however, to a great extent, they are mutually exclusive. From this inherent incompatibility arises the need to make informed trade-offs between the two goals. It is in this context that these two projects are being reviewed by government.

This chapter reviews the history, rationale, policy environment, and regulatory environment (including EIA) of each project, and identifies key issues associated with each.

3.1 - The Beaufort Sea Hydrocarbon Production Proposal

The federal government's drive towards self-sufficiency in oil has placed great emphasis on exploration and development of frontier areas with suspected hydrocarbon potential. One such frontier area is the Beaufort Sea - Mackenzie Delta region located off the Arctic coast of Yukon and the Northwest Territories (Figure 3.1). The Beaufort Sea - Mackenzie Delta sedimentary basin, which covers an area of approximately 420 000 square kilometers under Canadian and American territorial

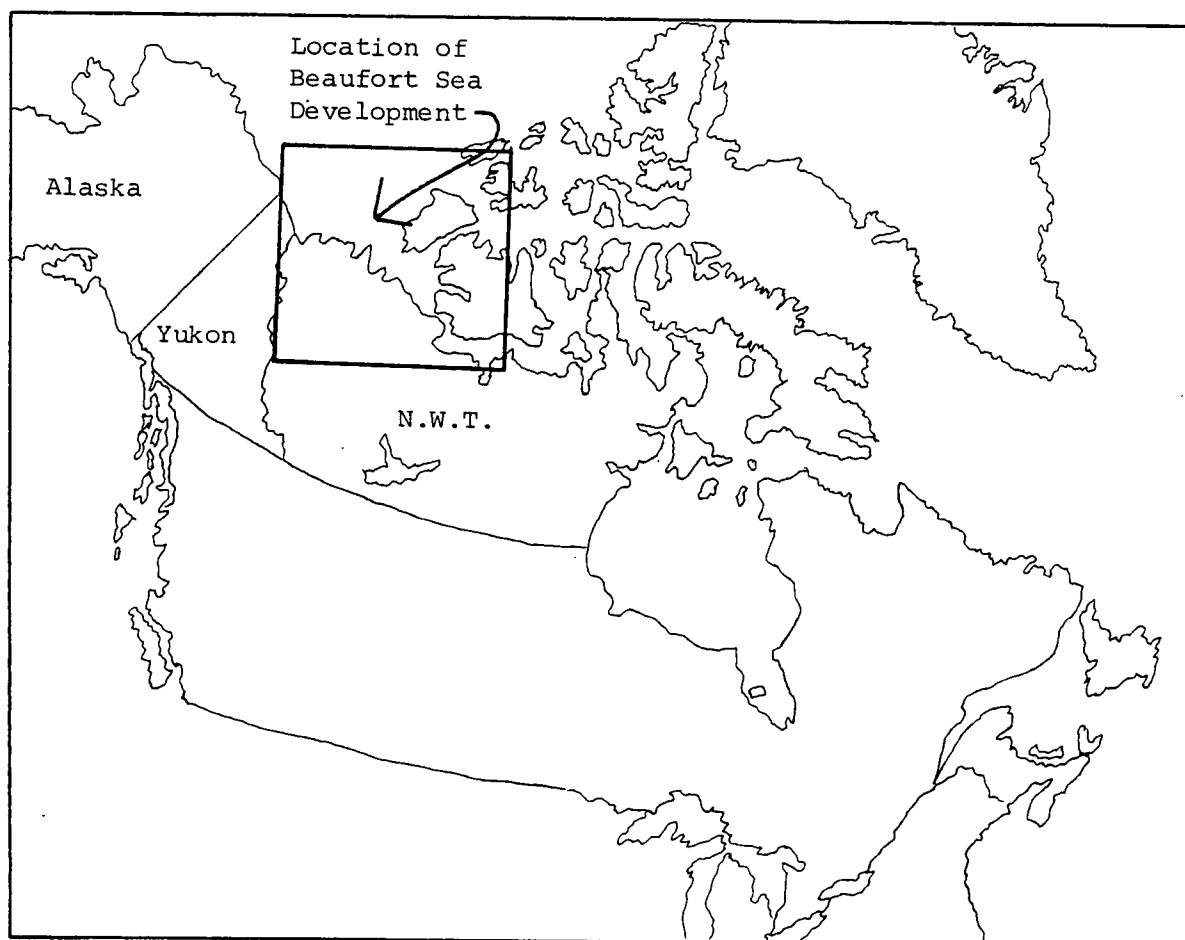


FIGURE 3.1 - Location of the Beaufort Sea Hydrocarbon Development (Adapted from: Dome Petroleum Limited et al., 1982:vol. 1, p. 1.2).

waters, is said to have "all the attributes of a major hydrocarbon producing area" (Dome Petroleum Limited et al., 1982, vol.2, p.2.1). The key geological feature of this basin is the Tertiary age sediments. The characteristics of the basin, including "many structural and stratigraphic traps," are "very similar to other producing oil basins in the world" (Dome Petroleum Limited et al., 1982, vol.2, p.2.2).

The petroleum industry has been active in the Beaufort region since the first federal exploration permits were granted in 1965, and has invested over \$1 billion in exploration (Dome Petroleum Limited et al., 1981). Seismic exploration work covering approximately 100 000 kilometers has identified many "potential hydrocarbon-bearing structures" to date (Dome Petroleum Limited et al., 1982, vol.2, p.2.3). On the basis of the seismic work, onshore and offshore drilling began. Over 100 onshore exploration wells have been drilled since 1965, resulting in several oil and gas discoveries (Dome Petroleum Limited et al., 1982).

As the most significant hydrocarbon potential in the region is thought to be offshore, a number of offshore exploration wells have been drilled using one of two methods. The first method involves construction of offshore artificial islands which serve as drilling platforms. Since 1973, 23 wells have been drilled from 21 artificial islands, in waters ranging from 3 to 22 meters in depth (Dome Petroleum Limited et al., 1982). The second method of offshore drilling relies on the use of drillships, which are capable of operating in deeper waters. Four drillships have drilled 15 wells since 1976, in depths of

23 to 68 meters of water (Dome Petroleum Limited et al., 1982).

These exploration wells have demonstrated the presence of oil and gas reserves in the region. However, after more than 130 exploratory wells, the threshold volume of reserves required for commercial viability has yet to be reached. Regardless, industry estimates of recoverable reserves indicate a high probability that commercial levels are present in the region (Dome Petroleum Limited et al., 1982). Approximately 50 companies held exploration permits in the region; Dome Petroleum Limited, Esso Resources Canada Limited and Gulf Canada Resources Inc. being the principle holders (Dome Petroleum Limited et al., 1981). These permits have now been renegotiated into exploration agreements under the new Canada Oil and Gas Act (Bill C-48).

Despite the perceived abundance of oil in the Western provinces, Canada is currently a net importer of oil. Perhaps more significantly, the NEB has forecast a potential oil supply shortfall of up to 1.8 million barrels per day by 2000¹ (Canada. NEB, 1981). If this shortfall were to be met through increased oil imports, the country would face two important consequences. First, there would be an increased drain on the national treasury; and second, the nation would become increasingly

¹This figure represents the total difference between the "low supply" and "high demand" forecasts; one must recognize the high level of uncertainty inherent in such long-term estimates.

dependent on foreign sources of supply.² Consequently, the current national energy policy is directed towards increasing Canadian oil production (Canada. Energy, Mines and Resources, 1980; 1982).

As Beaufort Sea oil could reduce significantly Canada's dependence on imported oil, the federal government has developed and implemented successive systems of incentives to encourage exploration in the region (and other frontier areas) by the oil industry. Because of the high cost of exploration in frontier regions, and in view of the federal government's perception of the need for frontier oil, exploration incentives have been very generous. Currently, for example, Ottawa allows companies with a certain level of Canadian ownership to write off up to 80% of all exploration costs through the Petroleum Incentives Program (Canada. Energy, Mines and Resources, 1981). Even so, with the projected cost of the Beaufort development over \$52 billion (Bott, 1982), and without proven large reserves, industry and the government are investing a lot of money in a very high-risk venture. The earliest possible production date for Beaufort oil was originally said to be 1986 (Dome Petroleum Limited et al., 1982), but production now appears unlikely before the late 1980s or early 1990s.

Development activities in the North are closely regulated.

As mentioned above, no fewer than six federal departments and

²Of these, the first is probably more important. Reducing dependence on imported oil means increasing dependence on limited domestic reserves. While this may be a politically attractive short-term strategy, it has been argued by industry representatives (see Steward, 1982; and Foster, 1982) that we may be better advised to maintain a diversity of sources of supply instead of putting all our security "eggs" in the domestic oil "basket."

agencies may be involved in project reviews. Twenty-eight key government approvals have been identified, involving FEARO, COGLA, DINA, DOT, DOE and the NEB (Dome Petroleum Limited, 1982) (see Table 3.1). While the need for better inter-agency coordination has been expressed, the current system has been described as "effective in terms of yielding decisions, perhaps not as quickly as industry would like at times, but usually in time to meet seasonal imperatives" (Dome Petroleum Limited, 1982:7.1). Industry has also suggested that both the regulatory process and EARP would benefit from a more explicit northern hydrocarbon development policy (Dome Petroleum Limited, 1982). This view concurs with those expressed above (by non-industry observers) in the discussion of EARP (see section 2.2.2).

Because it "would have potentially significant environmental impacts" (Munro, 1980) and because of its "potential to substantially alter existing lifestyles and activities in Canada's north" (Marshall and Scott, 1982), the Minister of DIAND referred the Beaufort Sea Hydrocarbon Production proposal for a formal review under EARP on July 22, 1980. The review is of hydrocarbon production and transportation effects only; exploration, reviewed through normal regulatory procedures is not included in the Beaufort Sea EARP. Difficulties may arise in the "grey area" between exploration and production: for example, an artificial island constructed for exploration drilling could also be used in production.

While the Beaufort Sea EARP is following the basic procedure outlined above (in section 2.2.1), the Panel review also features some innovations. Marshall and Scott (1982)

TABLE 3.1 - Key Government Approvals for Beaufort Development

FEARO

Beaufort Sea Panel recommendations

COGLA (DIAND)

Exploration Agreement
 Production Licence
 Drilling Program Approval
 Authority to Drill a Well
 Geophysical Program Approval
 Approval-in-Principle of
 Production Development Concept
 Development Plan Approval
 Production Facilities Approval
 Approval to Construct a Pipeline
 Approval to Launch and Transport
 Installation Approval
 Certificate of Fitness
 Production Operations Approval
 Approval to Operate a Pipeline
 Subsurface Storage Licence
 Operating Licence

DIAND

Island Lease and Dredging Permit
 Land Use Permit
 Water Licences
 Socio-Economics Benefits

DOT

TERMPOL Recommendations
 Ship Registration
 Arctic Pollution Prevention Certificate
 Registry of Alterations

DOE

Ocean Dumping Permit

(Adapted from: Dome Petroleum Limited, 1982:7.2)

outline 5 new features. (FEARO's ability to modify EARP in this manner arises from EARP's non-legislated status.) First, the seven-member Panel for the Beaufort Sea EARP is the first to be selected entirely from outside the public service. By selecting Panel members with no vested interest in the outcome of the review, the government sought to abate potential conflict-of-interest allegations.

Second, the government established a "pilot project" for funding of participants in the review. The funding program, administered independently of the Panel, was created in response to suggestions from previous Panels as well as interest groups. According to Marshall and Scott, the program has had "a very positive effect" in increasing the effectiveness of public participation.

Previous Panel reviews had been characterized by the "policy vacuum" in which they operated. The Beaufort Panel's response to this was to request position papers from DINA, Energy, Mines and Resources, DOE, Fisheries and Oceans, Health and Welfare, Public Works, DOT, External Affairs, Employment and Immigration, Industry, Trade and Commerce, and Communications; as well as the Royal Canadian Mounted Police, the Northern Canada Power Commission, the Government of Yukon, and the Government of the Northwest Territories (Canada. Beaufort Sea Environmental Assessment Panel, 1982b). These papers were "intended to show how the proposal will affect and be affected by these agencies' programs, policies and activities," and, with the proponent's EIS, "should give ... a reasonably complete picture of all the implications of development" (Marshall and

Scott, 1982:12). These agencies have complied with the Panel's request (some more readily than others), and copies of the position papers have been distributed to interested parties.

A fourth innovation was an information survey, conducted by FEARO, to supplement published materials and to identify topics currently being researched. Finally, the Panel has established a Panel office in Inuvik. Staffed by a native northerner, the office is intended to provide an information and liason service between the Panel and northern communities and residents.

Currently, the Beaufort Sea proposal is past the mid-point of the formal review. At the request of the Panel, the EIS was prepared jointly by the three principle operators in the Beaufort (Dome, Esso and Gulf), on behalf of all permit holders in the region. (This request was made in part to reduce duplication of effort, but also to obtain a more comprehensive view of the development proposal.) The EIS was released in November of 1982 (Canada. FEARO, 1982). After a 90-day public review period which ended February 7, 1983, the Panel issued a deficiency statement to the proponents on March 8, 1983 (Canada. FEARO, 1983). This statement identified four major deficiencies in the EIS which the Panel wanted the proponents to address before public meetings would be held.

First, the Panel felt that "[t]he socio-economic impact analyses [did not present] an adequate picture of the likely effects of the proposed development on the northern residents and their social environment" (Canada. Beaufort Sea Environmental Assessment Panel, 1983:5). Second, the Panel asked the proponents to strengthen their assessments of cumulative and

synergistic environmental effects of their proposal, and to detail their proposed mitigative measures for dealing with environmental effects. Third, the Panel requested more information about the proponents' abilities to deal with major oil spills in the project area. Finally, the Panel noted that the proponents "did not provide the Zone Summaries requested in the Guidelines" (1983:24), and asked the proponents to produce non-technical, "easy-to-read" summaries of social and environmental effects. In July, 1983, the proponents submitted to the Panel their responses to these four deficiencies.

After a thirty-day review period, the EIS was deemed acceptable by the Panel. A number of public meetings in northern communities and southern centers were held from October to December, 1983. The Panel is presently going through the information from the review and is preparing its recommendations for the Minister of the Environment.

During the Panel review, some concerns were expressed about threats to the integrity of the review. At an early point in the review, when discovery of commercially viable oil reserves seemed imminent, the federal DOE was said to be "under enormous pressure both from the consortium of companies involved in the project and the Energy, Mines and Resources Department, to speed up the process" (Crump, 1982:4). Indeed, a memorandum from the Executive Chairman of FEARO to the Minister of the Environment outlined several means of speeding up the Panel review, which, he acknowledged, would be achieved only at "a fair price in terms of process integrity, public credibility and Panel attitudes" (Robinson, 1982:4). Although the memorandum concluded

that the time saved would not be worth the damage to the credibility and integrity of the review process, the fact that such shortcuts were considered by the head of FEARO is evidence of the pressures and attitudes the Beaufort Sea EARP faced. Despite these pressures, no shortcuts were taken in the review.

