AN ASSESSMENT OF THE
SALMONID ENHANCEMENT PROGRAM PLANNING PROCESS

by

DARYL WAYNE BROWN
B.A., The University of Victoria, 1975

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

in
The Faculty of Graduate Studies
(The School of Community and Regional Planning)

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA
April, 1981

(c) Daryl Wayne Brown, 1981
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the Head of my Department or by his representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

School of Community and Regional Planning

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date    April 28, 1981
ABSTRACT

A Salmonid Enhancement Program (SEP) has been initiated by the Federal and British Columbia governments with a primary objective of rebuilding the Pacific salmonid resource to historic levels of abundance (i.e. double current production). To this end, a diversity of individual enhancement projects have been undertaken, and others are scheduled for the future. The projects range from simple, small-scale and relatively inexpensive activities, such as stream rehabilitation, to the construction and operation of capital intensive and technologically complex hatcheries.

This study seeks to evaluate the effectiveness of the SEP planning process as a means of producing socially acceptable salmonid enhancement decisions.

In addition to rebuilding the resource, the implementation of SEP projects is viewed by government as a means of contributing to economic, social and environmental objectives. The extent to which each of these objectives is satisfied is sensitive to the type, location, scale, and timing of separate enhancement projects. Different projects confer different kinds of benefits and costs. Since financial resources are scarce, tradeoff among objectives is necessary. Tradeoffs are determined by the dynamics of the SEP planning process which culminates annually in decisions to allocate scarce resources among competing ends.

In making the resource allocation, the SEP planning process must deal with considerable uncertainty. The satisfaction of Program objectives will depend ultimately on a sustained
increase in salmonid production. While the technology exists to produce fish artificially in great numbers, it remains unknown whether or not increased production can be sustained. The results will depend in large part on the regulation of harvests and habitat protection.

It is postulated that the constituent elements of a "good" planning process should correspond with the precepts of liberal democratic theory. This implies that a "good" planning process ought to produce resource allocation decisions that reflect the desires of society, and in doing so, it should deal with the problem of uncertainty in an acceptable manner. Accordingly, the normative criteria used to assess the SEP planning process are:

1. Interests (government and non-government) who will be affected by SEP decisions should have the opportunity to participate, or more realistically, be represented in all aspects of the planning process.

2. For interest representation to be effective and for policy decisions to be intelligent, relevant evaluative information on alternative enhancement plans should be generated and communicated among interests.

3. Planning should be efficient in the sense that it is not wasteful of time and resources.

The SEP planning process was studied in detail and evaluated through application of the foregoing criteria. Recommendations for remedying identified deficiencies were developed through application of theories of political and administrative behavior, derived from a study of the literature on this subject.
Strengths, Weaknesses and Proposed Improvements

A. Representation of Interests

1. Although the range of appropriate non-governmental interests is represented on a public advisory body (the Salmonid Enhancement Task Group - SETG), these interests are involved only superficially in planning. Furthermore, SETG members communicate insufficiently with their affiliated groups, thereby limiting the extent to which the interests of the "wider constituencies" are represented in planning.

To remedy this situation it is proposed that: (a) a second level of regional advisory task groups be formed, and (b) the existing SETG be provided with resources to obtain independent technical expertise so that it can function more effectively in the planning process.

2. The Salmonid Enhancement Board (SEB) which is composed of private interests as well as senior governmental officials decides upon programs to be undertaken and advises on policy matters. The problems with this arrangement are that: (a) private, non-accountable individuals participate in the allocation of public funds, and (b) proponent agency representatives, in effect, provide advice to themselves.

It is suggested that the SEB be made purely a decision-making body and that private interests be excluded from SEB membership.

3. While the announced policy is to recover the costs of salmonid enhancement through taxation of fish harvests, this policy has not been implemented and political-administrative
theory indicates that it is unlikely that it will be. If it is not, the Program will involve a redistribution of income of questionable fairness and motivate the initiation of projects of dubious merit from the point of view of the public as a whole.

4. Provincial government interests with responsibilities affected by SEP (e.g. Forest Service) are not always involved in SEP planning. It is proposed that referral processes should be initiated which, as an end-product, seek agreement among the appropriate agencies before an enhancement plan is implemented.

5. Although mechanisms have been established to integrate the on-going elements of salmonid resource management with SEP, evidence suggests that these have, in the past, been largely unsuccessful.

B. Adequacy of Information

6. Although efforts are made to generate relevant and systematic information for SEP decision-making, numerous deficiencies remain:

(a) too few project options are developed.
(b) projects are sometimes implemented without full information on whether or not production can be managed successfully.
(c) not all projects receive evaluation prior to their incorporation into an annual plan.
(d) incidence of effects of plans is conveyed abstractly.
(e) alternative annual enhancement plans are not formulated.

To improve the generation of information it is suggested that a countervailing influence in SEP planning is required. The SETG could potentially provide this influence if the role of this group is elevated and the funding for technical assistance is provided, so that it can effectively critique plans proposed.
by the SEP staff and conceptualize alternative proposals for consideration.

C. Efficiency of the Process

7. Inefficiencies in the planning process exist in the sense that: (a) the public advisory mechanism is relatively ineffective, despite the large amounts of time and money devoted, and (b) a potential duplication of function exists currently between the SETG and the SEB because both groups aspire to provide policy level advice on SEP planning. These deficiencies would be remedied if recommendations made in A and B above are implemented.

SEP - A Broader Perspective

While SEP is expected to achieve 85% of its Phase 1 production target there are serious questions about whether enhanced stocks add to or merely replace some of the existing natural base of fish stocks. In view of the importance of the salmonid resource to B.C. it is of critical importance that SEP planning and decision processes be made as effective as possible.
### TABLE OF CONTENTS

#### CHAPTER ONE — INTRODUCTION

1. Purpose ......................................................... 1
2. The Problem of Resource Allocation .......................... 1
3. SEP Background .............................................. 2
4. The Resource Allocation Problem - Specific to SEP ....... 3
5. Determining "The Mix" ........................................ 8
6. A Political Basis for Planning ................................. 9
7. Study Objectives .............................................. 9

#### CHAPTER TWO — METHODOLOGY

1. Evaluating the SEP Planning Process ....................... 11
2. The Evaluative Criteria ....................................... 12
   1. The criterion of representation of interests ........... 13
   2. The criterion of adequacy of information for decision-making .................. 13
   3. The criterion of decision-making efficiency ............ 14
3. Information Sources ......................................... 14

#### CHAPTER THREE — THEORETICAL FRAMEWORK

1. The Relevance of a Theoretical Perspective .............. 16
2. Public Choice Theory ......................................... 17
   1. Public choice as a democratic process ................ 18
   2. The representation problem ............................ 21
3. Other Behavioral Factors Affecting Institutional Performance ............................................. 23
   1. Bounded rationality ...................................... 24
   2. Perceptions and attitudes ............................... 25
   3. Clientelism .............................................. 26
4. The Information Problem .................................... 27
5. The Uncertainty Problem ................................... 28
6. Summary of the Theory ..................................... 31
CHAPTER FOUR -- A DESCRIPTION OF THE SEP PLANNING PROCESS ...33

Background Information: Planning for SEP .........................33
The Development and Evaluation of Project Options .............36
Internal SEP Plan-Making ............................................38
External Influences in the Planning Process ......................40
  (a) Public input into planning .....................................40
  (b) The decision-making unit ......................................43
Steps in Policy Implementation .....................................44
SEP Evaluation Techniques - The Five-Account Framework .......45

CHAPTER FIVE -- ASSESSMENT AND DISCUSSION OF THE SEP PLANNING PROCESS .................................................50

I. REPRESENTATION OF INTERESTS IN THE SEP PLANNING PROCESS ..........................................................50

A. Non-Government Interests in SEP Planning ....................50
  Indicator I-1: Opportunity to Participate ......................54
  Indicator I-2: Transaction Costs of Participation ..........59
  Indicator I-3: A Forum for Representation ...................59
  Indicator I-4: Effectiveness of Representation ..............61
  Indicator I-5: Representation of the "General Interest" ....66

B. Government Interests in SEP Planning .........................68
  1. Provincial agencies ............................................68
  2. Other components of fisheries management ...............70

II. ADEQUACY OF INFORMATION ......................................73
  Indicator II-1: Development and Technical Evaluation of Project Options ........................................75
  Indicator II-2: Formulation and Evaluation of Alternative Annual Enhancement Plans .........................80
  Indicator II-3: Incidence of Effects ............................83
  Indicator II-4: Communication of Information ................84
  Indicator II-5: Consideration of the "Information Problem" .........................................................87

III. EFFICIENCY OF THE PROCESS ..................................95
  Indicator III-1: "Cost-Effectiveness" of Representation ...96
  Indicator III-2: Duplication of Function ......................97
  Indicator III-3: "Cost-Effectiveness" of Information ....98
CHAPTER SIX — CONCLUSIONS AND RECOMMENDATIONS

A. STRENGTHS OF THE SEP PLANNING SYSTEM

1. Representation of Interests in SEP planning
2. Information for SEP Decision-Making

B. WEAKNESSES OF THE SEP PLANNING SYSTEM AND PROPOSED IMPROVEMENTS

1. Representation of Interests in SEP Planning

(a) Weaknesses of the public advisory mechanism
- Proposed improvements
(b) Weaknesses of the decision-making function
- Proposed improvements
(c) Consideration of the "general interest"
(d) Weaknesses in Provincial involvement
- Proposed improvements

2. Information for SEP Decision-Making

(a) Information deficiencies in SEP planning
- Improved information through improved representation
- Improving the multiple-objective planning framework as an information tool

3. Decision-Making Efficiency

Improving the efficiency of SEP planning

SEP: A BROADER PERSPECTIVE

BIBLIOGRAPHY AND REFERENCES CITED

APPENDIX I - Persons Interviewed for the Study

APPENDIX II - Salmonid Enhancement Task Group:
Membership and Affiliation

APPENDIX III - Salmonid Enhancement Task Group:
Terms of Reference

APPENDIX IV - Salmonid Enhancement Board:
Membership and Affiliation
APPENDIX V - Salmonid Enhancement Board:
Terms of Reference .................................142

APPENDIX VI - Sample of the 1980/81 Five-Account
Evaluative Information as Presented
to the SEB ...........................................146
LIST OF TABLES

Table 1 - Special Projects Unit Funding as a Proportion of SEP Budgets .........................63

LIST OF FIGURES

Figure 1 - Decline of the B.C. Salmon Catch ....................4
Figure 2 - SEP Planning Process - Proposed Improvements .....78
ACKNOWLEDGEMENTS

I would like to thank those members of the Salmonid Enhancement Board, the Salmonid Enhancement Task Group, and Salmonid Enhancement Program staff who provided me with information; my academic advisors, Professor Irving Fox and Anthony Dorcey for their guidance and support; and especially my wife Cindy, without whom this particular study would not have been possible.
CHAPTER ONE

INTRODUCTION

Purpose

The purpose of this study is to assess the Salmonid Enhancement Program planning process using normative criteria. Where inadequacies are revealed, recommendations are offered that could potentially improve upon the planning process.

The Problem Of Resource Allocation

All public expenditure programs face the difficulty of allocating scarce resources among competing ends. Where the target groups of such programs are pluralistic there can be no "optimal" allocation; for what is considered "best" by one group may be considered "worst" by another.

In spite of this dilemma, allocation choices (in the form of policies, programs and projects) continue to be made daily by government in the name of the public interest. The questions which arise immediately however, are: how are these choices made given the diversity of interests in society; and perhaps more importantly, how should these choices be made if they are to truly accord with the public interest?

This thesis attempts to provide some insights into these basic questions in a case study of one such public expenditure program - the Salmonid Enhancement Program (SEP). The focus of the study is on the SEP planning process in that it is this process which culminates in decisions to allocate scarce funds among competing ends.
SEP Background

SEP is an investment in fisheries resource development that's long term aim is to return Canada's pacific salmon and sea-run trout to historic levels of abundance.

The investment has been justified in terms of the numerous values which this resource has historically, and continues to contribute to Canada. Economically, the 1980 wholesale value of the five species of salmon (commonly named sockeye, chinook, coho, pink, and chum salmon) caught and processed in B.C. was $304 million. This represents 59% of the wholesale value of all fisheries in the Province for that year.

During this same period, over 11,000 people were employed at jobs related to harvesting and processing the salmon resource. (B.C. Ministry of Industry and Small Business Development, 1980).

In terms of recreational values, thousands of saltwater anglers enjoyed the benefits of the resource in 1975, contributing $100 million to the B.C. economy in total angling expenditures. (Fisheries and Environment Canada, 1978).

For many native Indian bands in B.C. the salmon resource is central to their culture and the stability of their communities, not only as a commercial enterprise, but also as an important food source.

Finally, the simple knowledge that the resource exists intact is of great psychological value to many people.

Recognition of these values is manifest in the complex management institutions which have evolved to try to preserve the integrity of this resource. In spite of management efforts,
overfishing and habitat deterioration over a period of decades have caused salmon catches to decline dramatically. (Fig. 1). Conventional management strategies have been unable to conserve the resource and SEP represents official recognition of this inability.

The Program is scheduled to proceed in two distinct phases. Phase 1 (1977-84) has received Federal Cabinet allocation of $150 million to achieve the annual incremental generation of 50 million pounds of salmonids. Phase 2 is contingent upon the success of Phase 1 and calls for an undetermined investment for a 16-20 year period to produce yet an additional 140 million pounds annually. The anticipated total incremental production of these two phases (190 million pounds) represents an approximate doubling of current production. (Fisheries and Environment Canada, 1978).

The Resource Allocation Problem - Specific To SEP

It is important at the outset to appreciate that salmonid enhancement is perceived by government as a means to an end(s), rather than an end in itself. That is, SEP is viewed as a tool to contribute to government's broader goals.

"The purpose of government investment in SEP is not to make more fish -- rather to generate social and economic benefits by making more fish". (DFO, 1979(c), p.2).

To this end, Canada and the Province of B.C. have agreed to work towards achieving the following five objectives:

1. To augment National and Provincial income.
2. To foster development of economically disadvantaged communities or regions.
Figure 1

Decline of the B.C. Salmon Catch

source: adapted from Fisheries & Environment Canada, 1978 and D.F.O. statistics
3. To improve the economic well-being of native Indian peoples, consistent with the need to preserve their social and cultural heritages.

4. To create employment opportunities for Canadians.

5. To preserve, rehabilitate, and/or enhance natural salmonid habitats, and maintain and/or rehabilitate vestigial salmonid stocks of local, regional or national significance. (Fisheries and Environment Canada, 1977, p.63).

The implementation of a diversity of individual enhancement projects is the proposed means of achieving these objectives. The projects range from simple, small-scale and relatively inexpensive activities, such as clearing obstructions from streams, to the construction and operation of capital intensive and technologically complex hatcheries.

The extent to which each of the five above-stated objectives is satisfied by SEP depends largely upon the type, scale, location, and timing of separate enhancement projects. For example, a large, well-designed hatchery located near south-coast fleet and processing capabilities would likely score highly in terms of the national income objective. That is, the economic value of the fish produced from such a facility will virtually always exceed production costs. However, as a contribution to economically disadvantaged regions, or in terms of benefits to native people, (and perhaps even resource preservation) such a project might score rather poorly.

On the other hand, for the same money, a series of small-scale, north coast enhancement activities could potentially make a large contribution to employment or native people objectives, but at the "expense" of national income in terms of salmonid production foregone. (i.e. fewer fish per dollar expended).

This is not to deny that some projects are capable of
contributing to all five objectives. It is true however, that the projects that end-up being implemented will influence the relative weighting that the objectives shall receive. The point is that budget resources are scarce and not all objectives can be maximized. Spending on one type of enhancement activity will mean that funding is not available for another — tradeoff is necessary. This is the essence of the resource allocation problem with which the SEP planning process must deal.

It is important at this point to emphasize that the satisfaction of SEP objectives will depend, more fundamentally, on a sustained increase in salmonid production. Yet, it remains uncertain whether or not large increases in salmonid production can be sustained, despite the technological capability to produce fish artificially in great numbers.

An enhancement experiment of this magnitude is unprecedented. All species in almost all salmonid producing regions of B.C. are scheduled for augmentation. The resource "system" is biologically, economically, and socially complex. It is not known for instance, whether or not the environmental capacity exists for twice current production, or if it is possible to successfully manage this increased production. Program results will depend in large part on how well SEP planning, as a process which allocates resources, can deal with enhancement from a "systems perspective".

It must also be recognized that what can and cannot be included in an enhancement plan is influenced by constraints on what is contemporarily feasible. Briefly, these constraints, which arise from many different sources, are outlined below.
1. **Manageability:** Stocks that are enhanced must be capable of being harvested in a way that does not impact detrimentally upon unenhanced stocks. (i.e. there must be a net increase in production over and above the natural base).

2. **Economics:** Treasury Board has required that its investment must be cost-recoverable. Logically, for this to be possible the Program must try to attain an overall benefit-cost ratio of at least 1:1. The actual benefit-cost ratio target for Phase 1 of SEP however, has been set at 1.5:1. The reasons that have been given for seeking this "extra cushion" of economic efficiency are: (1) it is not particularly desirable to "take-back" from the beneficiaries of SEP all the economic benefits that the Program has provided to them, and (2) it is probably not possible to devise a perfectly efficient or equitable scheme that could identify each and every SEP economic beneficiary and recover from him the exact amount that he has received from the Program. (Morley, pers. comm.). These economic considerations automatically eliminate many potential enhancement activities.

3. **International:** There is little point in enhancing fish stocks that are heavily intercepted by foreign fishermen. (although recent Canada/U.S. negotiations regarding a catch agreement may serve to relax this constraint).

4. **Resource-user interactions:** Single use of a watershed for fish production imposes opportunity costs on other watershed users (i.e. forestry, agriculture, municipal development, etc.). In some cases these costs may not be acceptable.

5. **Physical:** Not all locations have the physical attributes necessary for certain types of installations. (i.e. water quality, access, water flow, power source, adequate brood stock, etc.).

6. **Previous commitments:** A capital investment in a facility requires that funding for operations and maintenance must be ongoing for the life of the facility. This means that discretionary funds decline as the Program continues.

7. **Political:** Projects with potential for creating significant inequities among client groups, or that would impose significant costs to a particular client group would be unacceptable to the politician.

Given these considerable constraints on what enhancement plans can practicably consist of, and with the understanding that: (a) not all five objectives can be maximized simultaneously, and (b) planning must operate in the face of
considerable uncertainty, how is the most desirable mix of enhancement projects to be determined?

Determining "The Mix"

Conceptually, this question has not been overlooked by SEP planners. In describing the goals of the Program an analogy has been drawn between SEP and the function of the marketplace. (DFO, 1980(a)). The "shareholders" (i.e. the financiers) are the Treasury Board and Cabinet; the "market" are fishermen, processors and consumers; and "SEP products" are national income, regional development, employment, and native people and environmental and resource management benefits that flow from increased production of salmonids.

"It is the role of SEP management to maintain a balance between the interacting aspirations of shareholders and market...by adjusting the SEP products and processes." (DFO, 1980(a), p.3).

The task of SEP management is problematic because of the diversity of aspirants, and the complexity of their interactions. This is shown in the significant differences in the perspectives, not only among the "market" itself, but also between the "market" and the "shareholders". Client groups are concerned with the incidence of Program effects, since different enhancement projects confer differential benefits (and costs). Treasury Board, on the other hand, is a financial institution and is concerned that its investments are sound.

The difficult role of SEP management then, is to somehow strike a balance between large and small developments; low technology and high technology; centralized and de-centralized; and among species and stock mixes, that will keep all aspirants
generally satisfied.

Although optimization methods are available to assist with such difficult decisions, it is generally accepted these days, that they should not be relied upon as the sole determinants of allocation. Accordingly, SEP management must turn to an interactive form of decision-making -- a form that has its roots in the political process, since SEP after all, is in the business of providing a public good.

A Political Basis For Planning

Institutional arrangements are established for political decision-making in our society. Fox (1976, p.743) has defined an institution as "an entity; an organization or an individual, or a rule; a law, regulation or established custom" and an institutional arrangement as an "interrelated set of entities and rules that serve to organize societies' activities so as to achieve social goals". In terms of salmonid enhancement, it is the interaction and information exchange between resource user groups, bureaucratic resource managers and politicians that constitute the institutional arrangement within which salmonid enhancement policy, program and project decisions are made. The dynamics of this "provision system" (Sproule-Jones, 1979) will ultimately determine the way enhancement shall proceed.

Study Objectives

SEP subscribes to a relatively systematic planning framework to coordinate and facilitate the resource allocation function. Whether or not this framework adequately serves the
needs of salmonid enhancement and more broadly, the interests of Canadians, is the general concern of this thesis. More specifically, the study objectives are:

1. To understand and document as fully as is practicable, the operation of the SEP planning process as it occurred in the 1980-81 planning exercise. (i.e. the groups involved and the nature of their interactions).

2. To evaluate the adequacy of the SEP planning process as an institutional arrangement for arriving at socially desirable salmonid enhancement decisions.

3. To make recommendations regarding potential changes in the SEP planning process where the evaluation reveals that such changes are appropriate.
Evaluating The SEP Planning Process

For the past several years SEP has made numerous implementation decisions. Whether or not these decisions have been "good" decisions can be evaluated in two main ways. The first and most conventional method (often called evaluation research) relates to a program's ability to satisfy its intended objectives. (see Rossi and Williams, 1972; Weiss, 1972 and Wholley, 1970). The main problem in this method however, is that program objectives are rarely defined precisely enough (in operational terms) for evaluators to know if goals have or have not been met. Related to this is the fact that progress towards social or environmental objectives often cannot be measured quantitatively. Also, objectives can be expected to change over time and are meaningful only to the extent that there is agreement on what they should be, the weights they should receive, and the level that financial resources are consistently available to managers to meet them.

In the case of SEP evaluation, these and other problems are apparent. Objectives are broadly stated and are not all quantifiable. Objectives that are quantifiable were "interpreted" into operational targets by SEP economists after the Program was well underway. There was no clear agreement as to what these targets should have been prior to SEP implementation. Financial resources have declined since the time that the operational targets were set, thereby rendering them
generally unattainable and thus, meaningless for purposes of evaluation. More pragmatically, the lag time between project implementation and the realization of benefits (and costs) makes this type of evaluation impracticable until a later time in the life of the Program.

The second method of decision analysis (and the one used in this evaluation) deals with the adequacy of the process by which decisions are made (i.e. the planning process). If the planning process is a "good one" it is postulated that the actions that occur as a result of the decision are more apt to be also "good". That is, a good process will produce decisions that reflect the desires of society. (Fox, 1976).

Obviously, the fundamental requirement of this methodology is a normative description of a "good" planning process which can be used as a standard for evaluating other planning processes. It is accepted here as a premise, that the constituent elements of a "good" planning process ought to correspond to the precepts of liberal democratic theory, since these are the basic values which determine the type of policy processes that are acceptable in our society.

This thesis uses these precepts as the normative criteria upon which the assessment of the SEP planning process is made.

The Evaluative Criteria

Although we traditionally connect democratic principles with the "macro" level of policy-making by elected officials, the same basic principles should be evident at the "micro" policy-making level that is found lower in the institutional
hierarchy. Specifically, these basic principles (i.e. the evaluative criteria) are:

1. The criterion of representation of interests

Interests (government and non-government) whose welfares will be directly affected by planning decisions should have the opportunity to participate, or more realistically, be represented in all aspects of the planning process. Interaction among interests permits amelioration of conflicting viewpoints through bargaining and trade-off. The domain of the common property resource or the public good being supplied determines the interests that should be involved. (Ostrom, 1973).

2. The criterion of adequacy of information for decision-making

For interest representation to be effective and for policy decisions to be intelligent, relevant evaluative information on policy alternatives should be generated and communicated among interests.

The better informed an interest, the more likely it is that that interest will negotiate a position in its favour. It follows logically, that if all interests are well-informed, the more likely the result will be in the greatest collective interest of all parties. This is desirable from the social point of view. (Dorcey et al, 1980).

A normative description of the basic categories of information that are typically valuable in a planning exercise includes:

(a) alternative solutions to a problem or opportunity as determined to be relevant by the value frameworks of affected interests.
(b) economic, social and environmental consequences of each alternative and the marginal differences of these consequences for each alternative.
(c) identification of what groups in society can be expected to receive the benefits from alternative resource developments, and those that will bear the costs.
3. **The criterion of decision-making efficiency**

An over-riding requirement of democratic decision processes is that they should not require an inordinate amount of time and resources. Efficiency of a process however, is relative to the anticipated outcomes (i.e. decisions) that result from that process. For example, a costly process that produces "good" decisions might be considered more efficient than an inexpensive process that results in relatively "poor" decisions.

In this sense, this criterion can be loosely interpreted as a form of cost-effectiveness analysis. That is, analysis where dollar (and time) costs are compared to units of output. As used here, output refers to subjective judgements on the adequacy of the planning process in terms of our other two evaluative criteria. Hence, costs of public participation, or costs of generating information for decision-making are justified so long as they are effective influences in shaping an improved planning process.

Therefore, the term efficiency is specific to the planning process and is not to be confused with the conventional economic interpretation of project or program efficiency where a project or program is efficient if benefits (outputs) exceed or are equal to costs (inputs).

It is recognized that due to subjectivity inherent in the use of these three criteria, a precise measure of SEP's institutional performance is not possible. However, as Fox (1976, p.748) explains, "...it is believed that the criteria specified provide a basis for asking searching questions about the performance of any institutional arrangement."

**Information Sources**

In conducting this evaluation it was necessary to engage in two basic activities:

1. To become familiar with the intricacies of the SEP planning process (i.e. the groups and individuals involved and the nature and timing of their interactions).
2. To develop a theoretical perspective (a model) of public policy analysis which served as a basis for recommending potential changes in the SEP institutional structure.

In connection with these two activities the following information sources were useful:

1. SEP planning documents and related Department of Fisheries and Oceans (DFO) publications to gain an understanding of the mechanics of the planning process

2. minutes of meetings of the major participant groups

3. structured interviews with government and non-government individuals connected with SEP planning. (see Appendix I for a list of these persons).