There are three key issues associated with the Beaufort Sea Hydrocarbon Production proposal. The first issue is the uncertainty about the actual oil reserves present in the region. Although almost every exploration well has indicated the presence of oil and gas, commercial reserves have not been proved. Many observers suspect that sufficient reserves will be found; nonetheless, there is a high element of risk associated with investments in the region's hydrocarbon potential.

Second, Beaufort reserves would be of strategic importance to Canada. If production potential at the levels estimated by industry could be realized, Canada's energy options would be greatly strengthened: we would continue to have a choice of oil supply sources, and would not be forced into early dependence on foreign oil supplies. The additional security Beaufort reserves could give is in itself a powerful argument in favour of development. In addition, Beaufort development could provide an important focus for economic activity in Canada, and would stimulate significant secondary economic activity throughout the region and the rest of Canada (Dome Petroleum Limited et al., 1982). The presence of substantial economic activity in the Beaufort and the Arctic Islands would also establish with greater certainty Canadian sovereignty over the region.

The third issue - the local and regional impacts - arise as

a consequence of this proposed level of activity in the region. Two important impacts are possible (Marshall and Scott, 1982). First, development will have significant, dramatic, impacts on the social and economic aspects of life in the North -- most notably on the lifestyle and culture of natives in the region. These impacts may be perceived as positive, negative, or both: but such an evaluation can be made only by those affected. The second key local issue is the potential impact of a catastrophic event. An accident such as a well blow-out could have a drastic impact on the natural environment, and, as a direct consequence, on the native populations whose lifestyles and cultures remain closely tied to the land and the sea.

These issues represent the crux of the controversy surrounding development of the Beaufort. The increased energy security for (southern) Canada that Beaufort oil would bring must be traded off against the positive and negative impacts of development on the north and northerners. The important role of the Beaufort Sea EARP will be "to assist the Government in making environmentally responsible decisions about development in the western Arctic" (Marshall and Scott, 1982:13).

3.2 - The Northeast Coal Development

Where the federal government's emphasis on petroleum development is oriented towards the goal of energy self-sufficiency, the British Columbia government perceives coal development as one means of diversifying the provincial economy. One resource development project which falls into this category is the Northeast Coal Development, located in the Peace River region of northeastern British Columbia (Figure 3.2).

Coal currently represents one of Canada's "untapped" resources. Canadian coal reserves are estimated in the "hundreds of billions of tonnes" (Page, 1982); at current rates of production the predicted lifespan of these reserves is expressed in hundreds of years. In British Columbia, reserves are currently estimated to be about 35 billion tonnes, of which about 8 billion tonnes are located in the Peace River coalfield (BC MISBD, n.d.a). However, with current mining methods, only about 300 million tonnes (about 4%) of the coal in this deposit can be recovered (BC MISBD, n.d.a).

Coal in the Peace River deposits can be classified according to end use. About 85% of the deposit is metallurgical coal, that is, high-grade coal which is burned to obtain the carbonaceous material ("coke") required for steel production (BC MISBD, n.d.a). The domestic market for metallurgical coal is limited (the heavy industries in Ontario obtain their coal supplies from the northeastern United States), so the primary market for metallurgical coal in British Columbia is offshore, especially Japan (Page, 1982).

The remaining 15% of the coal is thermal coal, used

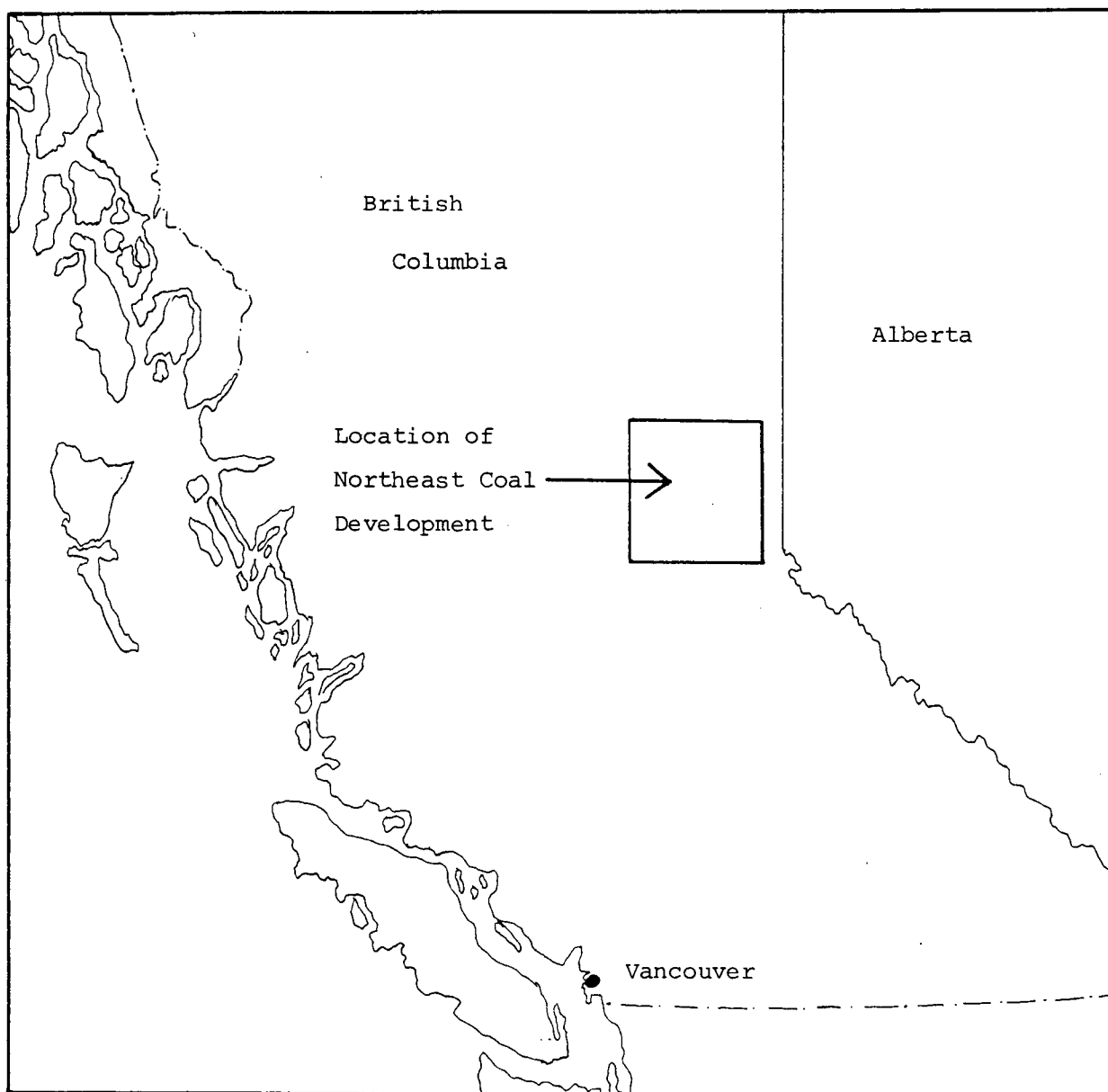


FIGURE 3.2 - Location of the Northeast Coal Development
(Adapted from: Quintette Coal Limited, 1982: vol. 1,
p. 1.1).

primarily for electricity generation. While domestic demand for thermal coal is expected to rise in the future, thermal coal from the Northeast development faces a distinct competitive disadvantage due to its relative isolation from markets, especially in eastern Canada (Page, 1982). As a result, the Northeast Coal Development will be dependent primarily on metallurgical coal exports to offshore markets.

Although the coal deposits in the northeast had been identified as early as 1793 (by Alexander Mackenzie), the deposits were not intensively surveyed until the late 1960's (BC MISBD, n.d.a). As a result of exploration, planning for a total of nine developments was initiated (O'Riordan, 1981). Currently, however, only four proposals have reached advanced planning stages. Teck Corporation and Lornex Mining's Bullmoose project and the Quintette consortium's project (managed by Denison Mines Limited and including Japanese and French interests) have concluded long-term contracts which call for approximately 7.7 million tonnes of coal to be delivered to Japanese buyers, beginning in late 1983 (BC MISBD, 1982b), and are now nearing completion of the construction phase. A third, the Monkman project of Petro-Canada, Canadian Superior Oil and McIntyre Mines is near Stage II approval, but is being held in abeyance until market conditions improve. The fourth, the Willow Creek mine of David Minerals Limited and Ssangyong Corporation of South Korea, is a relatively small-scale mine which will export annually about 400 000 tonnes of coal to South Korea. The cost of the Willow Creek project is an estimated \$18 million (Nutt, 1983). The Monkman and Willow Creek projects were not included

in this study: the former because it has been shelved; the latter because it was not considered to represent a large-scale resource development. Three other proposals, the Cinnibar, Burnt River and Carbon Creek projects, are in the early stages of the Coal Guidelines review process (BC MISBD, 1982b).

With the costs of the first phase of the development (the Quintette and Bullmoose mines, and the associated infrastructure) estimated at \$2.5 billion, Northeast Coal ranks as "the largest mining sector development in Canadian history" (BC MISBD, 1982a, vol.1, no.2, p.1). Due to the abundance of coal in Canada and the low levels of present (and forecasted future) domestic demand, the current strategic value of the northeast reserves is limited. Exports of coal will, however, strengthen Canada's trade balance (BC MISBD, n.d.b), although the magnitude of its contribution will be very dependent upon market conditions (BC MISBD, 1982c).

Provincially, the "most significant benefit of the coal development in the northeast would be the long-term growth it would bring to the economy of the region" (BC MISBD, n.d.a, p.31). The development is seen as an anchor for future economic growth and development in the region, which will bring significant social and economic diversification (BC MISBD, n.d.a). While the development is expected to represent an economically sound public and private investment, it must be remembered that the government's principle justification for support of the development is as much social and political as economic.

Because of the perceived benefits, both the federal and

provincial governments have made substantial investments in association with the private minesite developments. The federal government is committed to construction and operation of a new coal port at Ridley Island near Prince George (Ridley Terminals Inc., 1982), and to upgrading the Canadian National Railway line between Prince Rupert and Prince George (BC MISBD, 1982c). The province is underwriting construction of the new town of Tumbler Ridge; construction of a new British Columbia Railway branch line to Tumbler Ridge; provision of roads and utilities to the town; and provision of power to the minesites. The total cost of the public investment is estimated to be approximately \$1.3 billion (BC MISBD, n.d.b). Perhaps one indication of the importance the BC and federal governments attach to this development is seen in the fact that the current public investment actually exceeds that of the private sector.

The Northeast Coal Development is regulated no less than the Beaufort project: the Coal Guidelines identify a total of 17 provincial statutes applicable to coal development, ranging from pollution control to taxation (BC ELUC, 1976) (see Table 3.2). In addition, certain federal statutes and regulations apply to the development - most notably the federal Fisheries Act. But the province has attempted to deal with the problems this complexity poses for industry and government. ELUC and the Coal Guidelines Steering Committee are intended to streamline and coordinate government review of the companies' proposals (O'Riordan, 1981), although they deal only with matters within provincial jurisdiction.

All proposed mines in the Northeast Coal Development must

TABLE 3.2 - Provincial Legislation Applicable to
Coal Developments in British Columbia

Coal Act
Coal Mines Regulation Act
Controlled Highway Access Act
Corporation Capital Tax Act
Environment and Land Use Act
Forest Act
Income Tax Act
Land Act
Land Registry Act
Mineral Land Tax Act
Mining Tax Act
Municipal Act
Park Act
Pollution Control Act*
Taxation Act
Water Act and Regulations
Wildlife Act

Source: BC ELUC, 1976:21-24.

* Now the Waste Management Act

be reviewed under the Coal Guidelines. To date, the Quintette, Bullmoose and Willow Creek proposals have received Stage II approval; Petro-Canada's Monkman proposal has also received the Stage II approval-in-principle, however, the project has been shelved due to the current weak demand for metallurgical coal. While this study is concerned with the effects of the Coal Guidelines EIA on the companies involved, it is important to recognize that governmental review of the Development is not limited to the scope of the Coal Guidelines EIA. After receiving Stage II approval, the proponents must still negotiate their permits and regulatory approvals. This process involves detailed reviews of virtually all aspects of the proposal, by a number of government ministries.

Acknowledging the limitations of the site-specific Coal Guidelines for assessing cumulative and regional-scale effects of the Development, the province initiated a series of studies of these broader effects (O'Riordan, 1981). These studies, coordinated by BC MISBD, "indicated how the individual projects could be integrated in a framework of resource management and provided important information on costs and benefits for assessment of overall economic feasibility" (BC MISBD, 1982c, p.5). The federal government was involved in a number of these studies as a result of the 1977 "Subsidiary Agreement to Evaluate North East Coal and Related Developments," between MISBD and the federal Department of Regional Economic Expansion (BC MISBD, 1982c).

Because the Northeast Coal Development requires the construction and upgrading of facilities from Tumbler Ridge to

Ridley Island, the province created the Northeast Coal Development Office to oversee and coordinate the range of activities. This non-permanent government agency attempts to coordinate the scheduling of the various activities to meet the project completion deadline of December, 1983.

While the mining companies involved in this development must go through the Coal Guidelines process, the strong political support for the project has allowed the companies to take some short-cuts. For example, although Teck did not receive approval-in-principle for the Bullmoose mine until December of 1982, construction at the minesite was in progress in June of 1982. The Guidelines were "bent" to allow this, but probably the only effect of this manipulation is a loss of public credibility of the Guidelines. Clearly, the final outcome of the review would have been the same: political support for the Development precluded any decision on the basis of EIA findings against proceeding.

One important issue associated with the Northeast Coal Development is the continued dependence on primary resource development as a means of diversifying the economy. Currently, the region's main economic activities are agriculture, forestry, petroleum and the related support industries; local processing of the resources is "minimal" (BC MISBD, n.d.a). Implementing this large-scale coal development will certainly add a new component to the regional economy. But the coal industry is like many hard-rock mining industries -- volatile markets and international economic relationships together cause the familiar boom and bust cycles, of which most British Columbians are now

painfully aware. So the strategy of increasing the province's economic dependence on resource exports is not without its drawbacks.

Possibly the most controversial Northeast Coal issue is the cost of government investment in the project, especially by the province. While a recent provincial benefit-cost analysis of the project claimed that the provincial and federal governments will recover all costs and more (BC MISBD, 1982c), others have suggested that the governments could just as easily end up in the red (Odam, 1982). The economics of the Development are closely related to the volume of coal shipped; so market conditions will ultimately determine the project's long-term public costs and benefits.