4. participation (as an observer) in a weekend meeting between a collection of public interest groups and SEP planning personnel

5. appropriate literature concerning public policy processes and political-administrative behaviour of individuals and organizations.
The Relevance Of A Theoretical Perspective

Upon evaluating the SEP planning process we may want to prescribe some organizational or procedural changes that potentially could bring the planning system closer in line with the normative criteria set forth earlier. Recommendations for institutional improvement should not however, be random, or based purely on the analyst's intuition. They should be made on the basis of what is plausible, given our knowledge of the way individuals and organizations behave in policy-making settings. There is a good deal of literature on the subject of political-administrative behavior as related to policy analysis, some of which may be useful for the purpose of understanding and improving the SEP planning arrangement.

This chapter seeks to articulate a model that can serve as a tool for explaining (at least in part) the structure and past behavior of the SEP institutional arrangement, and also as a foundation for recommending potential improvements to the SEP planning system. To these ends, the main features of political-administrative behavior are discussed that have relevance to our case-study and that the literature shows to be important influences in the way decisions are made in the provision of public goods.

Much of what has been written relating to this subject can be grouped under what is known as public choice theory. The main features of this theory of interactive policy making are
discussed in the following section.

**Public Choice Theory**

As the name suggests, public choice deals with the way in which collective choices are made in the provision of public goods. A parallel can be drawn to micro-economic theory of markets as the way in which the theory explains how these collective choices are made. Like economic theory, public choice theory assumes that individuals act in their own self-interest. For this reason, Mueller (1976, p. 395) has defined public choice as "the economic study of non-market decision-making, or simply the application of economics to political science".

The fundamental assumption of this model then, is that behavior is **rational**; that is, individuals have preferences which determine their decisions and they will act in such a way as to provide themselves the greatest net benefit as weighed by these preferences. Rationality presumes cognizance of all possible strategies that are available for the fulfillment of personal objectives, that these can be ranked consistent with preference, and that calculations to choose among alternatives can be made with neither cost nor error. Once again we note the similarity between this public choice assumption and the assumption of comprehensive consumer and producer rationality in market theory. Later, we will see that there are limitations on the extent to which all behavior can be explained by rationality as it is defined here. While recognizing these limitations, it is nonetheless assumed for the general purposes of our model, that people are basically self-interested and act accordingly.
Therefore, with regard to the actors that are traditionally involved in policy processes, it is suggested that:

1. Politicians are rational in the sense that they are vote-maximizers. Downs (1967, p. 18) suggests that politicians are "interested in a citizen's vote, not his welfare; they must however, cater to his view of welfare to get his vote".

2. Bureaucrats each have a set of goals connected with their own self-interest. These goals may be at odds with the expressed goals of their organization; nevertheless, their behavior is rational in that they generate information, support policies etc., which are consistent with their goals. (Downs, 1967).

3. Interest groups are rational in that their participation in decision-making is generally to promote their collective self-interest. Each interest calls attention to the forces that must be reconciled and the differences that must be compromised.

Public choice as a democratic policy process

On the surface, it is difficult to understand how the self-interested behavior of all actors as inherent in the public choice model can produce socially desirable policy outcomes, and at the same time remain "faithful" to democratic precepts. This question has received considerable attention from the public administration theorist--Vincent Ostrom.

In setting out the rationale for why the range of legitimate interests should participate in policy processes Ostrom (1973, p. 62) states:

"If public agencies are organized in a way that does not allow for an expression of a diversity of preferences among different communities of people, then producers of public goods and services will be taking action without information as to the changing preferences of the persons they serve. Expenditures will be made with little reference to consumer utility. Producer efficiency in the absence of consumer utility is without economic meaning".

The basis of this position is that decision processes in
the pursuit of efficiency that do not take account of the preferences of a range of legitimate interests may result in policies that impose unacceptable external costs (including inequities) among some interests. The analogous requirement in economic theory is that unless there are a large number of independent buyers and sellers in the exchange process (i.e. perfect competition), optimal resource allocation will not occur.

The value that can be derived from interest participation in environmental decision-making has been amply documented elsewhere (see Utton et al, 1976; Saddler, 1979) and it is not the intention here to belabour that argument. Our concern is to determine how a public choice model of policy-making can effectively integrate this democratic requirement into planning.

Ostrom argues that effective involvement will occur if there are multiple levels in the bureaucratic hierarchy, each available to receive interest group input. He refers to multiplicity of structure as administrative pluralism. A federal system of "overlapping jurisdictions and fragmentation of authority" can bring accountability to bureaucratic discretion because each level is responsible to the constituency it serves, and because each level acts as a check on the power of other levels. In the words of Ostrom (1973, p. 144):
"Administrators as public servants or public employees are exposed to reviews and reconsiderations of their decisions by other decision structures which occupy potential veto positions in relation to their decisions...If the game of administration is one dominated by exclusive calculus of pleasing superiors (as self-interest would motivate), the consequences will be quite different than if public administrators stand exposed to the scrutiny of common councils representing citizens...to scrutiny by a free press, as well as to the scrutiny of other executive officers and agencies."

Sproule-Jones (1972) concurs that administrative pluralism encourages accountability. Fragmented authority means that no one authority enjoys independence in the making of particular decisions. He states:

"The combined effect of these multiple decision structures, all of which are potent but not omnipotent centers of power, is to require the support for any public policy or choice of more than a mere majority of interested citizens...public entrepreneurs have an incentive to come to terms with their public clientele, and with other agencies...the externalities of public choice can be internalized and public goods produced at the appropriate level at one and the same time." (Sproule-Jones, 1972 pp. 185-186).

Further commenting on the way that federalism can contribute to accountability in decision structure, Ostrom (1973, p. 109) says:

"Power can be divided and arranged among the several offices of government in such a manner that each will be a check on the other...Agreement will prevail when benefits accrue from mutual advantage. Conflict will intervene when some seek an advantage at the expense of others. Political structures are but a method for encapsulating conflict while due deliberation is sustained until human reason can search out new and improved solutions."

The re-occurring theme in public choice theory, that conflicts between self-interested groups is the basis for consensus, deserves qualification at this point. Interests are not all mutually exclusive of each other. In many cases they
share common goals. Buchanan and Tullock (1962) refer to these as "pluralistic loyalties". For example, in terms of SEP, there is general agreement among all groups that in principle, salmonid enhancement is a good thing. Divergence of opinion is based in different perceptions on how the Program ought to proceed.

The representation problem

The previous section considered the normative application of public choice theory. It was shown that representation of the range of legitimate interests in policy processes is important to minimize the external effects of decisions and for reasons of ensuring bureaucratic accountability.

Mancur Olson (1965) however, has shown that the "logic of collective action" may actually prevent representation of all interests in decision-making. This is because rational, self-interested individuals may not be motivated to organize to influence decision-making, even if those individuals share a common concern. He states that:

"... unless the number of individuals in a group is quite small, or unless there is coercion or some other special device (i.e. separable benefits for participants) to make individuals act in their common interest, rational and self-interested individuals will not act to achieve their common or group interest." (Olson, 1965, p. 2)

Although groups may have a common interest in obtaining a collective benefit, they have no common interest in paying the cost of providing that collective benefit. If individuals perceive that they will benefit whether or not they participate, each would prefer that the other members pay the full costs
(time and money) of providing the public good. It is in effect, a demonstration of the "free-rider" problem that economists have identified as the reason why the market system fails to provide pure public goods. Vincent and Elinor Ostrom (1971, p. 207) elaborate that:

"An individual's actions will be calculated by the probability that his efforts alone will make a difference (in the provision of a public good). If that probability is nil, and if he is a rational person, we would expect his effort to be nil."

Stated alternately, individuals will be motivated to organize and participate in policy processes, only if the anticipated benefits from doing so exceed the transaction costs of participation. Frequently, these costs may also involve considerable time and payment of technical expertise that is required to become fully informed about the issues and alternatives. These costs may be the most serious obstacles to representation.

It should be noted that participation in some groups does occur, despite Olsonian logic. For example, membership in conservation groups such as the Sierra Club often cannot be explained in terms of pure self-interested economic rationality. The explanation is that "ideology" provides the motivation for membership.

In spite of "ideological motivation" it is evident that there are many individuals with common interests that do not organize to try to influence decision-making. The general public (i.e. the consumer/the taxpayer) falls into this category. Olson (1965) refers to these as "forgotten groups" simply because they have no specific representation vis a vis vested
interests, in policy processes. As individuals, their transaction costs are too great in relation to the benefits that can be expected to be derived from involvement. As a result, we can expect special interests to dominate policy processes and consequent policy outcomes to be weighted in favour of these interests.

This "logic of collective action" has significant implications for what Theodore Lowi (1972) refers to as "distributive policies". The thrust of his argument is that it is easier politically to divert public funds to particular groups in society at the expense of the general taxpayer. The susceptibility of administrators to pressure from interests of intense preference, in the absence of countervailing viewpoints in the decision process, is at the root of the distributive policies problem. Lowi warns that policies which allocate benefits to identifiable groups in society amounts to "privatization of the public". This issue of distributive policies has strong implications for SEP in that the main beneficiaries of the Program are readily identifiable and the Program is 100% publicly funded at this point in time.

Other Behavioral Factors Affecting Institutional Performance

Although public choice theory, with its assumptions of rationality and self-interest, can explain a large proportion of political-administrative behavior, it cannot explain it all. We have already mentioned that "ideology" is a behavioral influence that is inconsistent with the economic interpretation of rationality. Beyond this, the literature shows there also to be
other influences which are important determinants of individual and organizational behavior. In effect, these influences are limitations on the public choice model. Briefly, these are discussed below.

(a) Bounded rationality

The main challenge to the assumption of comprehensive rationality comes from Herbert Simon (1957). In what is perhaps a more realistic view of how individuals respond to policy issues, Simon claims that comprehensive rationality is frustrated by an uncertain and complex environment. Accordingly, individuals operate with "bounded rationality". Simon claims that people are "satisficers" as opposed to maximizers, inferring that there is a limited search for solutions to a problem.

"As the individual, in his exploration of alternatives, finds it easy to discover satisfactory alternatives, his aspiration level rises; as he finds it difficult to find satisfactory alternatives, his aspiration level falls". (Simon 1957, p. 253)

Furthermore, dramatic innovation in problem solving is unlikely because individuals in organizational settings are generally risk averse. Accordingly, solutions arrived at by public agencies seldom deviate significantly from the status quo. This may be because individuals in the bureaucracy are generally not rewarded for taking chances, even if the results may be significantly beneficial.

At the organizational level, behavior is influenced by the necessity to present a single, common position on an issue. When organizations are composed of a diversity of professional
backgrounds, each "bounded", conflict resolution is typically characterized by internal negotiation and bargaining. Inconsistencies between bureaucrats' goals are resolved by "coalition formation and trade-off". (Downs, 1967).

In order to accommodate the diversity of perceptions and attitudes within the organization, attention is typically focused on short term problems and marginal actions. The explanation is that it is simply easier for groups of individuals to agree upon a means of solving an immediate problem than to deal with long-term goals. To this end, agencies typically rely heavily on "standard operating procedures" that may or may not be well adapted to the problem at hand.

Charles Lindblom (1959) labels this style of policy-making as "disjointed incrementalism", or more colloquially as "the science of muddling through". He claims that incrementalism is largely a response to uncertainty and goes so far as to advocate it as a preferred "strategy for decision". Lindblom's comments serve to further emphasize the limits on comprehensive rationality at the organizational level.

(b) Perceptions and attitudes

It is not surprising that professional training and experience affect resource managers' perceptions of and attitudes to the problems with which they deal. Sewell (1971), Ingram (1973) and others have shown empirically that background and experience can dramatically influence the range of alternative solutions to problems that are presented. For example, engineers as a professional group have traditionally
shown a preference towards projects that involve design and construction. On the other hand, biologists are typically "cautious" in their view of the world and favour courses of action that give priority to ecological considerations. Proposed alternatives may be rational from the proponent's viewpoint, but might not represent the complete range of solutions that would be expected under a style of decision-making that involved other viewpoints. In support of this notion, Wolman (1976, p. 775) claims that:

"Technological or physical factors may markedly limit the range of feasible solutions or approaches to a problem... Not infrequently however, what may appear to be a technological or physical constraint are matters of custom or solutions preferred by those who have dominated the process of selecting alternatives deemed suitable for review."

It is evident then, that there is often a standard repertoire of alternatives that are taken from a bureaucrat's "response map" for consideration.

(c) **Clientelism**

Another phenomenon which can sometimes influence organizational behavior is what Wildavsky (1964) has referred to as "clientelism". This refers to the tendency for regulatory bodies to favour the objectives of the organizations they regulate. The setting and interpretation of policy is accordingly sympathetic to those objectives (Fox, 1976).

If an agency becomes effectively "captured" by its primary clientele, to the extent that other positions in society (i.e. other perceptions of rationality) are not adequately considered in policy-making processes, we can conclude that the process is
The Information Problem

The above understanding of political-administrative behavior suggests that agencies will seldom array for choice the full range of possible approaches to a problem or opportunity. Furthermore, the evaluation of solutions that are arrayed, will be biased from the point of view of the agency.

The important point is that information on the consequences of alternative courses of action provides the basis for deciding what course of action will best serve the self-interest of the individual. If certain information that might be important to particular interests is potentially available, but is not generated because of political-administrative behavior, then those interests will be unaware of where their self-interests lie. In such instances, these interests may be effectively excluded from meaningful participation in the decision process.

With this in mind, it is understandable that certain groups (provided they have managed to overcome the "representation problem") might want to generate some of their own information to enhance their respective bargaining positions in the decision process. This is because groups must be able to substantiate the technical validity of their positions, and also why their particular priorities deserve imposition on all members of society—there must be valid reasons. Flathman (1966) suggests that value conflicts are adjudicated by "giving reasons" and that ultimately, reasons guide choice. There are however, two basic obstacles to adequate information for groups:
(a) **Information Costs** - The collection and synthesis of technical information can be prohibitively expensive in both temporal and financial terms. If a particular group is the only one that feels that the new information is relevant, traditionally it must bear the cost of providing that information. Often, such groups do not have the financial resources required to hire the necessary technical expertise. Also, information costs can comprise a significant portion of groups' transaction costs. We have already shown that if transaction costs are too great, groups will not participate at all in decision-making.

(b) **"Monopoly" of Information** - By virtue of their legislative mandate, resource management agencies frequently have a virtual monopoly on the capability to make analyses of alternative planning options. Other interests may simply not have access to the resources (i.e. the data, the technical expertise) that are necessary to conceptualize and analyze technical alternatives that accord with their preference systems. Without these abilities it is probable that the priorities of certain groups will not be adequately considered in plan formulation, unless the proponent agency and the interests share common objectives.

**The Uncertainty Problem**

The preceding discussions have considered problems arising from human behavior. The "representation problem", the problem of "distributive policies", and the "information problem" are all attributable to the actions (or non-actions) of individuals as determined by rationality or limitations to rationality.
The problem of uncertainty however, is independent of human behavior. It is a result of the intrinsic nature of technically complex problems (such as fisheries management).

Hickling (1975) suggests that there are three types of uncertainty with which every planning exercise must deal. These are:

1. uncertainty about the economic, social, environmental and political consequences of a given action.
2. uncertainty about "policy values". (e.g. what are the real objectives of an agency or program?)
3. uncertainty about the effects that others' actions (or non-actions) may have on your proposed actions.

Hickling states further that there are essentially three approaches to dealing with these classes of uncertainty. It can be ignored (the most common response), it can be reduced, or it can be accepted.

Ignoring uncertainty is a dangerous thing to do because future unforeseen situations that inevitably arise, might be more costly than they need have been.

Reducing uncertainty requires either the collection of more information, clarification of objectives, or closer collaboration among related interests and agencies. To eliminate or reduce uncertainty however, is not always possible, and attempts to do so can be exceedingly expensive.

Accordingly, it might be desirable in many planning circumstances to simply accept the uncertainty. Hickling (1975, p.43) suggests that if it is decided to accept uncertainty, the first thing that must be done is to get to know the uncertainties, "so that we know what we are accepting". Risk
assessment is one way of doing this if the uncertainties can be identified and if probabilities of their potential occurrence can be assigned.

However, where uncertainties and probabilities cannot be identified, an alternative approach is required in the acceptance strategy -- i.e. attempts should be made to accommodate uncertainty. By this, Hickling means that alternative actions should be judged according to how much "leeway" they permit in terms of being able to change your mind, should some unforeseen event arise. That is, alternatives should be evaluated in terms of option foreclosure. If an action is taken which itself is irreversible, or which induces effects which are irreversible, then that action will have reduced the potential for future flexibility in planning; an essential element in the management of uncertainty.

Hickling's arguments on flexibility are entirely consistent with Holling's (1978) proposed response to uncertainty. Holling suggests that the goal should be always to develop "resilient" policies. That is, policies which can be effective in dealing with the problem for which they were designed, but at the same time, can accommodate future "surprises".

As a proponent of resilient policy design Walters (1977) has identified six classes of major uncertainty that are important to the biology of salmonid enhancement.

1. mechanical failures of artificial devices
2. political irreversibility of bad decisions
3. future control of fishing efforts and investment
4. ocean limitation to production
5. interactions between stocks
6. differential impacts to fishing
In addition, there are uncertainties regarding the socio-economic impacts of particular projects, and also of the cumulative socio-economic effects of the entire Program.

Walters' suggest response to these uncertainties is to proceed with carefully prescribed trial and error fisheries management, since no amount of further research can fully resolve these uncertainties. This "adaptive" response to salmonid enhancement is explicitly "active" in the sense that it involves monitoring and learning from experimentally induced effects. It is not a "passive" (i.e. reactive) response to the unexpected. Logically, an active, rather than passive response, is a preferred way of dealing with uncertainty.

**Summary of the Theory**

The practicability of recommendations to improve the SEP planning process (in terms of our normative criteria) will depend largely on whether or not recommendations are consistent with political-administrative behavior.

The literature on this subject shows that self-interest and rationality can explain a good deal of such behavior, but cannot explain it all. Personal ideology, "bounded rationality", perceptions and attitudes as influenced by professional training and experience, and the propensity for agencies to demonstrate "clientelism" are other important determinants of individual and organizational behavior.

Due to this behavior, several problems emerge which can inhibit policy processes from converging on the satisfaction of our normative criteria. The "logic of collective action" may
cause some interests not to be represented in policy processes. The general, unorganized public is one such interest. This in turn, leads to the problem of "distributive policies" where public funds are allocated to special interests. Political-administrative behavior also gives rise to the "information problem". Typically, an agency will conceptualize and evaluate alternatives from its perspective only. Unless information is generated that is consistent with the full range of perspectives, some legitimate interests may be effectively excluded from representation in the planning process.

Other problems not arising from human behavior relate to the costs of generating technical information and the difficulty of dealing with uncertainty. These difficulties arise out of the inherent nature of complex management problems.

In making recommendations to move the SEP planning process more closely in line with our three normative criteria, the above considerations must be explicitly recognized.
Background Information: Planning For SEP

Recent SEP decision processes cannot be isolated for analysis without an appreciation of historic SEP planning events. Many of the individual enhancement projects that are currently being implemented were proposed and evaluated in an initial two year planning period beginning early in 1975.

During this initial planning period a co-operative Federal/Provincial steering group conducted economic, social, bio-engineering and environmental studies that culminated in a proposed "overall strategy plan" for Phase 1 of SEP. Geographic and species specific fish production targets and a corresponding list of approximately 170 candidate enhancement projects, along with a tentative financial flow schedule comprised the main elements of the "overall plan".

The initial production targets and list of project proposals were developed by three Federal/Provincial Geographic Working Groups (GWG's). These groups were composed originally of biologists, engineers and economists from the Department of Fisheries and Oceans and the B.C. Ministry of Environment. Project proposals were developed to meet production targets on the basis of reconnaissance and feasibility studies of biological potentials, engineering feasibility and economic factors such as production costs and commercial fish values. Other project selection criteria theoretically included: saving threatened stocks, extending the fishing season, dispersing the
fleet, improving the technology, minimizing international interceptions, improving Native fishing opportunities, etc. (Fisheries and Environment Canada, 1978, p.23).

The "overall SEP plan" was then presented for public scrutiny in a round of public inquiries in 18 communities throughout British Columbia. A number of issues were raised at the "inquiries" but the general consensus was positive support for the enhancement concept.

On May 30, 1977 the Minister of Fisheries and Environment announced Cabinet approval of Phase 1 of SEP for an investment of $150 million over a five year period. In 1978 Phase 1 was extended to seven years with no increase in funding as part of the federal government's commitment to fiscal restraint. The Provincial investment in SEP (approximately $7.5 million) was formalized at the signing of a Federal/Provincial Agreement in March 1979.

To facilitate such specific funding directives, SEP was set-up as a self-contained branch within the Pacific region of the Department of Fisheries and Environment. Unlike all other branches, the Executive Director of SEP does not report through the Director General for the Pacific region, and no formal organizational link has been set up. This may contribute to problems of coordination between the various functions of Fisheries as is explained later.

The majority of SEP's Phase 1 funds were earmarked initially for "major production" facilities. A smaller portion of funds was set aside for "less ambitious" projects that are not so much concerned with the economics of fish production but
rather are selected for their ability to contribute to the non-national income objectives of the Program. Projects in this class include such things as stream rehabilitation activities and the letting of contracts to community groups to engage in actual fish production activities (community development projects).

The intention is that the efficient class of projects can provide the economic compensation for the less productive class of projects, so that the overall Program can remain economically justified.

The "overall SEP plan" of 170 projects was not however, "cast in stone". There was a commitment at the outset of the Program to an adaptive planning process that would emphasize the continued search for new enhancement opportunities and the ex-post evaluation and monitoring of projects already implemented. To these ends the program was conceived in principle, as a

"...dynamic and evolving process, a process that will be responsive to the legitimate and changing needs of people and to the targets of government for economic growth and social improvement". (Fisheries and Environment Canada, 1978, p.23).

Since implementation of SEP policy occurs essentially at the individual project level, the basic requirements of such a process are intuitively obvious:

1. New enhancement initiatives must constantly be developed that reflect public and government aspirations so that alternative options can be arrayed for choice, and;

2. Projects should be designed and implemented in a manner that facilitates the accumulation of knowledge and experience useful for future application, while at the same time ensuring the ecological integrity of the resource.
Although these requirements raise questions regarding the definition and determination of "public and government aspirations", SEP attempts to accommodate them at the project initiation stage with the serial application of the technical feasibility criteria of "enhanceability", "desirability" and "manageability".

The Development And Evaluation Of Project Options

Analysis for enhanceability is typically the first step in the development and "flow" of a new project. This criterion deals with such technical questions as adequacy of water supply, site suitability, availability of brood stocks to be enhanced and other physical requirements of successful project operation. Biological and engineering field staff conduct these initial "bio-reconnaissance" surveys. If a site and corresponding technology are identified that make the proposal appear to be technically feasible, the proposal (outlining potential costs and production capability) is submitted to the "economics planning unit" for evaluation of a project's ability to satisfy the multiple-objectives of the Program.

This economic analysis represents a preliminary evaluation of a project's desirability - Is a project economically sound and how well does it satisfy the non-national income objectives of SEP? Also associated with this criterion is the requirement that a project should be designed, if possible, in a manner that will generate new technological knowledge that may be useful in guiding subsequent SEP actions, and in a manner that will not foreclose upon future potential enhancement options.
From here, projects are handed to GWG members to comment upon the manageability issue, and generally on how well the project fits into fish production targets and their timing for the particular area in question. The current membership and role of the GWG's has changed appreciably since the time when they were involved in the development of the initial "overall strategy plan" for SEP. Each GWG is now composed mainly of non-SEP individuals. Federal senior management biologists, one or more district supervisors from the GWG area, a habitat protection division representative, and finally a SEP planning coordinator comprise the membership of each GWG. In terms of function, these groups (of which there are now four) no longer initiate project options. Their prime responsibility is to determine whether or not the production from specific enhancement proposals (initiated by other SEP staff) can be effectively managed without impacting detrimentally on other stocks in the same fishery.

Manageability remains one of the most complex and uncertain issues within SEP and as a result the "biological planning unit" of SEP works closely with GWG's to try to resolve manageability problems associated with specific enhancement initiatives.

Each project proposal must satisfy the requirements of these three feasibility criteria (as far as is possible) before they are considered seriously for implementation. (DFO, 1980(a) and Fisheries and Environment Canada, 1978).
Internal SEP Plan-Making

The information gathering and project evaluation to this point in the annual "process" is a relatively rough, "first-cut" analysis of potential enhancement opportunities and is used mainly for preliminary "plan-making".

To help understand how individual project proposals are incorporated into an annual plan an overview of the internal administrative structure of SEP is outlined below.

The Director of Operations for SEP reports to the Executive Director of the Program and is responsible for the Divisions undertaking actual enhancement work. These and their functions are as follows:

1. Engineering - designs and constructs major enhancement facilities such as hatcheries, spawning channels and fishways. (i.e. relatively capital intensive and technologically sophisticated projects).

2. Facility Operations - operates the above enhancement projects after construction is completed.

3. Special Projects - undertakes small-scale enhancement activities using relatively low technology. Community development projects (contracted out to communities throughout B.C.), small stream rehabilitation, and public involvement projects (where the general public takes part in enhancement activities) are all administered by this Division.

Research, as a separate Division, conducts biological experiments in efforts to improve rates of productivity at enhancement sites. The Lake Fertilization program was initiated within the Research Division. Finally, reporting to the Executive Director of SEP in a service and advisory capacity respectively, are the Finance and Planning Divisions.

At the annual "plan-making" stage (usually around July-September) the senior bureaucrats in charge of each particular SEP Division choose a list of projects and activities that they
would like to see implemented in their respective Division in the coming fiscal year. The limit of projects and activities in each Division is constrained by an approximate budget "ceiling" imposed by the Executive Director of the Program. These allocations are based upon his perception of Division needs and commitments, precedence of financial allocation as manifest in previous years' budgets, and on what it is perceived the public and decision-making bodies will find acceptable (based upon past direction from these groups).

Negotiation and co-ordination among Divisions over annual budget allocations is facilitated by the SEP Management Committee. This is a 10 member group composed of SEP Division chiefs and other senior fisheries bureaucrats, including a Provincial representative. They meet weekly as a group to coordinate day to day SEP functions as well as to discuss broader topics regarding SEP planning and direction strategy. At "budget-time" this group devotes its energies to ratifying a mix of enhancement projects and activities that will constitute the "Executive Plan" that is recommended to the decision-making unit, the Salmonid Enhancement Board (SEB). This is the group in the SEP process that exercises decision-making authority. A discussion of their role follows later in this chapter.