Overshadowed by these economic issues are the environmental impacts of the Development. The minesites will occupy areas of key ungulate winter and summer range; construction and mining activities will cause some soil erosion, and may affect surface water and air quality; and increased human presence will have a direct impact on wildlife (Quintette Coal Limited, 1982). But the magnitude of the potential environmental impacts is arguably less here than in the Beaufort. While the Beaufort project involves the use of new and evolving (and largely unproved) technologies in a new environment, the companies involved in Northeast Coal can examine and apply the experience of other mines at predicting and managing environmental impacts under similar conditions.

However, this is not meant to imply that the Development should be accepted uncritically. The Northeast Coal Development

will have important environmental and social effects in that region. The task of the Coal Guidelines is to ensure that the Northeast Coal Development will "conform to the principles of integrated resource planning, principles which seek a balance between economic, social and environmental goals" (BC Coal Task Force, 1976:119).

3.3 - Summary

The Beaufort Sea Hydrocarbon Production Proposal and the Northeast Coal Development offer the potential for significant regional and national economic and social benefits. As a result, they have received strong support from government. Due to their magnitude, these resource developments could not succeed without government subsidy. In both cases, government support has included active participation: for example, providing the necessary infrastructure requirements in British Columbia and a policy of generous exploration incentives in the Beaufort.

At the same time that the governments promote these projects, they also act as regulators. One consequence of this apparent conflict of interest seems certain: the EIA's will not determine the decisions-in-principle for the projects, but will instead propose conditions for approval. Given the political importance of these projects this is not surprising. And it can be argued that knowing the projects will proceed (assuming enough oil is found in the Beaufort) does not diminish the importance of the EIA processes, as they will provide important information for impact mitigation. In either case, the attitudes of industry towards EIA will continue to be an important factor

in minimizing the impact of these resource developments.

CHAPTER 4 - INDUSTRY AND ENVIRONMENTAL IMPACT ASSESSMENT

4.1 - Introduction

Assessing the social and environmental impacts of large-scale resource developments involves a concerted effort by government and the private sector. Over the past decade, considerable attention has been given to how (or whether) EIA has actually affected governments' decision-making (see, for example, Rees, 1980), "but there has been surprisingly little coverage of the employment of [EIA] techniques by industry" (Elkington, 1981:23). This chapter examines the effects of the two EIA processes described in Chapter 2 on the two mega-projects' proponents. The following two sections (4.1.1 and 4.1.2) provide a context for this examination, by identifying incentives for industry to use EIA, and by outlining means by which companies can adapt to consider environmental concerns effectively.

4.1.1 - Why Should Industry Use EIA?

It was pointed out in section 1.4 that the final impact of resource development on the environment depends as much on industry's attitudes and efforts as it does on the governments'. A large proportion of project planning and decision-making responsibility has been shifted from government to the project proponents. This occurred partly as a consequence of the "polluter pays" philosophy toward environmental protection initiatives, but also as a result of government's apparent inability to provide a "pro-active" planning framework for

resource development. By default, industry ends up with the responsibility for environmental planning and other aspects of land-use planning.

Clearly, then, there is a "public interest" in the private sector's impact assessment and planning efforts. Therefore, it is not unreasonable for the government and the public to hope, or even expect, that industry does attempt to incorporate environmental concerns into decision-making -- for example, through EIA. Is there any incentive -- a "private interest" -- which would lead a company, whose aim is financial profitability, to do so?

The most obvious benefit to industry of using EIA is project approval. This is clearly the case where EIA is a legislated requirement, giving government (and, in some instances, the public) the legal means by which compliance with the EIA requirements can be enforced. One familiar example of this is the United States' National Environmental Policy Act, which forces government agencies to prepare impact statements before proceeding with proposed projects. But even in jurisdictions where EIA is founded only on administrative policy, governments can bring a range of pressures and forces to bear on proponents to encourage compliance with EIA requirements. For example, in both the British Columbia and the federal regulatory processes, there exist a number of regulatory approvals which are, by law, subject to ministerial discretion. If a company refused to comply with a government's EIA policy, a Minister would likely take that non-compliance into account when making the decision to allow or refuse an application for a

statutory approval. So approval for the project EIA and other regulations provides a prime incentive for the private sector to follow the governments' EIA processes.

While this seems self-evident, the real question industry faces here is not whether to conduct an EIA, but rather, how much effort to commit to that EIA. The resources available for corporate planning activities are limited, especially in times of low or even negative economic growth. Therefore, a company would not want to "waste" its limited resources by over-investing in its EIA effort. Conversely, too little effort could result in costly project delays or rejection after significant initial investments have been made. This is particularly true for large-scale energy projects. Loucks et al. point out that, because these projects require enormous financial investments, "any cancellations or project delays can result in considerable economic loss" (1978:1).

While some companies have complained that EIA requirements have imposed significant delays on project planning, others argue that a properly conducted EIA can actually speed up project approvals (Loucks et al., 1978). Elkington (1980) gives the example of the West German nuclear industry which, he says, "is already sufficiently worried about existing delays for EIA to appear as a godsend, at least insofar as it enables it to cut through the clutter of opposition to identify the central issues" (p.186). In many cases, a forward-looking EIA which attempts to anticipate potential problems and objections can actually minimize planning delays for developers (Elkington, 1981).

Although EIA does impose additional planning costs on industry, there is evidence which suggests that EIA may in the long run be of net economic benefit to industry. Elkington provides the example of British Gas, which "estimated in 1979 that the use of EIA had saved it at least £30 million.... For a total investment over the [ten year] period of some £7 million, a £30 million return represents excellent value for money" (1980:192). Loucks et al. present a similar conclusion: "...there is evidence to suggest that [adequate environmental management by industry] is potentially cost effective and the return on its investment is high" (1978:23). In addition, companies may realize some intangible benefits from EIA, including better public relations, an improved corporate image, and unhampered expansion and operations (Royston, 1979).

This evidence would appear to suggest that industry does, at least in some cases, stand to benefit from EIA. However, this does not necessarily imply that EIA has been readily accepted by industry. Elkington writes that most EIA studies "...have been commissioned not because industry itself wanted to know more about its environment -- or about any effects its projects might entrain. Instead, they reflect the growing public demand that environment should be taken into account in industry's management and planning decisions" (1980:202-3).

4.1.2 - How Should Industry Respond?

Whether industry responds because of perceived corporate benefits or because of government or public pressure, or both, each company is still faced with the problem of the form this

response should take, to allow the company to integrate fully environmental factors into its project planning process. In theory, effective consideration of environmental concerns requires a program with these important features: statement of corporate environmental policy; organizational adjustments; and making environmental concerns part of individual employees' responsibilities (Royston, 1979); and developing open lines of communication with government and the public (Gladwin and Royston, 1975).

Statements of environmental policy provide corporate decision-makers with direction on the importance attached to environmental concerns by the company (Royston, 1979). However, these statements will not increase consideration of environmental factors in planning and decision-making if the policies are not supported in practice by senior management (Welles, 1973). Therefore, one must examine a company's policy-in-practice when evaluating its policy statements.

Structural changes to the company's organization are also necessary. This includes adjusting internal chains of command to facilitate greater internal communication about environmental concerns (Gladwin and Royston, 1975), as well as the more obvious step of creating new positions within the organization which are dedicated to environmental planning and management (Royston, 1979).

Policy statements and corporate reorganizations will be of limited effectiveness if not backed with some form of inducement mechanism for all employees, especially those involved in project planning (Gladwin and Royston, 1979). One such

mechanism, suggested by Welles (1973), is incorporating "environmental performance" into ratings of an employee's job performance.¹ Gladwin and Royston conclude that "planning will be environmentally-oriented only when the firm's objectives for environmentally-responsible behavior are deep-seated, consistently supported by top management, and backed by reinforcing performance measurement and reward systems" (1975:194).

Finally, a fourth strategy for dealing with environmental issues is that of developing open lines of communication with government and the public. For industry, this means adopting organizational structures which increase the companies' awareness of "external" issues and trends (Gladwin and Royston, 1975), and developing a closer working relationship with government to facilitate coordination of corporate activities and plans with government regulations and policies, including potential changes (Royston, 1979). Elkington (1981) says that "EIA should represent a vitally important bridgehead, bringing industrial and conservational interests together in a working capacity -- often for the first time" (p. 21). An important point must be made about the above examination of organizational change in response to environmental issues and increased public awareness: companies must perceive the need to move in the direction of more environmentally-sensitive planning and decision-making. Whether this impetus is generated internally as

¹Welles was referring here more to construction and operation personnel than to those involved in project planning. However, a similar concept could be applied to the latter as well.

a corporate policy or due to external pressures such as government regulation is probably less important than the need for it to be present. The changes outlined above are intended to provide means for companies to actively and effectively consider environmental factors in their project development process. Obviously, companies which feel that "the environment" is merely a passing fad, or which view environmental issues only as a hurdle to development approval, are not likely to incorporate fully these suggestions.

4.2 - Industry's Responses To Environmental Issues

The private sector is sensitive to changes in its operating environment. Their responses to environmental issues in most cases predate the creation of EIA processes. The companies involved in this study continue to evolve in the general direction suggested in the preceding section.

4.2.1 - Dome, Esso And Gulf

All three companies involved in the Beaufort Sea project have created environmental groups which coordinate much of the companies' environmental work, and which also work on corporate environmental policy. In addition to their environmental groups, the companies also have positions with environmental responsibilities in their other management groups and branches. While each company has substantial in-house capabilities, all of them rely on consultants for a large proportion of the environmental studies related to their projects and proposals.

Respondents from each of the oil companies indicated that

their companies had policies of environmental responsibility for their activities. While no internal policy documents were sought to back this, as policy statements produced for public image reasons do not necessarily bear any resemblance to actual practices, other published statements make similar claims. For example, in a submission to the Senate's northern pipeline committee, Dome made the following statement:

We believe we operate in the spirit of good environmental and social policy on a daily basis. While this may be, in a sense, peripheral to the mainstream of the regulatory process, we believe it directly addresses the purpose and intent of the current array of acts and regulations governing the development of the north (Dome Petroleum Limited, 1982:7.1).

If one accepts that the "current array of acts and regulations" accurately reflects "the public interest," then Dome's statement may indeed indicate a policy of operating in an environmentally-responsible manner. A respondent from Esso Resources said that Esso's corporate policy was to conduct its operations in a way that meets local community standards and expectations as well as government requirements (Batteke, 1983). Limitations on the scope of this study prevented verification of these claims; however, there is some evidence to suggest that the companies do attempt to act as stated (Canada. Environment, 1983).

In addition to these internal changes for dealing with environmental problems, the companies also pay attention to external forces. This involves two main strategies: increasing public consultation in project planning; and improving contacts and liaisons with government. Dome also claims to have developed open lines of communication with northern residents affected by its activities: "Normal business practice has included

discussions with hunters and trappers and communities to resolve concerns in socio-economic and environmental areas" (Dome Petroleum Limited, 1982:7.1). The other oil companies have similar programs. Esso, for example, recognizes the importance of two-way flows of information between the company and affected communities in its planning efforts (Batteke, 1983). One may question the extent to which this "two-way flow" contributes to project planning and decision-making, but it should, at least, keep the companies aware of local problems and conditions.

The oil companies also attempt to anticipate changes in the regulatory environment, to give themselves more lead time to adapt to any changes which are actually implemented. For example, Gulf commissioned a study of likely trends in government regulations in several jurisdictions where Gulf is active:

The objective of this document is to alert the Company's senior executive, management and staff to issues, concerns and likely trends in the socio-economic impact assessment (SEIA) process from the perspective of government. The study has been written to present direct concise observations of senior government officials regarding the present situation, future directions, trends and regulatory issues which should be of concern to industry (Cornerstone Planning Group Limited, 1980:iii).

Keeping abreast of proposed changes also allows the companies to lobby the government, either individually or through industry organizations such as the Canadian Petroleum Association.

Finally, the oil companies recognize the utility of good public relations work. Gulf regularly places advertisements in magazines and newspapers explaining the purported benefits of its activities for Canada and Canadians. And, presumably to dispell misconceptions about their northern activities and to

demonstrate the problems and technical challenges they face, Esso Resources recently conducted a tour of their frontier operations for a number of journalists (Bell, 1983). Perhaps one indication of the effectiveness of Esso's public relations efforts is that the journalists willingly paid for the privilege of being escorted around the Arctic to promote Esso's activities. These companies recognize that being perceived by the public and the government as committed to environmentally-responsible operations can bring important benefits, including reduced public opposition to projects and "smoothed" government reviews.

4.2.2 - Denison And Teck

Both Denison and Teck have established environmental groups within their organizations with functions similar to those of the oil industry. At Denison, the core environmental group works on environmental policy for the company and on overall guidance of environmental studies, and report preparation for feasibility studies and government project reviews. Denison's practice is to rely on consultants for most environmental studies; in fact, even the writing of the Stage II EIS for the Quintette project was contracted out (Switzer, 1982).

At Teck, a similar pattern is followed. Early project planning is carried out by a core group in the head office in Vancouver. The environmental group coordinates the field research and decides on future research needs. Teck has some technicians located on-site at the Bullmoose project, but most environmental field work is contracted out to consultant

companies. As the project progresses, project management is gradually devolved from the head office to an on-site management group, but this occurs after the front-end planning work has been completed (Robertson, 1982).

While the oil companies have attempted to give their environmental (including social) planning functions high visibility, the same is not true of Denison and Teck. This probably reflects the fact that the companies are not subjected to the continual close public scrutiny that the oil companies endure, and, therefore, have not felt obliged to argue publicly the environmental responsibility of their operations. But, in a letter to the Chairman of the Coal Guidelines Steering Committee, a Denison vice-president stated that "...the Company recognizes sound technical and environmental management to be an essential part of the project" (Hermann, 1982).

This "hypothesis" would appear to be supported by information gathered in interviews with the companies' environmental coordinators about the commitment of their senior executives to environmental programs. The major oil companies have experienced numerous public reviews of their proposals, and the associated publicity has demonstrated to senior levels the advantages of displaying an environmental conscience. As Denison had previously gone through environmental reviews of a number of projects, their senior vice-president for the Coal Division (to whom the environmental coordinator reports) was described as being "quite open-minded" with respect to environmental considerations (Switzer, 1982).

However, the review under the Coal Guidelines of the

Bullmoose proposal represents one of the few occasions that Teck has been confronted with such a review process (Robertson, 1982). Management has attempted to apply their experiences with hard-rock mines (which, until recently, have not been regulated as closely as have coal mines) to this coal development (Robertson, 1982). This is not surprising, as Teck's senior management is made up of men whose primary experience is in hard-rock mining -- copper, silver, molybdenum, and so on. There has been some resistance on their part to recognizing the need for environmental review under the Coal Guidelines (Robertson, 1982). This resistance can be seen in Teck's organization. Teck's environmental coordinator reports to the Chief Engineer, who in turn reports to higher management levels. In contrast, Denison's environmental coordinator reports directly to a vice-president. One must question whether Teck's environmental coordinator can be as effective at his job as his counterpart at Denison can, given their differing status in the corporate hierarchies. However, there has been increasing awareness of environmental concerns at Teck, starting in middle management levels and moving up (Robertson, 1982). One can surmise that Teck will move increasingly in this direction as it accumulates experience with environmental reviews of its proposals.