But before it is presented to the SEB, the "Executive Plan" receives formal comment from a variety of groups. Firstly, the GWG's are presented the plan and are given the opportunity to raise comments regarding the manageability issue. Ideally, only minor modification of the plan would be required at this point due to continuous liaison with these groups and the SEP
"biological planning unit" throughout the entire process.

The plan is then shown to the Salmon Resource Board. This is a group of high-ranking Federal fisheries personnel concerned with the wider aspects of salmonid resource management, including: habitat protection, regulation, enforcement, etc., as well as the enhancement function. Their primary interest is that the proposed plan coincides generally with other fisheries policies.

External Influences In The Planning Process

(a) Public input into planning

Next, the Salmonid Enhancement Task Group (SETG - formerly known as the B.C. Task Group) is invited to respond to the "Executive Plan". This group is composed of a collection of interests and user groups that either directly or indirectly, will be impacted upon by SEP. Membership was determined originally (in 1976) by a consulting public involvement specialist on the basis of his perceptions of the appropriate groups to be included and also on the basis of geographical representation. (see Appendix II for current SETG membership and the interests they represent). The SETG functions primarily as an advisory committee to SEP staff and to decision-makers, aspiring to provide them with a broad-based consensus view on the preferences of the B.C. community regarding how salmonid enhancement should proceed. (see Appendix III for the SETG Terms of Reference).

As is apparent from past SETG discussions and their formal Policy Statement, the basic philosophy that this group tries to
communicate is composed of four main elements:

1. That public education, public advisory input into planning, and public participation in actual enhancement activities are crucial to the success of the Program.

2. That SEP must not operate in isolation from the larger fisheries mandate. (i.e. habitat protection, enforcement and regulation/management).

3. That integrated resource management is key to resolving many of the current problems faced by the salmonid fishery.

4. That a diversity of smaller "naturalistic" methods of enhancement are preferred over an imbalance of large-scale "artificial" projects.

An overall concern that also appears to be foremost in the mind of the SETG is for specific consideration of the sports-fishing interest.

The SETG's formal avenue of input into planning is via their chairman, who sits as a member of the SEB. The group maintains an elected executive and an external executive secretary responsible for the multitude of organizational and administrative duties connected with Task Group operation. Although members are not paid by government to participate in planning, they are reimbursed for their actual costs of participation. As an indication of the commitment SEP has made to this body, the 1980-81 budget for SETG operation was in excess of $90,000. The bulk of SETG funding goes to accommodation and transportation of members to and from meetings, and for provision of the executive secretarial service.

They meet several times each year either en masse, or in sub-committee, generally to discuss their preferences toward overall SEP philosophy and policy as opposed to site specific,
project-oriented details. This "macro-level" of public input into planning was decided upon early in Task Group development. At their second meeting in December 1976 the minutes record the statement that,

"We must not get too technical or attempt to involve ourselves in regular management activities. We want to be kept in the broad picture, with emphasis on the strategies level and general budget allocation...The group itself must strive for consensus, it must be more generalistic than the interest groups and/or areas we represent".

This position was subsequently reaffirmed in the SETG formal Terms of Reference that state,

"The Task Group shall participate in the broad aspects of the philosophy and policy-making of salmonid resource management and shall leave the detailed operational activities to those so accountable".

In accordance with this policy-level approach, the Task Group was formally presented by SEP staff planners in mid-August 1979 with the proposed 1980-81 expenditure plan, and were specifically asked to review it with consideration for the following elements:

(a) species balance
(b) adequate uses of technology
(c) employment levels
(d) regional benefits
(e) native benefits
(f) effects on the environment
(g) equity among types of fishing gear
(h) general production targets

The SETG membership discussed the plan and its implications with staff planners and then reviewed it individually in more detail at home. In early September 1979, a consensus statement on SETG response to the plan was issued to SEP staff and the SEB.

Although the SETG did not limit its response exclusively to the above considerations, the comments that were "plan-specific"
mainly concerned overall species balance and also that the Special Project Division of SEP should receive increased budget allocation to pursue more "naturalistic", public-oriented forms of enhancement.

(b) The decision-making unit

Although in theory, the SEB functions strictly as an advisory body to the Federal Minister of Fisheries and Oceans and Provincial Minister of Environment, in practice, their decisions on policy and Program options and budget allocation can be considered as final decisions.

The SEB is composed of five high-ranking government bureaucrats; (three Federal and two Provincial) and seven members from the private sector; all appointed by the Ministers. The private members have been instructed that their purpose is not to attempt to influence SEP policy and direction as representatives or spokesmen for their affiliated user group. Rather, they have been invited to sit on the SEB due to their knowledge of a particular aspect of the salmonid resource. The decisions that they arrive at, are among other things, the result of the interaction among this diversity of perspectives. (See Appendix IV for SEB membership, and Appendix V for their Terms of Reference).

In relation to the 1980-81 planning exercise, the SEB was asked to review the plan recommended to them and decide if the broader policy aspects of "balance" among species, regions and objectives was acceptable. The SEB recommended modification of the "Executive Plan" to include increased emphasis on lake
fertilization because of the high projected yield from such projects. This directive was then left to the discretion of the Executive Director of SEP to make the appropriate funding adjustments among Divisions.

From here, the 1980-81 plan was presented to Treasury Board and a few months later budget approval of the plan was received.

Steps In Policy Implementation

The above sequence of activities and interactions comprise the basic institutional elements of annual SEP planning, culminating in a decision to implement policy as is manifest in the array of proposed individual enhancement activities and functions. Decisions are based on technical information available at the time and for the purposes of broad Program planning, the information and institutional organization may be adequate. However, at the policy implementation stage, SEP seeks to refine much of the technical information that was gathered previously. This "fine-tuning" is done mainly for major production initiatives that may involve the investment of several million dollars. As a way of having tighter control over major expenditures of this nature, Treasury Board requires a detailed submission prior to the actual initiation of capital projects costing over $500,000. This necessitates a more in-depth estimation of project costs and projected fish production than what was required for the purposes of initial planning. If the project still appears to meet the three feasibility criteria, and if the GWG is satisfied that any updated production figures are still manageable, then the Division Chief
prepares a detailed Treasury Board submission. If these requirements are not satisfied, then the project may be either modified or delayed until more information is available.

SEP Evaluation Techniques - The Five-Account Framework

The socio-economic evaluation of individual projects and of overall annual plans is a critical component of SEP planning. By using common criteria to analyze all individual projects SEP economists attempt to present their findings in a systematic and standardized form which theoretically permits ease of comparison among individual projects and plans.

The five-account evaluation methodology that is used by SEP is a modification of the Water Resources Council's "multiple-objective planning" methodology that is used in planning water resource developments in the United States. (U.S. Water Resources Council, 1973). A system of accounts has been devised which attempt to separately consider social and environmental consequences of project developments in addition to the traditional economic effects. The five accounting methodologies are parallels of the five program objectives. The main elements of each of the accounts are outlined briefly below:

1. The **National Income Account** represents traditional economic efficiency information input to the planning process. Cost-benefit analysis of alternative projects is conducted which takes into account project benefits accruing to commercial, recreational and Indian food-fishing sectors, compared to the costs of development and management of the enhancement facilities. This account deals strictly with those costs and benefits that are easily quantifiable in monetary terms; social and environmental costs and benefits are dealt with in the other accounts.

2. The **Regional Development Account** seeks to rate a project's capability of providing a "greater balance
in the distribution of population, wealth and industry throughout the province". (Blasetti and Fraser, 1979, p.2). The wealth generated in less developed regions of the Province is considered "to be worth more" than if it were generated in the Vancouver or Victoria metropolitan regions. These perceived differences in value are reflected by simply weighting the incomes expected from remote projects more heavily than incomes from projects located near the Lower Mainland.

3. The Native People Account. Although the SEP itself is generally beneficial to the Native people of B.C. the "magnitude and distribution of effects are sensitive to choices made during program planning". (Friedlaender, 1979, p.2). In order to systematically rank these effects this methodology looks at economic and social impacts on:
   (a) employment, income and community satisfaction effects that accrue to Native groups living near the proposed project site.
   (b) increased income for Indian commercial fishermen.
   (c) additional Native employment opportunities in the fish processing sector.
   (d) improvements in Indian food fisheries.

4. The Employment Account. This account ranks projects on the basis of their contribution to generating employment in the fishing and processing sectors with the use of labour resources that are currently under- or un-employed.

5. The Environmental and Resource Preservation Account. Each alternative project receives a rating based upon an evaluation of certain key indicators (such as a project's effect on changes in stock characteristics, intra- and inter-species interactions, stock manageability, etc.). The perceived direction, magnitude, importance, probability, and potential for mitigation of key indicator values represents the final project score which gives the degree of beneficial or adverse impact that is expected from the implementation of particular projects. Projects with large perceived ecological value are rated higher than projects that make a small contribution (or detract from) environmental/resource preservation. (Gregory, 1979).

Projects evaluated in the social and environmental accounts receive a "score" on a five step ordinal scale ranging from very poor to a very good contribution to the objective (account) in
question. Project "scores" can then be compared to each other within a particular account.

Many of the "small-scale" projects initiated by SEP however, do not undergo explicit five account evaluation by the economic planners. This is mainly because of the difficulty in estimating the fish production that can be attributed to an enhancement activity such as removing a log-jam or improving conditions for spawning in a small stream.

Similarly, the major feasibility criteria of enhanceability, desirability and manageability are often waived or modified for these small, low-impact rehabilitative projects. (DFO, 1980(a)).

For those projects where full evaluation is conducted the five account methodology is explicit recognition of the fact that society has a multiplicity of goals, not all of which are communicable in monetary terms. The Department of Fisheries and Oceans has loosely articulated these goals in terms operationally appropriate for SEP and has at its disposal $150 million to implement projects capable of working towards these goals. Although the requirement of economic efficiency has imposed a considerable constraint on Program choice by emphasizing the national income objective, the remaining objectives remain un-prioritized. Varying mixes of alternative enhancement projects will each satisfy the objectives to varying degrees. Therefore, SEP decision-makers must deal with the question of how much of one objective they are willing to trade-off in order to achieve a certain level of another.

The implications of "trade-offs" among objectives were
identified for decision-makers during the 1980-81 planning exercise with the assistance of three alternative "maximization plans" constructed by SEP economic planning staff. These three plans were in addition to the "Executive Plan" that was recommended to decision-makers. Each of these "maximization plans" emphasized a different mix of projects that scored relatively highly in the particular account in question. For example, the National Income Maximization Plan mainly included projects that would best meet the requirements of economic efficiency. Projects and functions included in this plan were arrayed in order of descending cost-benefit ratio until the annual budget was exhausted. The Income Redistribution Plan emphasized projects capable of providing employment and subsequent income benefits to regions outside the Vancouver and Victoria metropolitan areas. The Environmental Maximization Plan emphasized projects identified as having relatively strong positive environmental and resource preservation attributes.

The perceived value of the maximization plans is their use as benchmarks to highlight how much of one objective must be given up to attain another. (see Appendix VI for a sample of the 1980/81 five account evaluation information as it was presented to decision-makers). The 1980-81 plan recommended by SEP planners (the Executive Plan) represented a compromise among objectives that was considered by decision-makers vis a vis the maximization plans.

"The question of whether the environmental and regional development benefits for example, of a particular development plan are worth less, the same or more than the amount of national income gains foregone, will have to remain a matter of judgement by policy-makers in each and every case".
It was suggested at the outset of SEP that the information contained in the five account system is all that is required for decision-makers to make informed choice on trade-offs among objectives. (Fisheries and Environment, Canada, 1978, p.40).
CHAPTER FIVE
ASSESSMENT AND DISCUSSION OF THE SEP PLANNING PROCESS

I. REPRESENTATION OF INTERESTS IN THE SEP PLANNING PROCESS

There are two basic categories of interest which deserve consideration in SEP planning: non-government interests and government interests.

(A) Non-government interests constitute those public groups whose interests impinge on, or are impinged upon by SEP decisions. (e.g. commercial and sport fishermen, processors, the forest industry, native communities, etc.).

To determine whether or not the criterion of representation of non-government interests has been satisfied, the following questions are suggested as relevant indicators of SEP performance:

Indicator I-1: Opportunity to Participate

Simply, can the appropriate interests be identified as having had the opportunity to participate in the SEP planning process at all stages? The "appropriate interests" are those interests which can be readily identified as having a legitimate concern regarding the direction of SEP, as determined by the "domain of the common property or the public good being supplied". (Ostrom, 1973).

Indicator I-2: Transaction Costs of Participation

Recall that Olson (1971) has shown that individuals of common interest may not be motivated to organize to further that common interest if the costs of participation exceed the anticipated benefits from doing so. (i.e. if their "transaction costs" are too great). Has SEP taken any actions to ensure that transaction costs of participation do not inhibit any interests from being represented in the planning process?
Indicator I-3: A Forum for Representation

For groups that are active in SEP planning, is there an official forum for input and exchange that lends structure to the way that representation occurs? A forum should facilitate two-way communication among participants and enhance discussion and bargaining that is not dominated by a particular interest(s). (Haefele, 1973).

Indicator I-4: Effectiveness of Representation

Is there any evidence to suggest that interests have been effective in influencing the direction of SEP, consistent with the preferences of those interests (and of course, consistent with what can practically be implemented)? Unless an interest can point to a decision outcome, satisfied that it has been instrumental in shaping that outcome, the interest will be unable to rationalize continued participation in the planning process. Also, it stands to reason that representation will be most effective when it occurs early in the planning process, before the "agenda" has been set.

Indicator I-5: Representation of the "General Interest"

Has SEP taken steps to resolve the problem that Lowi (1972) refers to as "distributive policies". All Canadians pay for SEP and yet only certain groups are expected to derive direct benefits from the Program. Are there any mechanisms within SEP which attempt to protect the interests of the wider public and prevent "privatization of the public"?

(B) Government interests that deserve consideration by SEP planning include those agencies whose "spheres of influence" interface with salmonid enhancement. (e.g. B.C Hydro, Ministry of Forests, Ministry of Agriculture, and local and regional governments in proximity to enhancement activities). It is important that these agencies be recognized in SEP planning because of the external costs potentially imposed upon SEP by the resource users that these agencies regulate or represent.

Another consideration here is the integration of other DFO interests with SEP planning. (i.e. habitat protection and
regulation/management). This integration is important for pragmatic reasons that could potentially influence whether or not SEP can be as successful as originally anticipated. These reasons are explained below.

The causes of the gradual decline in the productivity of the salmonid resource have been attributed to overfishing and habitat deterioration. (Fisheries and Environment Canada, 1978). Logically, efforts to increase productivity would address these two causes. SEP however, was instituted under a fresh mandate in 1977 to mitigate the symptoms of the above two causes rather than to deal with the causes, per se.

The decision to deal with declining productivity through an enhancement strategy was founded in the belief that such an approach was, in all respects feasible, and could be effective,

"...if improved habitat protection and stock management regimes are applied concurrently to protect the natural base level of salmonid production." (Fisheries and Environment Canada, 1978, p.20).

The question is whether or not these other two dimensions of salmonid resource management can be expected to keep pace with increased production without being coordinated closely with SEP planning.

The difficulty lies mainly in the management of "mixed stock fisheries", where enhanced stocks intermingle with and cannot be differentiated from unenhanced stocks. Gregory (1979, p.28) provides an explanation of the stock manageability problem.

"Salmonid enhancement projects are designed to increase the abundance of salmonid stocks, and this increase in turn serves to boost fishing effort. If salmonid stocks are then subject to common exploitation in the fishery, following an overall
managerial objective which seeks to increase the catch from the total system, the impact of increased fishing pressure on unenhanced stocks could prove highly adverse."

The adversity to which Gregory refers is caused by different rates of productivity between enhanced and unenhanced fish. For example, in order for a hatchery run to be sustained, only relatively few adults are required as "escapement". Their productivity is high because it is artificially enhanced. However, to ensure the vitality of a natural stock, a larger proportion of escapement is required. Because the relative productivity of natural stocks is low, they cannot sustain as high a level of harvest as artificial production, or reproduction will be endangered. (Graham, 1981).

Therefore, unless stock manageability is a priority of SEP planning, the potential results may be a decline in natural production that can dramatically lessen the impact of the Program and perhaps more importantly, lead to a reduction in overall system resilience and stability due to increased system homogeneity.

The involvement of fisheries managers who are involved with habitat protection ought also to be a priority of SEP planning. Enhancement of production in the absence of environmental rearing capacity to sustain that increased production is pointless.

For these reasons, the extent to which all dimensions of salmonid resource management are found to be integrated into SEP planning, constitutes an important aspect of the criterion of representation of interests.
A. Non-Government Interests in SEP Planning

Indicator I-1: Opportunity to Participate

Efforts to involve the public in SEP planning began originally in 1976 with a round of public inquiries in 18 communities throughout B.C. A second set of inquiries in 20 communities was conducted in 1978. (DFO, 1980(b)). Other past activities to receive public input have included occasional meetings between SEP planning staff and particular interest groups such as the Pacific Trollers Association and the Union of Fishermen and Allied Workers. (Morley, pers. comm.).

The primary mechanism however, for input into Program planning is the Salmonid Enhancement Task Group (SETG). Virtually every interest that is connected with the salmonid resource is represented on this group. Included in the membership are interests that will receive benefits from SEP as well as those that might bear costs. Beneficiaries are represented by members from interests such as fishermen's unions, salmon processors, native groups, and commercial and sport fishermen groups. Members associated with mining, hydro-electric development, and forestry provide representation of interests that might bear costs due to SEP. (see Appendix II).

Those SEP planning participants that were interviewed for this study, concur that the full range of legitimate interests are represented on the SETG. Indeed, this was the primary criterion of membership selection that was used by the consulting specialist who intitiated the SETG. (Sinclair, pers. comm.). There is also representation of some interests with
less obvious connections to the salmonid resource, as well as geographical representation of interests.

Although there may be some question of the appropriateness of the way in which Task Group membership was determined (i.e. a consultant for the proponent agency selecting those who shall participate), it is suggested that such methods may enjoy greater effectiveness than traditional methods of mass participation. O'Riordan and O'Riordan (1979) argue that the value of pre-selected advisory bodies such as the SETG is that they operate from a position of relative influence. Because members have been invited to participate as "consultants" they are more likely to be considered as equals in the planning process.

"Consultation through advisory groups can ensure more reflective input provided the groups are carefully selected, and enables a more effective utilization of the considerable technical, social and local knowledge that lies outside government...decision-makers often regard input from consultative groups as more credible than coming from mass public meetings." (O'Riordan and O'Riordan, 1979, p.91).

It is important to recognize however, that if "consultants" such as the SETG are to be truly representative of the interests with which they are affiliated they must communicate closely and be accountable to their "constituents". (O'Riordan, 1976). Unless this two-way education occurs, members may in fact become un-representative of the real aspirations of their affiliated interest. Individuals should have the "opportunity to participate" through the SETG member representative of their group.

Concern has been expressed by the SETG itself that this lack of communication may be a problem with their advisory body.
In an August 1980 meeting the question was posed whether members more accurately represent themselves than they do their respective groups. It was moved that ways be found to communicate more effectively with affiliated interests and the public at large.

This communication issue as perceived by the Task Group relates perhaps to a larger question. In the past four years Task Group members have become increasingly well-educated on the complexities of salmonid enhancement. In effect, the group qualifies as a panel of experts that, as a unit, has become fully integrated into the SEP planning process. According to their mutually agreed upon terms of reference their mandate is to provide policy level, consensus input into planning.

Given these attributes, the following question arises in connection with the Task Group's level of representativeness: Has the SETG (due to its long-term, consensus-seeking, and policy level nature) evolved to a level of sophistication where the objectives of the individual member interests have been sublimated by the objectives of the larger integrated group?

If the answer to this subjective question is yes, then it may provide an explanation of why it might be difficult for Task Group participants to communicate and justify Task Group activities to their respective interests. That is, the objectives and hence, the functions of the overall Task Group, differ significantly from the narrower and perhaps more self-interested perceptions of particular client groups.

This is not to insinuate that having an informed and cohesive body such as the SETG is a negative thing. On the
contrary, it is desirable to have such a group ensuring increased accountability of government by concentrating on basic issues that individual interest groups would not be motivated to pursue. The question is how to retain the sophistication of the SETG and at the same time ensure that representation is truly connected to the wider constituencies. Consideration of this question in terms of the theory developed previously, is provided in the following chapter.

The Salmonid Enhancement Board

The private members of the SEB, as distinct from the SETG, are not responsible to their affiliated user groups.

"While individual members may have vested interests in the thrusts of the Program, they have not been appointed to represent those specific interests on the Board except insofar as they may coincide with the overall purpose of the Program." (SEB, 1978).

Although the SEB mandate is supposedly also advisory, it operates from a position that is considerably more influential than that of the SETG. For all intents and purposes, SEB judgements on Program allocation can be considered as final implementation decisions since the two Ministers have never opposed or altered SEB recommendations.

Two issues are evident with regard to the SEB and the criterion of representation of interests in the SEP planning process.

The first issue concerns the question of whether or not it is appropriate that private interests are directly involved in what is a public decision-making function. Haefele (1973, p.81) has written with regard to this concern (albeit, not with
specificity to SEP).

"So long as technical committees and 'representation' is advisory, much good can be accomplished. When however, the advisors become the policy makers...or when they are used to give the appearance of 'public' participation in the decision process...a different issue arises".

Haefele's primary concern here is that decision-making by politically non-accountable individuals, and especially by those whose interests are potentially vested, is clearly undemocratic.

This apparent disregard of democratic precepts may (in the case of SEP) be compensated by the fact that the SEB is chaired by the Deputy Minister of DFO and is composed of other high-ranking government officials, who may be considered as legitimate decision-making delegates of the two responsible Ministers. Ironically, this significant government representation on the SEB gives rise to the second issue regarding the criterion of representation of interests.

Clearly, these senior government officials should be centrally active in the management of SEP. But, is it appropriate that they participate as leading members of what is ostensibly an objective advisory body? It is conceivable that heavy government representation on the SEB could influence recommendations that might be significantly different than if government representation was excluded from the SEB. In short, the key question is, should the proponent agencies be providing advice to themselves, routed through an advisory mechanism?

These comments are not without basis. Criticisms have been levelled by some SEP planning staff and have been insinuated by the SETG that senior bureaucrats have "hoodwinked" the SEB and that their concepts have been "railroaded through", casting
suspicion that SEB decisions are not always truly reflective of objective deliberation. Those SEB members interviewed however, were of the feeling that there was adequate opportunity for due deliberation.

Potential improvements to SEP planning in connection with these two issues surrounding the function of the SEB, are discussed later.

Indicator I-2: Transaction Costs of Participation

All SETG and SEB functions occur at no economic expense to participants. The operating budgets of the SETG and the SEB in 1979/80 respectively were $68,525 and $11,832; all of which was "picked-up" by government. In this sense, SEP has overcome a significant portion of these groups' transaction costs which were identified earlier as a prime component of the "representation problem". Obviously, these groups would not exist if this "subsidy" was not in effect.

Members do however, contribute a considerable portion of their personal time to participation in these advisory groups. It is probable that personal ideology and also perhaps the prestige of being involved in these relatively highly regarded and potentially influential groups, provide the necessary motivation for individuals to give up their time.

Indicator I-3: A Forum for Representation

The very existence of both the SETG and the SEB permits and encourages a forum for structured discussion that otherwise would not occur. Regular meetings are held by both groups and
about once a year the SETG and the SEB meet jointly. SEP staff participate at all meetings, either to present information or to be available for questions. Attendance by Task Group and SEB members is generally good at all meetings as is evident from SETG and SEB minutes.

The smooth running of the Task Group operations is facilitated by an executive secretary who takes care of organizational details and information dispersal to members. All members of the SETG appear to have adequate opportunity to participate in discussions, although the SETG has been mildly criticized as being dominated by the sports fishing fraternity. Naturally, the nature of individual personalities has a great deal to do with the "vocalness" of both SETG and SEB participants. Restructuring of the advisory functions to encourage liaison with the "wider constituencies" could perhaps further enhance the level to which a forum for representation exists.

The existence of a good forum for advisory input does not however, ensure that interests will be represented effectively. Effective representation will also depend on involvement of interests at all stages of the planning process (i.e. during problem identification, conceptualization of alternatives, evaluation of alternatives, and implementation). Our theoretical perspective of political-administrative behavior indicates why this is necessary.

Analysis of the SEP planning process however, shows that the SETG is not involved until annual plans have already been conceptualized and evaluated. It is only at this point that the
Task Group is asked to input into the planning process, by responding to plans. This has contributed to the ineffectiveness of this group as shown in the following section.

Effectiveness of representation is also closely linked to the type of information that is available to interests. This is investigated in relation to SEP planning under the second criterion of evaluation.

Indicator I-4: Effectiveness of Representation

It is a responsibility of SEP planners to conceptualize the policy concerns of the Program's advisory bodies into implementation strategies. This responsibility is in keeping with the Program's stated objective to be,

"...a process that will be responsive to the legitimate and changing needs of people and to the targets of government...". (Fisheries and Environment Canada, 1978, p.23).

The responsibility is also consistent with what one would expect from a planning process that is sincere in its commitment to public input into decision-making.

Three policy level concerns of the SETG which have been clearly conveyed to SEP planners and the SEB, and which can be readily "separated-out" of annual budget allocations for analysis are:

(a) public involvement in actual fish production
(b) community development projects
(c) small stream enhancement

The SETG has emphatically recommended that increased funding be made available to these three enhancement activities. It is evident however, that despite Task Group representations, the cumulative proportion of annual budgets allocated to these
three activities has over time, (with the exception of one year), shown a gradual decline. Allocations to these categories for the remainder of Phase 1, are projected to decline further. (Table 1).

A main reason for this apparent ineffectiveness of the SETG is that the "agenda" for SEP was set early-on, in the days when the "overall SEP plan" and its staging was agreed to by Cabinet. In order to meet the Phase 1 production targets, (i.e. to produce an incremental 50 million pounds of salmonids at no cost to government) an emphasis of relatively large and efficient projects of economic scale has been necessary.

A consequence of this emphasis is that not only are these projects capital intensive, but as Phase 1 progresses, they consume an ever-increasing proportion of annual SEP budgets for their operations and maintenance. Accordingly, discretion to allocate funds to SETG priorities is inhibited.