Denison and Teck have not engaged in the sort of high-profile public consultation programs that characterize the oil industry's planning activities; in fact, they appear content to keep public participation in project planning to a minimum. For example, although the Coal Guidelines have virtually no provisions for mandatory public involvement in the EIA stages,

Denison's environmental coordinator was not convinced that it was necessary to provide for increased public participation in the review, as he felt that there were enough interest groups on the scene to communicate the level and nature of any public opposition to the development (Switzer, 1982). One must recognize, however, that this view may reflect the strong political support the Northeast Coal Development has in Victoria. This support has allowed some manipulation of the Guidelines to the proponents' advantage. With less support, they may have been forced to "play the game" more fairly -- including increasing public participation.

4.2.3 - Summary

The five companies involved in this study have faced similar pressures to incorporate environmental considerations into their project planning and decision-making. All have created core environmental groups which are responsible for ensuring that the physical planning for their projects meets governmental standards for environmental protection. Although the companies contract out most of their research, the core environmental groups are responsible for establishing research requirements and for advising on corporate environmental policy.

The companies display some differences in the way they handle the "public relations" component of EIA. The oil companies have developed sophisticated public consultation programs in response to past experiences with high-profile public reviews of their proposals. In contrast, Denison and Teck have not adopted the polished approach of the oil industry. In

part this is because the current reviews of the coal projects do not have the same public visibility as does the Beaufort EARP. This observation may also reflect the learning process that companies undergo when adapting to new or changing regulatory environments. It is possible that Teck and Denison will adopt more open approaches to public involvement in EIA as they encounter and respond to increased public scrutiny of thier projects.

4.3 - Dome, Esso, Gulf And The Beaufort Sea EARP

Dome Petroleum, Esso Resources Canada and Gulf Canada Resources have had numerous encounters with environmental reviews and regulation of their projects. As a result, when the Beaufort Sea Hydrocarbon Production proposal was referred by DIAND to FEARO for formal review, the companies were able to exploit their previous experiences to facilitate the review.

As mentioned in section 3.1, Dome, Esso and Gulf combined their efforts in producing the EIS. The three companies set up a joint project management group to coordinate and direct preparation of the EIS (Dome Petroleum Limited et al., 1982). The structure of this organization is shown in Figure 4.1. This group included "various types of expertise ranging from senior managers to oversee the total effort, to working level scientists, engineers and others to supervise consultants and company staff in the preparation of the necessary documents" (Dome Petroleum Limited et al., 1982: vol.1, pp. A.2-A.3). Dome Petroleum played the principle role in managing the EIS preparation, while Esso and Gulf contributed expertise in certain areas as well as a proportion of the funding for external studies by consultants. Three other companies, Westmin, Bow Valley and Suncor, also made financial contributions to the EIS production efforts (Dome Petroleum Limited et al., 1982).

With this organization in place, the proponents have, to date, produced the EIS and responded to the Beaufort Sea Environmental Assessment Panel's deficiency statement. The remainder of the Beaufort EARP is, essentially, out of the proponents' hands -- although they participated in the public

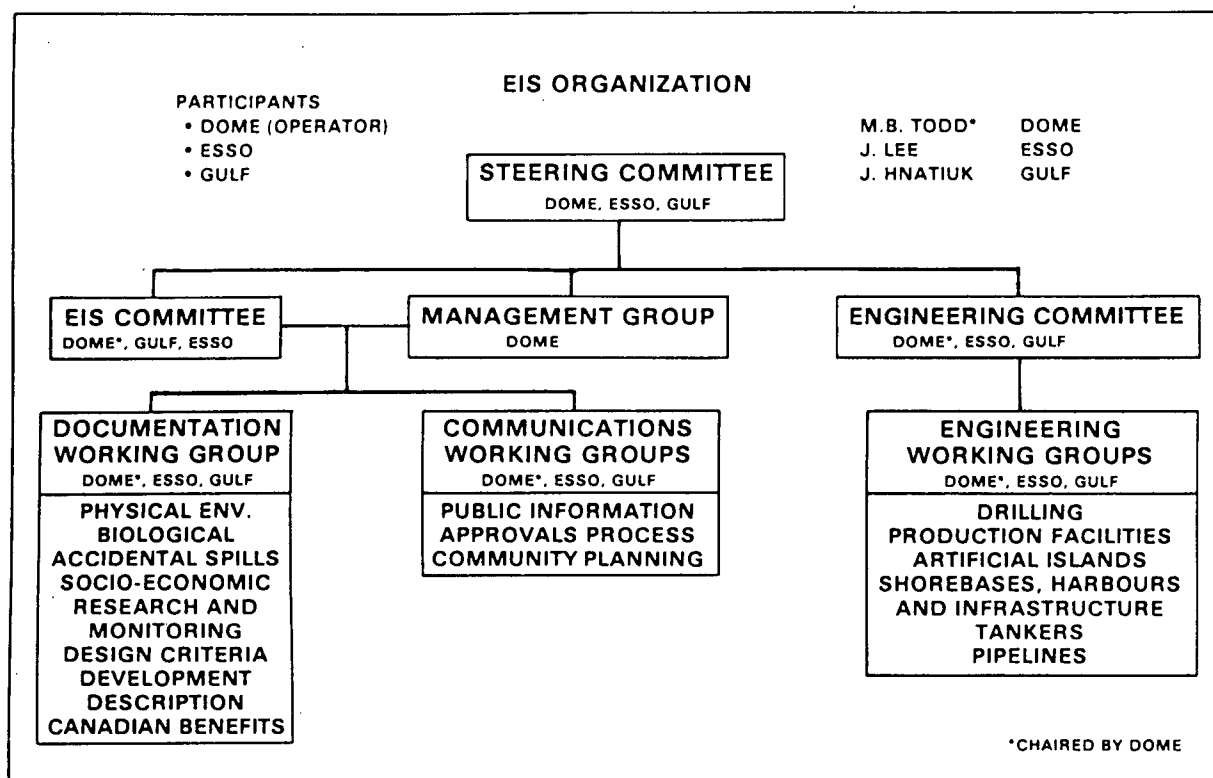


FIGURE 4.1 - Beaufort Sea Proponents' EIS Management Structure
 (Taken from: Dome Petroleum Limited et al., 1982:vol. 1,
 p. A.3).

meetings to review the EIS and the project as a whole, the timing and content of the meetings and the subsequent report to the Minister of the Environment was up to the Panel.

Although this environmental review is not yet complete, it has progressed to the point where it is possible to examine the effects that it has had on the proponents. The remainder of this chapter identifies and discusses the benefits and problems posed by EARP as seen by the Beaufort project proponents, and also attempts to put their statements into a broader perspective of the role and function of EIA. Where appropriate, opportunities to improve the performance of EARP are identified.

4.3.1 - Effects Of EARP: Project Delays

A commonly-raised issue was the uncertainty imposed by EARP on project scheduling. One respondent indicated that the biggest concern of industry is the potential for project delay inherent in EARP (Morrison, 1983). And a Dome respondent felt that potential time delays were "80 per cent of the problem" that EARP poses for industry (Pessah, 1982a). The reasons for these concerns about possible delays is clear: at the time of writing, the Beaufort EARP is well into its fourth year. With the Panel report currently in preparation, the duration of this Beaufort review has already exceeded the time it took Justice Berger to conduct and report on the lengthy Mackenzie Valley Pipeline Inquiry in the mid-1970s.²

²The Berger Inquiry began in March, 1974, and the first volume of the Inquiry report was tabled in the House of Commons in May, 1977 -- a span of just over three years (38 months) (Berger, 1977).

Of course, the scope of the Beaufort EARP is even greater than that of the Mackenzie Valley inquiry, and even includes the Mackenzie Valley as one impact zone. In addition, the Berger inquiry was focussed on a proposal to build a pipeline, whereas the Beaufort review is dealing with general development concepts on a regional scale. So it should not be surprising that the review has been an extended one; and due to the importance of this review, it is difficult to argue that four years is too long. Indeed, it seems clear that the Beaufort review has not, to date, had any adverse effects on overall project scheduling. Because the oil companies have not found sufficient reserves of oil in the Beaufort, the Beaufort EARP cannot be said to have caused any delays in the proponents' estimated project completion time. One can ask, however, if there were "lag periods" in the review process which may have had the effect of unnecessarily prolonging the review.

An examination of the review's chronology reveals that some opportunities may have been missed to expedite the process. For example, Table 4.1, a chronology of key events in the Beaufort EARP, shows that a period of ten months passed between the time the project was referred for formal review (July, 1980) and the time the entire Panel was in place (May, 1981). According to the Executive Chairman of FEARO, "[t]here were many reasons for the time taken.... Not the least of these was the difficulty of finding the right people to sit on the Panel, given the importance, size, scope and complexity of the review. Membership on the Panel was finalized only after extensive consultation with a wide variety of potential review participants including

TABLE 4.1 - Beaufort Sea EARP Chronology of Events

<u>Date</u>	<u>Event</u>
1980	
July 22	Proposal referred to FEARO for formal review.
Nov. 13	FEARO holds seminar in Calgary to identify key issues.
1981	
Jan. 27	John Roberts (Minister of the Environment) appoints John Tener as Beaufort Panel Chairman.
Feb. 10	Roberts appoints four more Panel members.
May 8	Roberts appoints final two Panel members.
June 14	Roberts gives Panel its terms of reference.
June	Draft EIS Guidelines relased by Panel.
October	Panel releases "Operational Procedures" for BSEARP.
Nov.-Dec.	Public meetings held to review Draft Guidelines.
1982	
February	Panel releases final EIS Guidelines to proponents.
Nov. 10	Proponents deliver final volume of EIS to Panel. Ninety day public review period begins.
1983	
Feb. 7	EIS review period ends.
Feb. 14	Panel meets to review EIS.
March 8	Panel releases deficiency statement for EIS.
July 4	Panel receives proponents' responses to deficiency statement. Thirty day review period begins.
August 8	End of review period.
Oct.-Dec.	Final public meetings held to review EIS and responses.
1984	
April (?)	Panel report to Minister of the Environment. (Panel must report no later than six months after final public meetings conclude.)
??	Minister of the Environment and Cabinet decision on Beaufort development.

the two territorial governments, federal departments and agencies, and a number of public and native groups" (Robinson, 1983). Although the Panel Secretariat was working on the review well in advance of the Panel's formation (Robinson, 1983), it seems likely that this ten month lag may have delayed, for example, the release of the draft EIS guidelines.

A second lag in the review process occurred when the meetings on the draft EIS guidelines were postponed by the Panel from "mid-September" to "early November." This two month delay of the review was intended, in the words of the Panel, "to allow review participants adequate time to request funds from the funding committee and to prepare for the public meetings..." (Canada. Beaufort Sea Environmental Assessment Panel, 1982b:3). While the Panel may have felt that this postponement was warranted, the most important effect that it had from industry's point of view was to push back the date when the final EIS guidelines would be released. The proponents had already started work on the EIS before the meetings on the draft guidelines were held; however, they could not finalize their EIS until they were aware of all of the Panel's requirements in the final EIS guidelines.

One respondent questioned the need for public review of the draft guidelines, as he did not feel that the public review contributed substantially to the final content of the EIS. While this may be true, the Panel is obliged, more for reasons of public credibility than for methodological rigour, to provide the opportunity for public involvement in establishing the guidelines. By doing so, the Panel demonstrates its willingness

to listen to public concerns as well as those of government and industry. Although the Panel may have a reasonable idea of individuals' concerns (as the Panel does comprise a wide range of backgrounds and experience), it must still be perceived by the public to be considering public concerns. For these reasons, the public meetings were necessary, despite the additional time they required.

In all, the proponents were kept waiting over 20 months from the time the proposal was referred for formal review until the final EIS guidelines were released in February, 1982. A letter from Dome to the Minister of the Environment stated that, "This is considered to be an unreasonable amount of time to be dedicated to providing the proponents with instructions on how to prepare an EIS.... If the proponents had waited to receive the guidelines before writing the EIS, at least one more year would have elapsed before the EIS could even have been completed" (Todd, 1983). In response, the Minister noted that "...draft EIS guidelines were released by the Panel in June, 1981 and were not substantially changed thereafter. Accordingly, industry had from at least that time to start preparing the EIS and not 20 months after the referral as you suggest in your letter" (Roberts, 1983). One can appreciate, however, industry's frustration at the eight-month public review of the draft guidelines which, in the end, did not result in any "substantial changes" to the final guidelines.

While the two examples discussed above show that government action (or inaction) may have slowed the pace of the review, in other instances the proponents' response time has been the

limiting factor in the review's progress. After the final EIS guidelines were released in February of 1982, the proponents initially indicated that the EIS would be completed during the following summer (Marshall, 1983). However, the final volume of the EIS was not received by the Panel until November 10, 1982. Of course, finalizing and producing a 2 000 page EIS only eight months after the final guidelines were released was a major accomplishment. But the fact remains that the proponents did not meet their own proposed completion date for their EIS. And, although the Panel's subsequent decision to issue a deficiency statement added four months to the review, one could argue that this extension of the review could have been avoided if the proponents had originally addressed the key issues adequately in the EIS. Therefore, this lag can be attributed as much to the proponents as it can to the Panel.

On the basis of this evidence, it does appear that the review has taken more time than theoretically necessary. It is difficult to estimate the real increase in the duration of the review due to the delays identified above, but it does appear that the actual duration could have been shortened by more timely responses by both the government and the proponents. One respondent noted that FEARO had never had a firm schedule for the Beaufort review (Hoos, 1983a). While the difficulties with attempting to impose a schedule on such a broad review can be appreciated, leaving the time-frame for the review open-ended may not encourage a time-efficient approach to the review. Therefore, it may be desirable to consider providing some guidelines for timing of review events, to aid the proponents'

scheduling of key activities and periods during the review process.

Although the proponents have encountered some delays in the Panel review, no project delays have occurred as a consequence. The oil companies are not waiting for EARP approval before they move to production: at present, they are still looking for the reserves needed to make production a viable option. Given the political importance of this development, it seems likely that if the Beaufort EARP was the only obstacle preventing the development from proceeding, the government (and industry) would have compressed this review into a much shorter time period (for example, by limiting the scope of the review).

4.3.2 - Effects Of EARP: Additional Costs

While the Beaufort EARP has not delayed the proponents' foreseen production scenarios, it has increased their project planning costs. In general, the proponents were unable to provide detailed information on the costs they incurred in going through the review process. The main reason for this is that the proponents do not deal with EARP in isolation from other aspects of project planning and from other government reviews dealing with social and environmental issues. The overlap among government review and regulatory processes is reflected in the overlap in industry personnel's responsibilities: although a worker may be involved in the Beaufort EARP, his or her responsibilities are likely to include functions which are not directly related to EARP.