The present implications of this emphasis on major production activities is that SEP's advisory groups cannot expect to be very effective in influencing the remainder of Phase 1 planning. There is no apparent reason to expect an improvement in their level of effectiveness in Phase 2 unless there is a change in the priorities of SEP direction. As yet, no firm commitments regarding Program direction for Phase 2 have been made.

In designing an institutional structure that can ensure advisory effectiveness, it is evident then, that public input must occur early in the planning process, before the "agenda" is set. For example, the involvement of a SETG in the original
Table 1
SPECIAL PROJECTS UNIT FUNDING AS A PROPORTION OF SEP BUDGETS

<table>
<thead>
<tr>
<th>Enhancement Activity</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1977/78</td>
</tr>
<tr>
<td>Public Involvement</td>
<td>5.6%</td>
</tr>
<tr>
<td>Community Development Projects</td>
<td>5.0%</td>
</tr>
<tr>
<td>Small Stream Enhancement</td>
<td>2.5%</td>
</tr>
<tr>
<td></td>
<td><strong>13.1%</strong></td>
</tr>
</tbody>
</table>

Source: Actual and proposed budget flow as presented to the S.E.B. for the 1980/81 and 81/82 Program Proposals.
planning for SEP may have resulted in a planning process capable of greater flexibility (i.e., decreased emphasis on the economic objective). With this in mind, advisory input at the outset of Phase 2 planning and development appears most desirable.

Apart from the problem of declining discretionary funds, there appear to be two other possible explanations for why Task Group recommendations are not always acted upon by SEP. The first relates to an inconsistency in Task Group recommendations. While advocating that greater attention should be given to small-scale "naturalistic" projects, the Task Group also strongly recommends that a program to recover the implementation costs of SEP should proceed. However, before cost-recovery can occur, the benefits of SEP must be greater than or equal to the costs of providing SEP. The economically efficient class of major production facilities are theoretically, the most capable of contributing to the successful implementation of cost-recovery. An excessive proportion of less economically efficient small-scale projects would jeopardize the viability of cost-recovery.

The second reason why Task Group recommendations are not always acted upon by SEP relates to the "scope" of Task Group comments. Many of the Task Group's policy recommendations relate to issues currently outside the mandate of SEP. For example, the Task Group has regularly advised on such things as the need for integrated resource management, for better habitat protection, and the need for an international fisheries agreement with the U.S.
While these suggestions are unquestionably germane to salmonid enhancement, they are outside of the Program's singular responsibility and are considered by the SEB to be peripheral to what the Task Group's concerns ought to be. (SEB, 1979). In this regard, the objectives and priorities of the SETG, and hence, their recommendations are much wider in scope than this one Program can accommodate.

There is no apparent reason however, why SEP staff should not set-up channels for transmitting the wider concerns of the SETG (i.e. concerns that are not the explicit responsibility of SEP), to those groups in DFO that are responsible for such considerations. So long as Task Group inputs relate to the salmonid resource, it seems unreasonable to suggest, as the SEB (1979) has done, what the SETG's concerns ought and ought not to be.

The above discussion is not meant to imply that the SETG has been completely ineffectual in Phase 1 planning. On the contrary, the SETG appears to have had some degree of influence in shaping the Program. For example, the proportion of annual budgets proposed originally for allocation to the types of projects that the SETG supports, was only in the 6-8% range. (Fisheries and Environment Canada, 1978, p.16). Table 1 however, shows that actual and proposed allocations are as much as two times greater than proportions earmarked originally. The feeling by many participants is that SEP would be a significantly different Program, with an even greater emphasis on major production activities, if the SETG did not exist.
Indicator I-5: Representation of the "General Interest"

Public expenditure programs face the difficulty of protecting the interest of the general public vis a vis the vested interest. In some respects, SEP has attempted to take account of this difficult policy issue.

From the outset, the Program has subscribed to the philosophy that general tax dollars should not be directed at only a few beneficiaries. To this end, considerable study has gone into how a portion of the increased economic rent that is anticipated to flow from SEP can be re-captured to pay the costs of Program implementation.

"The consequences of not recovering costs would be the distribution of sizeable windfall gains to a few fishermen and processors at public expense." (Fisheries and Environment Canada, 1978, p.55).

Cost-recovery however, has not yet been implemented. One reason for this delay is that measurable net benefits from SEP (i.e. the increased economic rent) are not yet apparent. Understandably, it would be inappropriate to expect fishermen to pay for something which they have not yet received.

It is recognized however, that by some groups' standards it may never be appropriate to implement cost-recovery. This may be particularly true if the benefits from SEP are not clearly enumerable. For example, SEP production began to come on-line in 1980. This same year however, was the worst year for fishermen in decades. It would very likely have been unacceptable to most interests that year, to have had to pay cost-recovery, even considering that catches would have been even lower without SEP. It is probable therefore, that cost-recovery will have a chance of success only if there are indeed identifiable and significant
windfall gains to fishermen and processors. This condition will require: (i) protection of the natural fisheries base so that SEP's augmentation efforts are not offset by a loss in productivity of the stocks we already have, and (ii) restraint on capital investment into the fishery so that increased economic rent attributable to SEP is not dissipated.

Lowi's (1974) argument however, provides an explanation of why cost-recovery will perhaps never be implemented, even if such a scheme is completely practicable. That is, it is simply easier politically to divert tax funds from the unorganized general public to satisfy the more intense demands of organized clients, than vice versa. Despite such reasoning, it appears at present that many SEP client groups support the principle of "finnage". Perhaps this support stems from a realization that demand for salmon is very high and expected to stay that way, and therefore, the cost of "finnage" can be simply passed-on to the consumer, not significantly affecting profit margins.
Government Interests in SEP Planning

1. Provincial agencies

There are a number of Provincial government agencies whose responsibilities affect, or are affected by, SEP decisions. The question here is whether or not SEP planning is coordinated with these interests in an effort to reduce potential future resource use conflicts in specific watersheds. This question is recognizable as at the heart of the philosophy of integrated resources management; a concept always praised but seldom implemented, primarily because of the single-purposeness of most resource management agencies. In fact, the SEP goal to double fish production is generally characteristic of this vertical alignment of interests.

It is not surprising then, that a formal institutional mechanism does not exist to integrate these related agency interests into SEP planning. As desirable as it might seem, it is outside the mandate of DFO, and more particularly the narrow SEP terms of reference, to lead B.C. to an explicitly integrated style of resource management.

It is however, a different level of magnitude to expect SEP to introduce integrated resource management to all of B.C., than to expect it to try to protect its investments by taking account of the potential negative impacts on enhancement activities caused by other resource users that are regulated by Provincial agencies. For example, forest harvesting or municipal development may damage fish habitat that is vital to the productivity of a SEP project.

Currently, two mechanisms are in use which, to some extent,
ensure increased consideration of potential resource use conflicts. Firstly, all SEP projects that involve the development of Provincial lands are subject to the traditional referral process among potentially affected agencies (Morley, pers. comm.). This practice serves to indicate where the more immediate conflicts might arise. Secondly, consideration of some conflicting Provincial interests is met, at the policy level, through Provincial representation on the SEB and the SEP Management Committee.

There are however, two reasons to suggest that these mechanisms are insufficient methods of integrating Provincial interests into SEP planning. First-off, not all projects are subject to referral; and even if a referral is made, agreement is not necessarily forthcoming that future conflicts will not arise. Secondly, not all Provincial interests are represented at the policy level of Program planning. Although the Ministry of Environment is well-represented on the SEB, this interest cannot be expected to speak for other potentially affected agencies such as the Ministries of Forests, Agriculture, Municipal Affairs, Lands Parks and Housing, B.C. Hydro, etc.

Although the Fisheries Act itself may be a significant deterrent to activities harmful to salmonids, it has not in the past, shown itself to be particularly effective in conserving the salmonid resource.

In light of the above, it is suggested that more explicit coordination of Provincial interests with SEP planning would be desirable, not only to help protect the long term effectiveness of SEP investments, but also to ensure that SEP does not impose
unreasonable costs on other resource interests. A suggestion that could potentially promote this coordination is outlined in the following chapter.

In viewing the likelihood that resource interaction conflicts will undoubtedly increase in number and magnitude, SEP should be taking further steps to protect its investments.

Day to day resource use decisions involving conflicting resource interests, are currently made through a relatively informal process of bargaining among various regulatory agencies and private interests. (Dorcey et al, 1980). Accordingly, SEP should develop definite watershed strategies to which it can refer, to strengthen its bargaining position. Such strategies would mean the formulation of strategic plans, outlining for each drainage, manageable production targets, alternative strategies for attaining these targets, and the costs and benefits (economic and non-economic) anticipated to flow from the plans. (Dorcey et al, 1980). Although such plans should be constructed from a "fisheries perspective", they should not ignore other watershed interests. (Paish, 1980).

2. Other components of fisheries management

Indeed, SEP subscribes to the idea of strategic watershed planning and also perceives the need to consider other watershed interests in such plans. Studies have been commissioned by SEP to look at fisheries/forestry interactions (see Sydneysmith, 1979), and also the overall question of cooperative watershed planning (see Paish, 1980).

Conceptualization of such plans however, is frustrated by the relative "isolation" of SEP from the other two main
dimensions of salmonid resource management (i.e. habitat protection and regulation/management). Ideally, changes in stock and fleet management practices and increased enforcement and habitat protection would be integrated concurrently with enhancement, as complementary strategies to obtain production and distributional objectives, as laid out in strategic plans.

"Clearly, enhancement out of context with the rest of fisheries and habitat management will result in a transfer of production from low cost natural production to high cost artificial production, with little or no increase in (overall) production". (DFO, 1980(a) p.2).

Recognizing the necessity of this integration of functions, SEP planning has "nurtured" the GWG mechanism. Each GWG sets production targets for its respective region and are responsible for assuring that before a SEP project is implemented, its fish production is manageable. Although these groups initially experienced considerable difficulty in meeting these responsibilities, they are reported now to be increasingly effective in providing SEP with advice on manageability issues. To this end, the SEP biological planning unit maintains close liaison with GWG's. Also, SEP funds a number of manageability studies to try to ensure that managers have the information necessary to properly regulate fisheries that include enhanced stocks.

A second way which, to some extent, brings the wider integration of internal DFO functions into SEP planning is the involvement of the Salmon Resource Board. This group, composed of senior DFO personnel (including staff from habitat protection and management/regulation), review annual SEP plans prior to their implementation.
Given these institutional devices, it is evident that in spite of SEP's relatively isolated mandate, efforts are being made by Program planners to improve integration of functions.

Recently (1981), a planning function has been initiated for the entire Pacific region of DFO to try to coordinate the multiple dimensions of fisheries management. Although no additional funds have yet been allocated for increases in habitat protection or management, this body should in the future, assist in putting SEP into balance with an integrated regional salmonid management plan. This hope is increased by the appointment to this position of the previous director of SEP planning -- an individual keenly aware of the need to take a wider outlook than that to which SEP aspired initially.
II. ADEQUACY OF INFORMATION FOR DECISION-MAKING

The systematic generation of relevant information is central to planning. The two key words here are "systematic" and "relevant". First, we will consider what constitutes relevant information.

(a) Relevancy is determined by the peculiarities of the planning problem at hand and also by the objectives of the project or program. SEP aspires to meet certain spatial and temporal production and species balance targets which in turn are capable of contributing to a multiplicity of broader national goals. Therefore, information that is relevant to SEP planning must logically include:

(i) determination and analysis of alternative enhancement projects that are capable of contributing to the targets. This information relates primarily to the technical feasibilities of individual projects.

(ii) formulation and analysis of alternative mixes of enhancement projects (i.e. alternative annual plans) to determine their relative levels of contribution to the national goals. The important categories of information to be generated at this level are the perceived economic, social, and environmental consequences of alternative annual plans, since these reflect the goals of the Program. These estimated impacts should be interpreted into terms that are meaningful to participating interests so that each may determine intelligently where its self-interest lies, thereby enhancing realistic negotiation among interests.

(b) The systematic documentation of evaluative information is considered important to facilitate communication and understanding of the potential effects of alternatives, and also to permit easy comparison of the relative merits among alternatives.

The preceding discussion suggests that the following
questions are pertinent as indicators of whether or not the information that is generated for SEP planning is adequate.

Indicator II-1: Development and Technical Evaluation of Project Options

The development of surplus feasible enhancement options is desirable so that SEP has the opportunity to enhance the potential for choice in its overall direction. Are alternative enhancement options that faithfully reflect the differing perceptions of the various interests being continuously identified and evaluated for technical feasibility and potential effectiveness?

Indicator II-2: Formulation and Evaluation of Alternative Annual Enhancement Plans

Are alternative mixes of individual enhancement projects (i.e. annual expenditure plans) formulated and evaluated for their relative contribution to Program goals? Are all three categories of basic information (i.e. economic, social, and environmental effects) generated in this evaluation? Furthermore, does this evaluative information permit ease of comparison of the relative merits among alternative plans (i.e. tradeoffs)?

Indicator II-3: Incidence of Effects

Does the evaluative information outline for each alternative what social groups will receive the anticipated benefits or costs? When the perceived consequences of a proposed alternative are interpreted into tangible "end states" that are of real significance to particular groups, decision-making is enhanced. (McAllister, 1980).