As a result, the companies were able to provide only broad

estimates of administrative costs attributable solely to the Beaufort EARP. The overall cost of meeting the EARP requirements was estimated to be approximately \$14 million to date. This includes the cost of preparing the EIS, the cost of participating in the public meetings, the cost of studies and reports prepared specifically as support documents for the EIS, and a percentage of studies used for both the EIS and other planning or regulatory needs (Hoos, 1983a). The three companies used approximately 60 person-years along with the services of about 60 consultant companies over two years to prepare the EIS and to deal with other aspects of the Beaufort EARP; the cost of producing the EIS itself was approximately \$5 million (excluding research) of the overall figure of \$14 million (Pessah, 1982b). In addition, "[t]he EIS draws upon some \$750 million of research of which about \$100 million was Beaufort Sea Offshore research and another \$100 million for Beaufort Sea Onshore research" (Pessah, 1982b).

Again, these figures were accompanied with the caveat that "the dollars and manpower costs identified are very approximate since it is virtually impossible to account for every individual's time spent on the program" (Pessah, 1982b). While this does, in a sense, frustrate attempts to assess the actual costs of EARP, at the same time it suggests that these companies do not deal with EARP in isolation. The fact that it is so difficult to attribute costs to EARP suggests that EARP is considered alongside the proponents' other environmental planning responsibilities, if not in the mainstream of project planning.

Clearly, the oil companies in the Beaufort are spending a considerable amount of money on EARP. And these costs can be increased by delays in the review process and by government requests for new or additional information. The important question, however, is whether these costs are excessive in comparison to the benefits derived. EIA, it should be remembered, is a government decision-making tool. The information generated for government decision-makers by EIA is therefore an obvious benefit -- in fact, that is a principal objective of EIA. EARP provides a vehicle for public participation in decision-making and as such serves to enhance public confidence in the government's decision processes. It is very difficult to identify all the public benefits of EIA, to say nothing of quantifying those benefits. One must consider these benefits and the motivation (both in theory and in practice) behind EIA when examining the costs imposed on industry. As a result, it is really not possible to attempt an objective assessment of whether industry has been forced to spend "too much" on EIA in the Beaufort.

In addition, the costs of compliance with the Beaufort EARP pale in comparison with the costs of other required environmental protection measures and especially in comparison to overall development costs in the Beaufort. The \$14 million cost of the Beaufort EARP represents less than 0.03 per cent of the development's total estimated cost of greater than \$50 billion; and, as described in 4.3.3, the proponents do themselves benefit to a degree from EARP.

While this makes the costs of EARP appear trivial, consider

that these costs are eventually passed on to consumers and taxpayers. Should industry provide more detailed breakdowns of their compliance costs for EIA and other regulatory requirements, it might be possible to make a case for excessive regulatory costs. The oil companies were unable to provide this level of detail for this study, however, so no such analysis could be attempted. Other studies of the effects of environmental regulation have encountered similar problems (for example, Nelson et al., 1980; Dorcey et al., 1980; Hunt and Lucas, 1980).

4.3.3 - Effects Of EARP: Benefits

The respondents expressed a range of opinions about the benefits their companies derived from the Beaufort EARP. Dome respondents indicated that one important benefit of EARP, from the proponents' perspective, was that it brought the three companies together. This allowed them to identify areas of common interests as well as conflicts among their proposals and plans (Pessah, 1982a; Palmer, 1982). As a result, some efficiency gains may have been realized, for example, by reducing duplication of effort for the review. Although impossible to quantify, these efficiency gains may have reduced the three companies' combined expenditures for the Beaufort EARP. Beyond that, the Dome respondents felt that the Beaufort EARP had been of little use to their project planning needs, as they would have done (and are doing) the same environmental planning work, even without EARP.

From Esso's point of view, an important benefit of EARP was

that it facilitated establishing a two-way flow of information between the company and the residents of the affected communities (Batteke, 1983). However, it was pointed out that, while EARP may have improved this flow of information, Esso's corporate policy of carrying out its operations in accord with local standards would have resulted in the company establishing a local consultation program regardless of EARP requirements (Batteke, 1983).

For Gulf, the Beaufort EARP was beneficial from a public relations perspective. As Gulf has had a relatively low profile in the north until becoming involved in the Beaufort, the company has used the Beaufort EARP as a means of increasing its public profile and showing the governments and the public that their corporate policies and attitudes toward northern development are acceptable (Morrison, 1983). In addition, EARP may give Gulf's environmental group more influence and credibility within the company. When intervenors in the public meetings say the same things that the environmental group attempts to argue internally, Gulf's senior management may be inclined to give more weight to those arguments (Morrison, 1983).

In general, then, the benefits of EARP for the proponents lie in improved communication within and between companies, and between companies and the public. None of the respondents suggested that going through the Beaufort EARP had resulted, to date, in improved information for project planning or management. This was attributed to the companies' high standards for project planning (which make economic sense for operations

in such harsh environments), and to the existing environmental regulatory processes in the North which, it was claimed, make EARP redundant from an environmental and project planning perspective. As a result, the companies view the Beaufort EARP as a public review, intended to show the public that the government is doing its job, more than as a technical review which contributes to knowledge of project impacts and appropriate mitigative measures.

4.3.4 - Integration Of EARP Into Project Planning

In section 1.3, it was noted that for EIA to be effective, it must occur early in the planning process and be an integral component of that process. In the Beaufort, it appears that the EARP review is occurring at an appropriately early stage in the proponents' planning process.³ The Beaufort Sea Hydrocarbon Production proposal has not yet reached an advanced stage of design. In fact, at present the proposal constitutes a number of possible alternative development scenarios, with such parameters as rate of development and potential hydrocarbon transportation systems still very much subject to change. As the oil companies and the federal government appear to consider the need for Beaufort oil to be self-evident, this is the proper time in the planning process to assess the potential environmental effects

³Whether it is occurring at an appropriately early stage in the government's planning process is another matter. Exploration in the Beaufort was never referred for formal review under EARP. As a result, many of the social and environmental effects of hydrocarbon development, with which the Panel review is concerned, have already occurred because of the exploration activity in the region.

of the various development scenarios. It would have been pointless to try to conduct an EIA of the development proposal at an earlier stage; even now it is very difficult to grasp the nature of the scenarios well enough to assess their effects. And, if the EARP had been conducted much later in their project planning process, decisions could have been made in the interim which limited the possible alternatives for consideration.

The actual degree to which EARP is integrated into the proponents' planning and decision-making process is more difficult to assess. It does appear that the proponents attempt to consider and avoid or minimize adverse environmental effects, wherever possible. Of course, the business of these companies is producing oil, so their concept of avoiding impacts "wherever possible" may not necessarily coincide with that of the government or the public. In fairness, it should be noted that the oil companies in the Beaufort do try to meet (or exceed) in advance the government's and the public's expectations and standards for their northern operations. In addition, it may be misleading to examine the integration of EARP into the proponents' planning as a measure of their consideration of environmental factors in project planning, as they view EARP as only the public review of broad environmental issues associated with their proposal. The "real" EIA, it is implied, occurs in the regulatory approvals process, where detailed reviews of plans and impacts occur.

As stated above, some respondents consider EARP to be redundant, as the companies would have done the same environmental work with or without EARP's presence. If so, the

degree to which EARP is integrated into the proponents' planning process may not be indicative of the extent to which the companies attempt to consider environmental factors in their project planning. Indeed, the claim was made that the proponents' consideration of environmental factors had developed to the point that no changes have been made to project plans or designs as a result of information from studies conducted for the EIS (Hoos, 1983b). EARP, it was claimed, does not contribute to improved project design as the companies' standard planning practices would indicate how best to proceed with development in an environmentally sound manner (Hoos, 1983b).

It should be pointed out that the Beaufort development has not yet progressed to the stage of detailed project design. Therefore, it may be premature to dismiss completely EARP's potential contribution to project design. EARP is also the main channel for public involvement in Beaufort planning and decision-making, and focusses public attention on the proponents' plans. In this way, EARP may act to ensure that sound planning occurs in the Beaufort. It is difficult to say whether this public pressure would be less influential in the absence of a public review under EARP, or whether it would be exerted through different channels.

As the proponents are aware of the significant public and government attention focussed (largely through EARP) on the Beaufort, there is little reason to doubt that they will attempt to operate in an environmentally-responsible manner. Indeed, a recent Environment Canada report states that, "The manner in which industry is addressing its responsibilities on northern

environmental matters is most encouraging. Current designs for many northern industrial projects reflect a high degree of environmental planning" (Canada. Environment, 1983:23).

4.3.5 - EARP: Problem Areas And Possible Improvements

The respondents in this study identified a number of other problems associated with EARP. These ranged from questioning the need for EARP to methodological problems related to the application of EARP in the Beaufort.

4.3.5.1 - The Need For EARP

The need to submit the Beaufort development to a formal review under EARP, in view of the extensive regulatory process which already exists in the north, was questioned by the proponents. The opinion was expressed that EARP was meant to be applied where no review process existed. While acknowledging that it may, in theory at least, provide more of an overview of effects, EARP was said to be almost completely redundant for industry, as current regulatory approvals cover the same ground as EARP (Pessah, 1982a).

These criticisms are not aimed at the need to conduct an EIA for the Beaufort proposal; rather, they reflect the overlap and duplication of environmental reviews in the north. There are a number of acts and regulations, applicable in the north, with "limited assessment procedures" which "duplicate the EARP although they are not as extensive" (Canada. Senate, 1983:69) (see Table 3.1). A recent Senate report states that, "The fact that this comprehensive environmental and socio-economic

assessment is taking place [through the Beaufort EARP] has not prevented other agencies from completing their own reviews" (Canada. Senate, 1983:68). In this context, it is not surprising that some respondents question the need for EARP, especially when it is perceived as being done primarily for political reasons. It was suggested that the federal government probably realized that the existing regulatory approvals process could handle the environmental questions associated with hydrocarbon development, but that the Beaufort development was referred for formal review because the federal government felt it needed to be seen to be doing more than the normal regulatory effort.

That duplication and overlap exists between EARP and the regulatory process cannot be questioned. A more important issue is whether it is EARP or the regulations which are redundant. The current regulatory regime in the North has developed haphazardly. Individual regulations were implemented in response to a range of separate issues and problems, with no planning framework to provide a reference point. EARP was added on top of this disjointed regulatory regime. Reducing the existing overlap might be accomplished most easily by scrapping EARP. However, it would seem more logical to achieve the same end by adjusting the regulations to take advantage of EARP's strengths -- for example, its ability to provide a relatively comprehensive assessment of development effects, and its role as a focal point for public participation. While this may be a more difficult means of reducing the duplication, it would create a more efficient and effective review and regulatory system than would either scrapping EARP or maintaining the status quo.

4.3.5.2 - The "One-Shot" Approach To Impact Assessment

Not only was the Beaufort Sea EARP seen as unnecessary; the EIS-based federal approach to EIA was also considered inappropriate. Almost every EIA process revolves around the production of an EIS which describes the existing environment, the proposed project and its predicted consequences. There are two important reasons why this may not be the most desirable approach to use in the Beaufort. First, from a strictly theoretical perspective, many observers have pointed out that there "are real limits to the prediction of environmental effects..." because "everything that has already happened (but is still producing effects) can't be assessed; and ... the really significant effects that occur are synergistic and cumulative, and they are often incapable of being assessed in advance" (Lang, 1977:64).

Thompson et al. go so far as to state that "it is pointless to try to assess and make provision for all project impacts at the time of initial project approval" (1981:11). This is because "[a]llmost by definition, the impacts will be the consequences of disturbances that are unlike any the natural system has yet experienced" (Holling, 1978:133). Given the considerable knowledge deficiencies about the environment in the Beaufort region, and the poorly developed state of impact prediction methods for both social and environmental assessments, it is not unreasonable to question the value of the Beaufort EIS as a means of improving the quality of government decision-making in the north.

Ironically, the utility of EARP's EIS orientation, labelled

by one respondent as a "snapshot" (meaning static) approach to EIA, is further hampered by the fact that the review is occurring when it should -- early in the project planning process. As mentioned above, the proponents do not have "a proposal" for hydrocarbon development. Rather, they have proposed a number of possible alternative scenarios for production and transportation of oil and gas from the Beaufort. These scenarios are, in general, more concepts than plans; changing almost continuously as the results of each exploration well are analyzed and even as the world price for oil fluctuates. It was pointed out by the respondents that the current structure of EARP is not capable of adapting to the proponents' evolving proposals for the Beaufort.

The result is that the usual difficulties in predicting impacts are exacerbated by the fuzzy nature of the proponents' proposals at this early stage in their planning process. This presents a real problem for EARP: attempting to analyze in a limited amount of time all impacts of all scenarios for Beaufort development results in an enormous EIS of only limited utility to decision-makers. (Which seems to be exactly what has happened; but a cynic would point out that the real decision-makers won't be looking at the EIS anyway.) Clearly, this one-shot approach is an inappropriate means of carrying out an EIA of a proposal of the Beaufort Sea Hydrocarbon Development's complexity and magnitude.

One proposal for dealing with this problem was that EARP could be transformed into an open-ended review process which would run for the duration of the development (Pessah, 1982a).

But it was suggested that even this role for EARP would be somewhat redundant, as most of the permits the oil companies need to conduct their operations in the north are issued and reviewed on an annual basis (Pessah, 1982a). However, if that open-ended review was used to establish the terms and conditions of the annually-renewed permits, that apparent redundancy could be exploited to adapt the permits to changing environmental and social conditions.

It does seem obvious, however, that the government's approach to impact management needs to be re-evaluated. Instead of trying to predict and manage all impacts at the EIA stage, "it is better to recognize that there is a whole spectrum of decisions ... that need to be made" both before and after project approval (Thompson et al., 1981:11). For example, it may be preferable to defer detailed consideration of impact mitigation and compensation proposals until after project implementation, when the nature and magnitude of potential impacts are more fully understood (Thompson et al., 1981). "In other words, there can be a responsible decision to proceed with a project on the basis that problems will be dealt with as they arise" (Bankes and Thompson, 1980:5).

However, for this to occur, we must know "at the time of project approval that there is a structure in place capable of making these postponed decisions" (Thompson et al., 1981:11). Currently, there is no such structure at the federal level. In fact, the Panel, in its report to the Minister, can only recommend conditions for approval: "It is up to them [the project proponent or initiator] whether or not to implement

Panel recommendations" (John Herity, FEARO Director General for Process Development and Evaluation, cited in Rees, 1981a:375, note 3). So at present, while a Panel can recommend post-approval monitoring and assessment programs, neither the government nor the proponent is legally obligated to implement them.

For EARP to be transformed into an ongoing impact assessment and management process in the Beaufort would probably require some form of legislated mandate, so that compliance with conditions of approval could be enforced. This would certainly make EARP a more effective process; but whether the political will exists to give EIA that much power and influence in northern decision-making is doubtful.

4.3.5.3 - EIS Guidelines

The final guidelines issued to the proponents state that the EIS "should address environmental and socio-economic issues associated with a proposal for hydrocarbon production... and alternative modes of transportation to southern markets.... Project and site specific details, as they are developed, will be reviewed and assessed by other mechanisms at appropriate times" (Canada. Beaufort Sea Environmental Assessment Panel, 1982a:1). However, much of the information requested in the guidelines appeared to be oriented more toward detailed review than to an initial review of a development concept.

As one respondent pointed out, many of the information requests seemed to be a matter of scientific interest more than information required for informed decision-making. Of course,

the Panel needs a wide range of information to be able to appreciate the possible ecological and social consequences of development. Yet one can only wonder how much a description of, for example, "species composition, distribution, abundance and production on a seasonal basis" of aquatic vegetation throughout the Beaufort Sea (Canada. Beaufort Sea Environmental Assessment Panel, 1982a:37) will contribute to the Panel's task of identifying "major development effects" on the environment.

By requesting information which may be useful but not important for their needs, the Panel is helping to perpetuate the "information overload" problem which has plagued EIA for years. These requests place the proponents in an uncomfortable position. While they may feel quite strongly, based on previous experience, that the information they are being asked to provide will not be very useful, they cannot protest too loudly or too long without being seen by government and the public as unwilling to participate in good faith in the review. As a result, it is often simpler for the companies to attempt to comply with the guidelines' requests than it is to question their validity.

This would be less significant if both industry and government had unlimited resources and time to spend on EIA. This, of course, is not the case. Both the proponents and the government must work within limited budgets for preparing and analyzing EIS's and participating in the other components of a formal review. It is important, therefore, that the information the proponents are asked to provide is directly related to the Panel's task of assessing the Beaufort development. One simple

way this could be done is for the Panel to accompany, in the guidelines, each request for information with a brief statement of how that information will contribute to their task. This will help the Panel to scope the guidelines to key issues, and will make it easier for the environmental groups within the proponent companies to establish internally the need to fund and carry out relevant studies and activities. The problem of scoping EIAs has been examined in greater detail in recent studies (for example, Beanlands and Duinker, 1983).

Another problem identified by industry was the lack of consistency among the guidelines issued for the various EIA's that their different projects go through. It was noted that the EIA requirements for each project have been different, making it difficult for industry to anticipate the kinds of information that will be expected of them in upcoming reviews (Morrison, 1983). This makes it difficult for the proponents to initiate studies at an early enough stage in project planning that they will contribute to an understanding of existing conditions and potential project effects. This is especially true for baseline environmental and social studies, where the problem is always that there is not enough time available to collect sufficient information. It was suggested that a set of "core" requirements could be established for most EIS's, to reduce uncertainty about expectations.

This appears to be a reasonable approach. Although most proponents could predict in advance the types of information they will probably be asked to provide, there are no FEARO guidelines to establish this consistency between reviews. But

the benefit of EARP's project-by-project approach to EIS guidelines is that it can adapt to the circumstances of each different project review. For example, it would be very difficult for FEARO to establish a set of core requirements which would be equally valid for reviews of hydrocarbon production in the Beaufort and the expansion of the Vancouver International Airport. It may be possible, however, to establish core requirements for certain classes or categories of project reviews. This would provide the project proponents with some advance warning about the likely requirements (and thereby reduce the "learning time" that industry must go through when adapting to the regulatory environment of a new project) and could lead to greater consistency in the level and detail of EARP reviews, while preserving the process's ability to adapt to a wide variety of proposals and projects.

4.3.5.4 - Panel Independence

The June 14, 1981 letter from John Roberts, Minister of the Environment, to John Tener, Chairman of the Beaufort Panel, which set the terms of reference for the Panel review, states that the Panel "is independent from the operations of FEARO in conducting its review" (Roberts, 1981:9). However, some respondents expressed concerns that this independence from FEARO was not being realized in practice. There was a prevalent perception that the Panel Secretariat, in addition to providing administrative support for the Panel, was also providing substantive guidance. One respondent suggested that a disadvantage of having an all non-government Panel was that the

Panel could be influenced to a greater degree by the Secretariat's advice. A specific concern was that the Secretariat may have influenced the substance of the EIS guidelines and the Panel's deficiency statement.

The Panel Secretariat, in response, felt that these concerns were not justified. The independence of the Panel in practice was stressed, and it was pointed out that the Panel members were aware of the need to remain independent from the Secretariat as a matter of practice, to ensure procedural fairness. In fact, a request to the Panel Secretariat to interview Panel members as part of this study was turned down on the grounds that procedural fairness concerns would make private meetings with Panel members to discuss the review and associated procedural and substantive issues inappropriate. However, it was acknowledged that the perception of the Secretariat's relationship to the Panel could be affected by its role as the funnel for all correspondence between the Panel and the proponents and the public. The Panel's terms of reference state that, "Except for public meetings, the Secretariat is the main point of contact for communication between the Panel and all participants..." and that, "The proponents' primary contact with the Panel is the Secretariat" (Roberts, 1981:9-10).

Because of this role, it is not difficult to see how the influence of the Secretariat could come into question. And, although it was not possible to determine whether the Secretariat had indeed influenced the Panel to any extent, the mere existence of this perception on the proponents' part is a matter for concern. Remembering the legal maxim that "justice

must also be seen to be done," in other words that what is seen to happen is as important as what actually happens, it may be desirable to consider additional means of ensuring that the Secretariat's role in providing administrative support to the Panel is clearly separate from the Panel's function, and is perceived to be distinct by all participants in the review.

4.3.6 - Summary

The need for industry to incorporate environmental concerns into project planning and decision-making appears to have been accepted by the oil companies active in the Beaufort Sea. This acceptance stems in part from the existence of the government's environmental regulatory regime, and also from the companies' realization that adequate environmental planning can be of net benefit to overall project planning. EIA, as one component of environmental planning, is similarly recognized as one means of ensuring that development proceeds responsibly.

In general, however, EARP is not viewed as a true EIA process. It is perceived to be only the public review component of EIA; the technical review component is seen to occur during the regulatory approvals process. As a result, the need to submit the Beaufort project to a formal review was perceived to be more political than technical in nature. From a project planning perspective, the proponents felt that EARP was largely unnecessary, as normal planning procedures would have covered the same ground -- including public consultation. While this may be true from industry's standpoint, it must be remembered that EARP is meant to aid government decision-making more than

project planning by industry. Although the Beaufort EARP did not delay overall project scheduling, nor amount to an unreasonable cost, the significance of this conclusion must be considered in view of the review's alleged redundancy. In other words, it may be misdirected to worry about the effects of delays and additional costs if the whole process is unnecessary to begin with. However, it seems more reasonable to view the regulatory regime as containing the redundant components, not EARP. Regulatory approvals cannot provide as comprehensive an overview as can EARP; nor does the regulatory approvals process allow public input into decisions about whether proposals should proceed.

In any event, the proponents also identified a number of problems they encountered in the Beaufort EARP; some of which appear to be substantiated -- for example, concerns about EARP's "snapshot" approach to EIA -- while others are less certain. However, the important point is that these are perceived by the proponents to be problems affecting EARP. The significance -- or validity -- of each of these problems may be debated by others, depending upon the observer's perspective, but the fact that industry considers them important means that they should be examined, if only to show that all parties involved are treated equally and fairly.

Despite the problems that EARP presents to industry, the process is presently weighted in the proponents' favor. Information is power; and the current structure of EARP that requires the proponents to prepare the EIS ensures that most of the information and knowledge of a project's likely effects will

be in industry's hands. However, the government -- or, perhaps more importantly, the bureaucracy -- still retains substantial influence over industry, through legislated and informal powers. And, while the relationship between government and industry seems to be improving (in terms of working cooperatively), the respondents in this study often felt unable to enter into a frank appraisal of the Beaufort EARP "on the record," because they felt it could affect their future dealings with government. This reluctance suggests that the government-industry relationship is not a totally open one, at least in the area of environmental assessment. Problems are not unexpected between regulator and regulated; but a more open relationship between government, industry and the public could contribute to more effective and more credible environmental management. EARP, or some derivative thereof, could prove useful toward that end, in its role as a forum for discussion of the effects of development.

4.4 - Denison, Teck and the Coal Guidelines Review Process

In the Beaufort, several companies have combined their efforts to participate in the Beaufort EARP, which is attempting to assess the broad concept of northern hydrocarbon development. The B.C. Guidelines for Coal Development are not structured to encourage such a joint approach to impact assessment. The Guidelines apply to individual proposals for mine developments in the northeast of B.C., not to the entire Northeast Coal Development. Although the Bullmoose and Quintette projects are immediately adjacent in the Northeast coal block, they (and the other proposed mines) are going through the Coal Guidelines Review Process (CGRP) independently. This may make it difficult for the provincial government to assess adequately the cumulative and synergistic effects of the development -- especially as more mines are developed -- on the region's natural and social environment.

Denison and Teck have both formed distinct corporate entities to manage their respective mines. Denison is the major shareholder in Quintette Coal Limited, a consortium which also includes Japanese and French interests (Quintette Coal Limited, 1982). Teck and Lornex have formed a subsidiary, Bullmoose Operating Corporation, to run the Bullmoose project. However, the preliminary planning, including the Stage II impact assessment, was done by Denison and Teck for their respective operating companies (Switzer, 1982; Robertson, 1982).

4.4.1 - Delays Due To CGRP

As in the Beaufort, the EIA process contained in the Coal

Guidelines has not caused the proponents' expected project completion time to be delayed or extended. This is due, in large part, to the notable flexibility that the provincial government has displayed in applying the Guidelines to the two projects. In both cases, the rate of progression through the four stages of the CGRP has been determined by the proponents' project scheduling needs, and not vice versa.

Table 4.2 presents a chronology of the progression of Teck's Bullmoose proposal through the CGRP, as of July, 1983. The proposal entered the review in August, 1979, when the Stage I report was filed with the Coal Guidelines Steering Committee (CGSC). (No prospectus was filed [Crook, 1983].) Approval-in-principle for Stage II was not granted until December, 1982, over three years later. However, after the Stage I report was approved in October, 1979, "there was a period of project planning dormancy" until coal sales were announced in January, 1981 (Crook, 1983:2). So the actual review time for Stages I and II is closer to two years than three.

In addition, after Teck arranged sales with Japanese buyers, with deliveries to begin in late 1983, the Environment and Land Use Committee (ELUC) "expedited matters by allowing some overlap of Stages II and III ..." (Crook, 1983). As a result, Teck was able to begin work on the Bullmoose site in April, 1982, "to satisfy a very strict construction schedule ...", although final Stage II approval was not granted until December, 1982 (Robertson, 1983). It was recognized that this "fast-tracking" of the project planning and review did not follow the letter of the CGRP (Robertson, 1983), and was only

TABLE 4.2 - Chronology of Bullmoose Project Review

<u>Date</u>	<u>Event</u>
	No prospectus filed.
August, 1979	Stage I report filed.
October, 1979	Stage I report Accepted.
January, 1981	Coal sales announced.
April, 1982	Preliminary Stage II report filed.
July, 1982	Final Stage II report filed.
December, 1982	Stage II approval-in-principle granted.

Sources: Crook, 1983; Robertson, 1983.

possible because of the strong political support in Victoria for the development (Robertson, 1982).

A similar pattern can be seen in the review of Denison's Quintette proposal. Denison originally filed a prospectus for the project with the CGSC in May, 1976 (see Table 4.3 for a chronology). Their Stage I report was accepted in May, 1977. But approval-in-principle for Stage II did not occur until June, 1982. Again, however, there was a period of time -- about four years -- when project planning was "virtually dormant" because no markets had been lined up for coal from the Quintette project (Crook, 1983). Only one-and-a-half years passed from the time coal sales were announced in January, 1981 until the time Stage II approval was granted.

ELUC also allowed Denison to overlap Stages II and III: "With the announcement of coal sales in January of 1981, the company [Denison] was faced with the formidable task of completing the government review and project construction by October of 1983. For this reason, the ELUC agreed to some overlap of Stages II and III ..." (Crook, 1983:2). This decision underlines the Province's strong support for the development. In fact, the announcement of this decision in February, 1981, occurred at the same time that Denison's Stage II report was rejected as deficient. This rejection was not unexpected -- Denison had submitted a "draft Stage II" report in September, 1980, which was "...acknowledged by both your company and the Province to be deficient in several respects when it was filed in confidence with the Ministry of Industry and Small Business Development" (Rogers, 1981). It was this draft which was

TABLE 4.3 - Chronology of Quintette Project Review

<u>Date</u>	<u>Event</u>
May, 1976	Prospectus filed.
December, 1976	Stage I report filed.
May, 1977	Stage I report accepted.
September, 1980	Stage II submission filed.
January, 1981	Coal sales announced.
February, 1981	Stage II submission rejected. ELUC allows overlap of Stages II and III.
May, 1982	Revised Stage II report filed.
June, 1982	Stage II approval-in-principle granted.

Source: Crook, 1983.

rejected.

The provincial government did not want to hold up the Quintette project until Denison received Stage II approval: "...I would note that the Province is anxious to cooperate fully with your company in generating the necessary approvals. Any further delays would worsen still further the conflict between the coal production schedule and the need for additional mine planning" (Rogers, 1981:4). As the government recognized that work on the Quintette site would have to begin in 1981 to meet the contracted 1983 deadline for first deliveries, "...we have decided to modify the Coal Guidelines Review Process to achieve the dual objectives of preserving the construction schedule while ensuring that government agencies receive the information they require in a timely manner" (Rogers, 1981:3). The government decided to allow Denison to begin negotiating permits and approvals (that is, to enter Stage III), but at the same time required the company to produce an acceptable Stage II report (Rogers, 1981).

It can be seen that in both cases, the provincial government's willingness to tailor the CGRP to project deadlines meant that any fears the proponents may have had about potential delays in Stage II never materialized. The respondents from both Denison and Teck emphasized that this political support meant that this application of the CGRP was not representative of the potential effects the Guidelines could have if no concessions were made to project scheduling requirements: "...if the process was to be enforced on a future project, the costs of delays in proceeding would be very significant" (Robertson, 1983).

However, both respondents stressed that the projects would have received approval even with less explicit government support, although the approvals may have been slower (Robertson, 1982; Switzer, 1982). Both also indicated that the real potential for delays is in Stage III, when the companies would be attempting to negotiate permits and approvals with the various government ministries and agencies (Switzer, 1982; Robertson, 1982).

It is difficult to say if the government's actions will have any effect on the environmental impact of the development. There is no way to determine, in advance or even after the fact, if fast-tracking the planning and reviews of the projects has reduced the quality of information available for decision-making. The abbreviated baseline studies may make it more difficult to monitor project impacts, but it is not possible to assess the effects of the shortened planning period on the quality of project design -- an important factor in determining a project's environmental impact (Fabrick and O'Rourke, 1982). The proponents must still meet the requirements of the provincial regulatory approvals in Stage III; regardless of how much they fast-track their planning, there is a threshold level of project design for impact avoidance and mitigation which they must surpass. To design for impact mitigation and avoidance, one must first predict probable impacts, so there is also an implicit threshold level of impact assessment effort which must be met if regulatory approvals are to be forthcoming. The question arises whether the threshold established by the current regulatory regime is adequate, but this falls beyond the scope of this study.

4.4.2 - Additional Costs Due To The CGRP

Once again, no detailed estimates were available for the costs Denison and Teck incurred in complying with the Stage II EIA requirements. Denison estimated that total expenditures on environmental studies for Stage II were approximately \$3.1 million, out of a total cost for feasibility studies of about \$30 million. Denison's environmental coordinator indicated that the company usually found that environmental studies represented about 10 to 13 per cent of total feasibility costs (Switzer, 1982), so the relative cost of the environmental studies for Quintette was not exceptional.

The cost of these environmental studies would normally represent an investment with uncertain returns for a company, as the government could conceivably reject a project proposal after substantial expenditures had been made on feasibility studies. A company would then have to write off the costs of these studies as a loss, so the prospect of having to conduct expensive environmental studies could be enough to increase the risk associated with a proposed project to the point where that project is no longer financially viable from the company's point of view (Switzer, 1982). But this is clearly not the case in the Northeast, where the Province appears as eager as the companies to see the development proceed. As the risk of the government deciding not to proceed with the Northeast Coal Development is minimal, the cost of environmental studies for Stage II should be considered in relation to overall project costs. The cost of environmental studies as a proportion of overall development costs for the Quintette project (about \$900 million) is about

0.3 per cent.

Teck estimated the cost of producing their Stage II report to be about \$1 million (Robertson, 1982). It was noted that this cost could have been much greater if they had not been allowed to fast-track the review. The modified review process also prevented the loss of an entire construction season (Robertson, 1983), which would have made it impossible for Teck to meet the contracted deadline for first shipments of coal from Bullmoose of October, 1983. The opportunity costs of missing a full construction season would therefore have been substantial.

These cost estimates for both Denison and Teck include the costs of studies which would have been done without the Stage II EIA requirements or which would have been necessary for the regulatory approvals the companies require to construct and operate their mines. Neither company was able to separate out the costs of the Stage II EIA requirements only. But it does not appear that these requirements represent an undue burden, especially in comparison to the other costs of environmental regulation which the companies face. For example, Cameron (1980) states that "...it appears that environmental legislation can account for 10 to 15 per cent of the operating costs of a project" in western Canada (p. 152). And, as was discussed in 4.1.1, the companies do stand to benefit in a number of ways from adequate environmental assessment, whereas the only benefit of compliance with most other forms of environmental regulation is continued operation.

4.4.3 - Benefits From The CGRP

In contrast to the Beaufort, where the oil companies felt that the main corporate benefits from EARP were improved public relations and communication, the benefits identified by Teck and Denison resulting from the CGRP were related primarily to technical design. Both companies indicated that one benefit of studies done for Stage II was identification of the need for sediment control ponds to reduce the amount of sediment reaching local drainages through surface run-off from roads and the minesite (Robertson, 1982; Switzer, 1982). It was pointed out that if the need for these structures had not been determined before the construction phase began, the companies may have ended up spending more money to correct the problem after the fact than they did by dealing with the problems before they arose (Robertson, 1983; Switzer, 1982).

Other changes in project design included facilities siting, building design and location of roads and dumps at Quintette (Switzer, 1982), as well as designing "hydraulic structures for flood control at the [Bullmoose] plantsite and rail loadout" to meet 200-year flood design criteria, at the government's request (Robertson, 1983). These design changes and some other minor changes did occur during Stage II. However, it is again difficult to attribute these design improvements solely to information obtained during the impact assessment phase. Both respondents implied that some changes were made more to expedite Stage III permit negotiations than to mitigate environmental impacts (although the changes may ultimately have that effect). Information from Stage II was also said to be helpful in

designing monitoring programs for the construction and operating phases (Robertson, 1983).

While there do appear to be instances where the CGRP has resulted in improved project design, from an impact avoidance or mitigation perspective, neither respondent suggested that the companies derived public-relations or corporate image benefits (along the lines of those identified by the oil companies in the Beaufort) from participating in the CGRP. This can probably be attributed to the low public profile of the CGRP, especially in comparison to EARP. Because of the limited provision for public participation in the CGRP, it is not surprising that Denison and Teck did not receive much public attention as they went through the review. The CGRP seems to be more of a physical development planning process than a public development review process, which may explain the types of benefits the respondents identified from the process.

4.4.4 - Integration Of The CGRP Into Project Planning

It is very difficult to assess the degree to which Denison and Teck -- or any other companies -- have voluntarily incorporated environmental planning into their project planning processes. However, the Coal Guidelines do appear to have been incorporated, to an extent, into the proponents' planning processes. This is due in part to the structure of the CGRP, which forces a developer to integrate the results of the Stage II EIA into construction and operating plans. This is accomplished in two ways: by attaching conditions to the Stage II approval, to which the companies respond in writing; and by

involving key ministries in the review process so that concerns which are outstanding after Stage II are not forgotten but incorporated into the terms and conditions of the Stage III permits and approvals.

In comparison to EARP, the CGRP is a more interactive approach to planning and review. As noted in Chapter 2, the CGRP involves several key development, environment and social services related ministries in the review of the proponent's proposal during Stages I and II. The proponent has the opportunity to incorporate the responses of those ministries into the evolving mine plan. In addition, the ministries, when reviewing the Stage II EIS, can recommend approval-in-principle subject to certain conditions being met by the proponent. As a result, the proposal may proceed to Stage III instead of being held back at Stage II while revisions are made to an otherwise acceptable Stage II report.

Although the government allowed Denison and Teck to overlap Stages II and III, neither was excused completely from meeting Stage II requirements. When Denison and Teck did receive their respective Stage II approvals, each was granted on a conditional basis. Each company received a list of outstanding concerns, to which each responded by agreeing in writing to deal with those concerns at the appropriate points in Stage III (Hermann, 1982; Lipkewich, 1982). Whether these letters legally bind the companies to follow through on their promises is uncertain; however, it is clear that the companies are aware, at senior levels, of the need to incorporate the concerns into subsequent construction and operating plans. And the government expects

them to do so: "Your company [Teck] is now expected to take the initiative in approaching government agencies directly on a one-to-one basis to discuss, evaluate and ultimately resolve outstanding concerns during Stage III" (McDonald, 1982).

The ministries which are involved in negotiation of permits and approvals in Stage III were also part of the Stage II review. Therefore, these ministries are aware of the remaining Stage II concerns and could incorporate some of these concerns into the terms and conditions of the regulatory approvals. One problem is that not all concerned ministries are involved in Stage III, as some do not have roles in post-approval project regulation. For these agencies, Stage II reviews are the only opportunity they have to attempt to ensure that the proposal meets their standards. One example is the social services related ministries, which do not have regulatory powers equivalent to those under the Waste Management Act or the Coal Mines Regulation Act. Nor is there any guarantee that Stage II concerns will necessarily be reflected in the terms of Stage III approvals, especially when the concerns are those of a ministry not directly involved in regulatory approvals in Stage III.

However, these two mechanisms do appear to have the effect of forcing the companies to integrate the Coal Guidelines, and the consequent amount of environmental planning that the Guidelines require, into their project planning processes. The commitment of the two companies to this consideration of environmental factors is not clear. As discussed in 4.2.2, Teck's senior management still displayed some reluctance to accept the need for EIA in project planning. And Denison's

approach to Stage II -- submitting an admittedly deficient EIS and upgrading it as the reviewers required -- suggests that Denison did not intend to do any more work on Stage II than absolutely necessary. While this only represents one outside observer's impression, it does not appear that Denison and Teck have developed as sophisticated an approach to dealing in advance with environmental matters as have the oil companies involved in the Beaufort development. But it should be emphasized that both companies' environmental coordinators feel that going through an EIA process is of net benefit to the companies and to the quality of their project planning (Switzer, 1982; Robertson, 1982).

As well, this is only one case study of the two companies. It may be that this perception of the companies' attitudes and approaches toward EIA reflects the Province's current emphasis on expeditious resource development more than the companies' normal planning practices. The onus is on the government to demonstrate to the companies that it considers EIA and other aspects of environmental planning to be an integral and important part of overall project planning. If the government does not give industry this message, one cannot expect companies to attempt to surpass minimum government planning standards in their consideration of environmental impacts.

4.4.5 - CGRP: Problem Areas And Possible Improvements

4.4.5.1 The "One-Shot" Approach To EIA

Denison's environmental coordinator suggested that the current structure of the CGRP placed too much emphasis on the front-end review phases and too little on the subsequent monitoring of the construction and operation phases (Switzer, 1982). An example of this was the tendency of the review process to concentrate more upon the potential effects of the proposal than on the companies' plans for dealing with those effects (Robertson, 1982). Both respondents felt that this was inappropriate, as the quality of the mitigation plans is an important determinant of the mines' environmental impacts.

It was suggested that the government should reduce the emphasis on the EIA portion of the CGRP, while placing more weight on post-approval monitoring (Switzer, 1982). The government should increase the strength of the regulations -- for example, by increasing penalties for non-compliance -- as it increases its enforcement efforts, so that they would increase the level of compliance with the regulations (Switzer, 1982). While it may seem unusual for a company to suggest that it should be regulated more strictly, putting more resources into Stage III could actually benefit the companies. Both respondents indicated that the greatest potential for project delays occurs in Stage III. Therefore, expediting the negotiation of regulatory approvals could more than compensate for any increased costs of compliance with those regulatory approvals.

Would reducing the emphasis on front-end review also be

beneficial from a public or a government perspective? Where the government has decided in advance that a project should proceed, as the Province has done with the Northeast Coal Development, there is no need to rely on EIA to assess the need for a project. The EIA is still necessary to determine in advance the required mitigation and compensation plans to deal with the project's impacts.

However, one must question whether it would actually be possible to reduce the emphasis on Stage II any further than the Province did in the Northeast, while still maintaining a useful pre-approval review. The respondents' suggestion to reduce the emphasis on the front end of the Guidelines may be a good idea when a more typical application of the Coal Guidelines is used as an example; but it is difficult to make such a recommendation based on the experiences of Denison and Teck with the CGRP in the Northeast Coal Development.

4.4.5.2 - Inexperienced Government Reviewers

The respondents indicated that some difficulties had been encountered because some government personnel, primarily in the regional offices, did not have previous experience with reviews of mining proposals. This was attributed in part to the rate of turnover of regional staff. The result was that some government reviewers ended up having to comment on subjects and resource conflicts with which they may not have had previous experience.

This created some problems for the proponents. Because some reviewers had not previously dealt with a mine proposal, it was perceived as a threat to their sectoral responsibility. And, as

the only time these reviewers dealt with industry (including other types such as forestry) was when industry was presenting such threat, it was felt that the reviewers had developed a "basic mistrust" of industry. The reviews of the proponents' Stage II reports, it was suggested, showed that the reviewers only saw the negative side of industry's proposals.

A second consequence was that there was occasionally some conflict or confusion between what the regional reviewers told the companies and what the companies heard from Victoria. This meant that the "rules of the game" changed as the companies received varying signals about the government's requirements and expectations. One respondent noted that it was occasionally necessary to go directly to Victoria, over the heads of the regions -- something that was only possible because of the strong support the Development has in Victoria.

A third problem, which may not be directly attributable to reviewer inexperience, was the tendency of some government reviewers to stray, in their reviews, beyond their own jurisdiction into those of other ministries. The review comments from the Ministry of Lands, Parks and Housing for both the Quintette and the Bullmoose projects are one example. The vast majority of their "detailed review comments" appear to be outside their mandate. As the introduction to the Lands, Parks and Housing comments on technical and biophysical aspects of the Bullmoose proposal states, "Many concerns were identified, most notably with respect to water management, waste dumps, reclamation, plant design and waste disposal. Most of these concerns fall into the jurisdictions of other agencies, and

should be discussed with those agencies as appropriate" (BC Coal Guidelines Steering Committee, 1982). It seem reasonable to expect that the reviewing agencies and ministries should confine their comments to their jurisdictions. This would make it easier for industry to identify the ministries responsible for certain matters and would also reduce the conflicting feedback that the companies encounter in the reviews.

It was suggested that a possible improvement to the current structure of the CGRP would be to set up a core group of government personnel to act as reviewers for coal developments (Robertson, 1982). This would help to provide continuity and consistency in the reviews, and could help to offset the loss of expertise and the consequent task of "re-educating" new reviewers for each proposed project. It was suggested that this group could consist primarily of personnel from Victoria, with some regional representation as well.

This could be considered as one way of dealing with the numerous mine proposals which will come out of the Northeast Coal Development. It appears that up to 10 or 12 separate projects could go ahead in the region in the next 10 or 20 years, if appropriate economic conditions prevail. To have the same people involved in reviews of similar projects in the same area seems appropriate. Of course, there is going to be a certain turnover of staff over that period, so even this suggestion would not deal with the loss of experienced government reviewers. The problem of turnover of government reviewers appears to be something the industry must live with -- people will always be moving to different jobs. It should also

be noted that the government reviewers involved in the Northeast Coal Development have now gained some experience with mine reviews, albeit at Denison and Teck's expense. Reviews of subsequent proposals may benefit as a result.

Similarly, it seems likely that many environmental resource management agencies will continue to perceive resource development initiatives as threats to their jurisdictions. Their mandate is to manage their own sector, or resource; and that usually seems to be interpreted as protecting that resource from any outside threats. It is up to the politicians in Victoria to place the competing resource uses in their political and economic context and to make the appropriate trade-offs. Then the government's policies and priorities must be communicated to the regional offices which, to a large extent, are responsible for implementing government policy on a day-to-day basis. One means of communicating these policies would be a regional land use planning process which would apply the Province's policies to the resource uses in the Peace River region.

The land use plans which would be generated by such a process (and which would be updated as policies and conditions changed) would provide regional office personnel with an applied policy framework within which resource development proposals could be reviewed. Industry would also stand to benefit, as such plans would reduce much of the uncertainty about government resource development policies and would allow them to channel investment into areas where less government and public resistance would be expected. Of course, one obstacle to the

development of such a process is that it would require that the government explicitly state its policies and priorities for the various resources and resource uses -- something which could prove difficult. Depending on the extent of public and regional involvement in such a process, it could also mean that some of the policy-making power would be decentralized. It is uncertain whether Victoria would consider this a desirable trend.

4.4.6 - Summary

The Bullmoose and Quintette coal projects are progressing through the CGRP with strong support from the provincial government. This support has reduced the potential for delays that the review process presented to Denison and Teck, for example, by allowing both proponents to overlap Stages II and III. In comparison to the Beaufort EARP, Denison and Teck encountered relatively few problems with the CGRP in the northeast. A study by Cameron (1980) indicated that other developers encountered few problems -- including delays -- in going through the CGRP. The same study concluded that, from an international perspective, the western Canadian coal industry was not excessively regulated: "The requirements of the environmental regulations enacted within recent years in Western Canada are new constraints on the coal industry and appear very stringent, but in the international perspective they are not inordinately demanding. By comparison with the situation in major coal producing nations, the industry in Western Canada is not over-regulated" (Cameron, 1980:166-167).

For Denison and Teck, potential problems they might have

encountered were further lessened by the government's willingness to adapt the review process to meet the needs of the companies' project scheduling. It is not possible to assess in advance the costs or benefits (including socio-economic and environmental consequences) of the government's decisions. An important concern in this application of the Coal Guidelines is the low level of public involvement in the EIA stages. Increasing public participation would make the Coal Guidelines a more credible, and possibly more effective, impact assessment and management process. But from industry's perspective, it could also make it a lengthier and more costly process.

4.5 - Chapter Summary

Two important factors which influence industry's attitudes toward EIA are the potential delays EIA imposes on project planning and overall completion time, and the additional costs of compliance with EIA requirements. Delays can occur if project approval is held back until studies are submitted, reports are reviewed, or hearings are held; additional costs are incurred in conducting studies, in preparing reports, and especially in waiting for project approval.

On the other hand, information obtained for this study indicates that the expected project completion time for both the Northeast Coal and the Beaufort Sea Hydrocarbon developments has not increased as a result of the existing EIA requirements for the projects -- for different reasons in each case. The strong political support for the Northeast Coal Development has allowed Denison and Teck to begin construction work on their projects before their EIA's were completed and approved. Project delays have occurred in the Beaufort, but they are not attributable to the Beaufort Sea EARP. Although the review is now in its fourth year, project implementation is not even a real issue because commercial volumes of oil reserves have not yet been confirmed.

While the EIA processes did not delay (or, in the case of the Beaufort, have not to date delayed) target dates for project completion, they did increase project planning costs. Denison spent over \$3 million on its environmental studies, out of a total of about \$30 million for all feasibility studies. Teck estimated the cost of producing its Stage II report at \$1 million. In both cases it was noted that these figures would

have been even greater in the absence of such strong political support. Costs were much higher in the Beaufort. The cost of producing the EIS was estimated to be \$14 million; information for the EIS was drawn from environmental studies costing over \$750 million.

Clearly, these companies are spending substantial sums on environmental planning studies. However, two important points must be made. First, not all the costs can be attributed solely to the EIA processes, as many of the environmental studies would have been conducted even in the absence of the EIA requirements. Second, the actual expenditures on EIA -- even on all environmental studies, EIA-related or not -- are a very small proportion of overall project costs.

While the negative effects on industry of these two EIA processes are similar, the proponents had different opinions about the utility of the processes as means of improving development planning and design. The companies in the Beaufort felt that participating in the Beaufort EARP had not contributed substantially to the quality of their planning for the development. This was, it was claimed, because the companies' standard planning practices covered the same ground as did EARP, and would have been carried out even in EARP's absence. In contrast, the companies in the Northeast Coal Development were able to provide examples where the information they obtained from their Stage II studies had led to changes in project design. These differing benefits appear to be a result of the differing roles of the two EIA processes. EARP is a public review of the social and environmental implications of the

proponents' broad development concepts for the north. As such, it does not deal directly with issues related to detailed project planning. In contrast, the Coal Guidelines are oriented primarily toward detailed planning and design issues, while both the proponents and the government appear content to keep public involvement to a minimum. These differing roles of the two processes seem to be closely correlated to the types of benefits the proponents realize from each.

All five companies involved in this study appear to attempt to integrate environmental concerns into their project planning processes. This integration has evolved over the last two decades in general; as the oil industry has been subjected to more intensive public scrutiny of their operations, their efforts and strategies for dealing with environmental issues appear to be more sophisticated than those of the two mining companies. It does appear that the latter two companies are moving in that direction as they build up experience with EIA, and as they receive more public attention over their operations and plans.

Most resource developers now accept the need for EIA in project planning and review, and recognize that it can bring benefits to both industry and society. But this is not meant to imply that the status quo cannot be improved upon. Especially in the north, where the many environmental regulations and reviews overlap and often conflict, full appreciation of the impact of all environmental regulations cannot be obtained when only one component -- EIA -- is examined.

While environmental regulations may reduce the social costs

of resource development, these regulations themselves impose costs on both the private and public sectors -- costs which are eventually passed on to consumers and taxpayers. Better regulatory coordination and more explicit statements of public policies and priorities for resource development and environmental protection will lead to more effective and efficient public and private sector planning and decision-making (Rees, 1981a). These changes could contribute to resource development practices which facilitate economic growth and development while maintaining acceptable standards of environmental quality.

CHAPTER 5 - OVERVIEW AND IMPROVEMENTS

5.1 - Effects of EIA on Private-Sector Project Planning

A major conclusion of this study is that the effects of EIA on project planning by the companies involved in the Beaufort Sea and Northeast Coal projects are limited. This includes effects on the quality of project design, as well as on the duration and expense of the planning and design process.

EARP and the CGRP do not appear to have had a substantial effect on the technical aspects of environmental planning carried out by these companies. Two contributing factors are involved. First, the regulatory environments in which these projects are being planned have numerous acts and regulations related to environmental protection. As a result, even without the specific requirements of these EIA processes, much of the environmental planning work done for these developments would still have been necessary to meet regulatory requirements.

Second, for both projects, sound environmental planning makes financial sense for the companies. In the Beaufort, the companies face harsh operating conditions. High standards for planning and design are necessary to ensure that equipment functions properly, avoiding expensive shut-downs and repairs. In the Northeast, using high design standards will reduce the cost of environmental protection measures required during the construction and production phases. In both cases, the five companies are increasing their front-end capital costs to gain long-run reductions in operating and maintenance costs.

While the two EIA processes may not contribute

substantially to industry's planning efforts, one should not draw from this observation the conclusion that formal EIA processes are not necessary. EIA's intended role is that of an aid to public review of projects, not to private planning of projects. At a relatively small cost to the companies -- in the two case studies the EIAs caused no project delays and represented only a small fraction of total costs borne by industry -- the government and the public are provided with a "window" on industry's project planning process. This provides an important source of information for government decision-makers, and allows both the public and the government to increase their influence on industry's project planning. In this context, the role of EIA in project planning is homologous to the role of environmental monitoring by government during project construction and operation. EIA processes also provide certain intangible benefits to industry, ranging from improved corporate image and community relations, to providing a quality-control function for their project planning and design. Government EIA processes, therefore, are necessary components of project planning and review.

5.2 - Problems In The Present System

Although EIA, as represented by EARP and the CGRP, has had some positive effects for project review by government and, to a limited extent, project planning by industry, it has not realized its full potential. This study has identified two principal constraints: overlap with existing regulations; and what has been termed the "one-shot" approach to impact

assessment. Especially in the North, there exists an environmental regulatory regime which covers much of the same ground as EIA is intended to. This gives rise to complaints that EIA is redundant. However, EIA was created after much of the body of environmental regulations was in place, and overlap does exist. Indeed, one wonders if industry might not be calling the regulations redundant if the order had been reversed; that is, if the regulations had been imposed on top of the EIA processes. In any event, while EIA and environmental regulations do overlap, each is necessary. The solution to the problem of overlap is not to scrap one or the other; but to integrate the review and regulatory stages. One possible approach is outlined in section 5.3.

The second major constraint on effectiveness identified in this study is the static nature of the two EIA processes. The tendency of EIA to focus on "snap-shots" of proposals -- in the form of the EIS -- is in part a consequence of the need to provide a concrete proposal for government decision-makers to consider. Unfortunately, this one-shot approach ignores the evolutionary nature of project planning and design -- as exemplified by the changing development concepts for the Beaufort. With EARP, this problem is exacerbated by the limited contact between the proponents, the Panel, and the government agencies and departments. The Panel review procedures -- many of which were developed in response to fairness concerns -- have the effect of isolating the reviewers (the Panel) from much of the ongoing project planning, and essentially guarantee that the review will focus on the EIS, not the evolving development

concepts. While the B.C. CGRP shows a similar tendency to focus on the Stage II EIS, an attempt is made to encourage contact between the developers and the various government agencies throughout the review process. The EIS does appear to be an essential component of EIA, but its role must be complemented by greater (ongoing) communication between the government, proponents and the public throughout the EIA process.

5.3 - An Improved Arrangement

The two EIA processes are limited by internal structural problems as well as the environment in which they operate. A suggestion for an improved process -- not radically different from many jurisdictions' institutional arrangements for environmental management -- is outlined below. This suggested arrangement provides a general illustration of how planning, assessment, regulation and monitoring could be integrated to provide more effective and efficient environmental management. This proposal is more evolutionary than revolutionary in nature, in keeping with the typical pattern of change for government institutional arrangements.

A basic assumption of this idealized system is the existence of an ongoing land-use planning process. This process, which would include government, private and public interests, is of fundamental importance to effective impact assessment. The planning process would integrate or translate the various resource policies and public and private interests into functional resource use plans. In theory, these plans would provide a framework, indicating social priorities and

preferences for resource use, within which impact assessments would be conducted.

The plans would provide general indications of whether or not a proposal for resource use was appropriate or needed in a certain region. EIA would be used to determine if the proposal was in fact in accordance with the designated land or resource uses, and what the consequences of proceeding (or not proceeding) would be. It could be desirable to separate the EIA into two stages. The first stage would focus on whether the proposal should proceed, although this would be more narrowly focussed than similar investigations at present. The principle point of reference for this first-stage EIA would be the land-use plans: Is the project actually in keeping with the plans? Is the project justified in view of its effects? Are there any extenuating circumstances which might justify the project even though it diverges from the designated land or resource uses in the plan? At this stage, a detailed EIS would not be required, although the proponent would be expected to present the evidence needed to convince the reviewers (perhaps a government/public group similar to the Beaufort Panel) that the proposal should be allowed to proceed. Consent of the reviewers at this point would represent approval-in-principle for the project, and it would proceed to the second stage of the EIA process.

This second stage would focus on the (primarily technical) issues associated with implementation of the project. The first event in this stage would be production of a detailed impact statement and implementation plan by the proponent. Guidelines for the EIS's contents would be left to the proponent's

discretion. As the onus is on the proponent to convince the reviewers that they have dealt adequately with all relevant issues, it would naturally be in the proponent's best interest to ensure that the EIS covered issues of importance to the public and the government -- for example, by consulting those interests when formulating the EIS guidelines. While the proposal would have received approval-in-principle by this time, the reviewers would still have the ability to prevent its implementation until they were satisfied that it should proceed. Because the EIS provides only a static view of the proposal, extensive contact between the proponent and the government and public would be needed to ensure that changes in the proponent's plans and new environmental or social concerns could be communicated and integrated into the evolving project plans.

This two-stage EIA process would have two main advantages. First, it would allow the reviewers to separate concerns about project need from concerns about project implementation. The present arrangement is a source of frustration for all parties involved. In EIAs of many proposals, the usual situation is that many public intervenors are trying to argue against a proposal while the proponents are only interested in discussing how that proposal should be implemented. In this proposed arrangement, arguments would be focussed on the two key issues -- "whether," then "how" -- in sequence. If approval-in-principle was granted, the second stage would proceed with all parties aware that the proposal would likely be implemented; and debate in that stage would be focussed on means of avoiding or mitigating any adverse impacts.

The second advantage of the two-stage EIA is that it would facilitate integration of the EIA phase with the ongoing monitoring process which would monitor implementation of the proposal. The proposed iterative planning and review process of the second-stage EIA would involve consultations between proponents, government and the public. This same approach could be used to monitor project effects. For example, regular meetings could be held at which the proponents would provide updates on their plans and activities, and where the government and the public could raise new issues associated with the project. (This could also be an important source of feedback for updating the land-use plans.) This arrangement would likely prove to be an effective means of following up on outstanding concerns from the EIA phase.

The monitoring phase would have two key objectives: to manage or reduce impacts; and to learn, for application to future proposals. Monitoring is not an end in itself: if information from monitoring is not used to improve decision-making, the exercise is pointless. The government must have means of ensuring that the proponents monitor key aspects of their operations, and, more importantly, that they use that monitoring information to adapt their plans and activities as appropriate. At the minimum, this requires that the government have the capability to monitor the information collected by the proponent's monitoring program, and to review and approve their operating plans to ensure that they are actually using that information to avoid or mitigate impacts as much as possible. Implicit in this requirement is the need for effective

enforcement measures to be available to the regulators. This could be the weak link, for several reasons: industry has control over most of the information; resources (money and manpower) for enforcement are scarce, and effective enforcement is expensive; limited baseline information makes it difficult to establish valid environmental standards; and, finally, public (and, to an extent, government) interest in a project seems to fade after final approval is granted, reducing public pressure on the proponents. The ongoing forum for public feedback into project management described in the preceding paragraph could help to counteract the latter problem.

The second objective of the monitoring phase would be to "learn from doing." This aspect of monitoring would have two benefits: it would improve our ability to predict and plan for the environmental impacts of certain classes of proposals; and it would provide a continuing flow of information to be used in updating the existing land-use plans. These benefits may be of less immediate importance for project-specific impact management, but are important over the longer term as means of improving our institutional capabilities for dealing with resource developments.

At first glance, this proposed arrangement may seem more burdensome than our existing approach to review and regulation. However, this may not be true. The key to making this system function smoothly and efficiently is the existence of the land-use planning process. This process would be the forum for much of the public debate which now occurs in EIA reviews of projects. By removing what is essentially policy debate from

project reviews, it seems likely that the EIA process would become more efficient and effective. Integration of the second stage of the EIA process with the environmental regulation phase would also reduce much of the uncertainty proponents currently face when applying for permits and approvals. A more open approach to planning and decision-making could also reduce initial opposition to a proposal (from government and the public) if that opposition reflected concerns about lack of control over a proposal more than the nature of the proposal itself. With these potential benefits to industry, some support could be expected from that sector, once the normal initial resistance to change was overcome.

Perhaps a more significant obstacle to overcome in attempting to move toward this proposed system would be encountered in the government itself. Some politicians may find the thought of making life easier for industry distasteful, especially if they were concerned that "re-regulation" would be perceived by the public (that is, their electorate) as deregulation. In addition, the extensive restructuring of the institutional arrangements would be certain to encounter a good deal of passive resistance (inertia) from the existing departments and agencies, with their vested interests and reluctance to cede decision-making powers (especially to "environmentalists!").

The important point to take from this is as follows: both industry and the public stand to benefit from an improved environmental management system. Industry would have a more efficient (less costly) project planning, review and regulation

system which would provide more effective environmental protection and improved resource-use decision-making for the public. We know what is needed; getting there will be the problem.

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