Indicator II-4: Communication of Information

Is evaluative information communicated effectively among process participants? (i.e. Is there time for assimilation and discussion of information prior to actual decision-making? Is the information comprehensible to non-technical participants)?

Indicator II-5: Consideration of the "Information Problem"

Information judged to be relevant by all participating interests is necessary so that the bargaining inherent in the decision-making process is not dominated by a particular viewpoint, by virtue of the effective exclusion
of a countervailing viewpoint. Recall that if interests might want to generate some independent information to substantiate their position, there are two basic obstacles to the generation of this information: information costs and "monopoly" over information. Is it appropriate that SEP planning should engage in any activities to help overcome this "information problem"?

Recall also that an active as opposed to reactive approach is a preferred strategy for dealing with the issue of uncertainty. As a component of the "information problem", does SEP actively take steps to deal with uncertainty?

The following discussion applies the five above "indicator questions" to the SEP planning process.

Indicator II-1: Development and Technical Evaluation of Project Options

Three basic inadequacies of the SEP planning process are apparent in connection with this indicator.

1. Too few options

It appears that not enough project options are being currently developed by SEP to satisfy a desirable ratio of "option development to option use". A recent SEP planning discussion paper states that:

"At present, we find ourselves in the situation of having to take available options rather than being able to select from an array of proven options". (DFO, 1980(a) p.27).

Consideration of our theory however, raises the question of whether or not it is possible for SEP to array for choice the spectrum of projects that faithfully reflects the differing perceptions of the various interests. Projects conceptualized by SEP will always reflect the inherent bias of that organization, unless there are opportunities and incentives for planners to be influenced by the different interests.
The primary implication of this is that some interests may be unaware of the opportunities potentially available to satisfy their concerns, and thus, will be unable to enter the decision process in a significant way. This is a fundamental obstacle to democratic decision-making that requires institutional change if it is to be overcome.

Another problem with an insufficient number of options is the potential that this situation creates for hasty implementation of inadequately proven options. The necessity to "go with something" might result in the oversight of critical information or the foreclosure of a different and potentially better course of action.

2. Evaluation for technical feasibility

As discussed in Chapter Four, project development is determined by the technical feasibility criteria of "enhanceability", "desirability", and "manageability", in that order. Only those projects that are considered both enhanceable and desirable are forwarded for evaluation against the manageability criterion.

The past tendency however, has been to build a project and then try to determine acceptable management strategies for harvesting the increased production (DFO, 1980(a)). Resultant manageability problems are exacerbated by the temptation to "scale-up" project proposals in search of economic justification at the desirability stage.

The reasons that have been given for considering these three criteria in this order are that enhanceability considerations can move faster than the others and because
manageability considerations are vested in a non-SEP group (i.e. the GWG's) with a different priority structure. (DFO, 1980(a)).

An additional explanation for this practice appears to arise in part, out of perceptual and attitudinal differences of the key actors involved in project development. The GWG's are composed of biologists. The SEP planning personnel with which the GWG's are in closest contact are also biologists. Typically, this profession is cautious in their approach to natural systems disturbance. Their work is complicated with complexities and particularly by uncertainties. Accordingly, this group has been relatively hesitant to take the lead in watershed planning.

The engineering component of SEP however, facing less uncertainty in their role, and eager to get on with the job of producing fish, have not been so hesitant to take the lead. Typical of the engineering profession, their enhancement proposals have focussed on the design and construction of facilities. With their plans "ready to go" this group has in the past, often sought funding approval with the manageability issue not yet fully resolved.

A proposed alternative to current project development, which recognizes the reasons why projects have in the past, been evaluated using this sequence, is to expose proposals to the manageability and desirability criteria prior to evaluation for enhanceability, with appropriate feedbacks. (Fig.2). A more detailed discussion of this potentially improved arrangement is contained in a document entitled, "SEP Planning Discussion Paper" (DFO, 1980(a)). Suffice it to say here that the primary
GWG's set general production targets by species and area that are manageable.

SEP Planning staff to coordinate (i) specific production targets (ii) suitable project options for scale/technology.

Reconnaissance in target areas in search and development of opportunities consistent with pre-set production targets.

SEP Planning staff reviews these options for "desirability" i.e., establish cost limits - evaluate project risk - evaluate project contribution to knowledge - evaluate rate of U.S. interception - evaluate option foreclosure

Feasibility studies by operational groups to determine "enhanceability".

Full 5 account evaluation of options.

SEP Planning staff prepares and evaluates alternative annual Program plans.

Internal and external plan review and selection (SEP Management Committee, GWG, Salmon Resource Board, SETG, SEB).

Modifications as necessary to Program plans.

Plan implementation.

Monitoring.

NB. Iterative feedback to occur between all steps as required.

Source: Adapted from DFO 1980(a).
value of such an arrangement could encourage more explicit consideration of the manageability issue and increased assurance that future enhancement options are not being foreclosed upon.

3. Evaluation of small-scale projects

The third inadequacy regarding this "indicator" is the failure of SEP planning to evaluate all small-scale projects at the appropriate stage in the planning process.

Currently, projects which cost over $500,000 are required by Treasury Board to receive a detailed five account evaluation. "Lesser projects" however, are usually exempt from this requirement, and are usually only evaluated after they have already been included in an annual plan, or possibly after they are already in operation.

The apparent reasons for this "informality" are that, (i) quantification of benefits from these types of projects is often difficult, and (ii) most of these projects come under the umbrella of the Special Projects Unit of SEP and are initiated for purposes of achieving the non-national income objectives of the Program, and therefore, are not in economic competition with other projects.

The problem with not evaluating these projects at the appropriate time however, is that they do not receive consideration for budget allocation on the basis of their individual merits. As part of the Special Projects Unit they are automatically considered to be the uneconomic portion of the Program that must be compensated for by the more economically efficient class of projects. Yet without evaluation it cannot really be known if they are indeed "non-competitive" options.
Accordingly, they receive unequal consideration in the planning process.

If proposed projects do not contribute to Program objectives, then that information should be known at the outset, so that modified options can be developed. Also, if an interest is particularly supportive of this class of projects (as is the SETG), information should be available to determine whether or not support is warranted.

In addition, in the long run, SEP will probably undertake proportionately more small-scale projects than large. That is because there are probably fewer large-scale opportunities than there are small (DFO, 1980(a) p.15), and also because the easiest and most economic enhancement "plums" have already been developed. (Swan, pers. comm.). This means that ultimately, evaluation techniques will be required for these "lesser projects". SEP should take the current opportunity to become proficient in these difficult analyses so that planning for Phase 2 activities is not unduly retarded.

Indicator II-2: Formulation and Evaluation of Alternative Plans

Using the multiple-objective planning framework, SEP each fiscal year, has constructed and evaluated alternative enhancement expenditure plans. Each alternative either emphasizes one or more of the objectives (i.e. the maximization of particular accounts) or represents a compromise.

Presented in a matrix style, each expenditure plan basically contains the following information:

(1) individual project performance in each of the accounts for each plan.
(2) each plan's cumulative contribution to Program objectives and production and species balance targets.
(3) the tradeoffs inherent in and among plans.

Clearly, there are a number of positive attributes of the five account style of analysis which permits the synthesis of this basic information:

1. The methodology provides explicit recognition that equity considerations are often at a cost to economic efficiency, and conversely, that the pursuit of economic efficiency is often at the expense of other social considerations. Such tradeoffs are documented in a fashion that relates actual projects and plans to Program objectives. (Fraser and Friedlaender, 1980).

2. Although it is not the intent here to critique the technical aspects of account methodologies, there appear to be no apparent biases that would be reflected in project scores. (Although the national income account assumes investment restraint into the fishery which, if not forthcoming, could substantially lessen the overall economic efficiency of the Program).

3. There is no attempt to mix economic with non-economic values as traditional cost-benefit techniques often do.

4. Not only does the multiple-objective planning methodology detail the impacts of individual projects, but it reassembles the parts back into a comprehensible whole. In this regard McAllister (1980) has suggested that there is value in evaluation methodologies that collapse a complex list of potential impacts into a few key and conceptually manageable categories of information (i.e. a score or a grand index) to which a simple criterion can be applied for accepting or rejecting the proposal.

On the other hand, there exists a significant weakness with the multiple-objective framework that is not so much a criticism of the framework itself, as it is a criticism of the way that SEP has used it. This issue is discussed briefly below.

The essence of the multiple-objective framework is to articulate the tradeoffs among economic, social and environmental objectives that are inherent in alternative development proposals. In this regard, SEP has stated that:
"Whether distributional and quality of life gains are worth dollars foregone, is, and must remain a matter for political rather than analytical judgement". (Fraser and Friedlaender, 1980 p.8).

A significant political decision however, made at the outset of the Program, has affected the flexibility of subsequent decision-making, and thereby, has compromised the potential effectiveness of the multiple-objective tool. The decision is the same one which limits the potential effectiveness of the SETG to significantly alter program balance -- that is, that Phase 1 of SEP shall produce an incremental 50 million pounds of salmonids in a manner that incurs no cost to government.

These targets have made it necessary for SEP planners to generate project options and to construct annual plans which emphasize the national income objective. Tradeoffs among distributional and economic objectives have still been possible, but only to the extent that plans do not dip below this strict economic requirement. The constraint has meant that the full range of tradeoffs have not been shown to public groups and decision-makers.

It is recognized that constraints are a part of any project, program or policy. In fact, financial constraint is the underlying rationale for using the multiple-objective framework in the first place. That is, if there was unlimited funding for SEP, tradeoff among objectives would be unnecessary -- efforts could proceed to maximize all objectives, subject to biological constraints. However, pre-set constraints which significantly affect what options are generated for consideration, would appear to lead to a less than optimal (and perhaps even
inappropriate) application of the multiple-objective framework. Advisory groups and decision-makers should have the opportunity to decide what constraints, and what levels of constraint, are appropriate, at that particular time.

By not placing a pre-set emphasis on a particular Program goal area, flexibility in Program planning is not tied to a single priority from beginning to end; changing priorities in government can be accommodated. If political decision-makers decide in a particular year that they would like to emphasize a particular goal area (be it national income, native people, or whatever), they still have the unconstrained opportunity to choose an appropriate plan. Furthermore, their choice will be made on the basis of full information on what is being traded-off to achieve that particular emphasis. These conditions should increase opportunity for Program adaptability to which SEP originally aspired.

Indicator II-3: Incidence of Effects

Incidence of anticipated project and annual plan effects are currently outlined in a fairly general and abstract fashion within each of the five accounts. For example, the regional development account tells whether or not a project/plan is perceived to have a "poor, fair, good, or very good" impact on areas outside of the Lower Mainland region of B.C. The score that a project or plan receives in this account does not indicate what particular region is to be affected, who within the region is to be affected, or by how much.

It is questionable however, whether or not this highly
aggregated system of impact accounting adequately conveys distributional information. If client/public participation in SEP is expected to be effectively solicited it is suggested that these interests should be presented with a more precise understanding of where their relative self-interests lie. Otherwise, discussion of plans is potentially limited to vague generalities.

In an effort to link enhancement "means" to "tangible ends", SEP evaluations should perhaps take evaluations in the distributional accounts one step further. For instance, the regional development account might show the expected increases in incomes by gear type and by region, or the jobs anticipated to be generated in the regional economies. The native people account might name the bands that are most affected by a proposal, outlining what the actual effects are anticipated to be. The resource and environmental preservation account might show which runs are being saved and which ones may be threatened. This more detailed information should be quite readily available since these are the inputs from which the aggregated project/plan scores of poor, fair, etc. are composed.

The purpose of generating this type of information is simply to give groups an understanding of what the implications for a particular plan are for them, and thus to promote more effective bargaining in the planning process.

Indicator II-4: Communication of Information

Evaluative information concerning annual enhancement plans is communicated to interests in relatively formal meeting
settings. Two general criticisms from those presented information are frequently heard in connection with these meetings. First, that there is not enough time to assimilate information and to respond in a meaningful fashion and second, that information is poorly presented.

SEP planning staff could perhaps improve upon the first criticism by simply mailing information packages to participants earlier, and recently, there is evidence to suggest that this is being done.

With regard to the second criticism the problem is perhaps less a result of poor communication (i.e. poor presentation of information) than it is a lack of understanding by participants of the multiple-objective planning framework and the idea of tradeoffs that this tool tries to convey. This possible lack of understanding may be linked to the problem of constrained flexibility in alternatives formulation that was discussed earlier. For example, in the SEB meeting to discuss the 1980/81 expenditure plan, only one plan was presented that was "implementable". The other three "maximization plans" that were displayed were really non-options since they did not represent enough of a compromise among Program objectives.

Although the maximization plan "alternatives" were useful as "benchmarks" to show what was being given up to attain the recommended compromise, the value of the maximization plans was otherwise marginal, since decision-makers had no other choice but to "go with" the plan recommended to them.

With regard to this issue Barbour (1975, p.19), in discussing use of the multiple-objective framework in the U.S.,
has stated:

"The effective limitation of choices to only one compromise plan is believed contrary to the essence of multi-objective planning, which is to promote the identification of meaningful and implementable choices where there are competing objectives. Comparisons of tradeoffs and differences among say three plans where only one plan has reasonable prospects of materializing are hardly conducive to effective decision-making".

Accordingly, SEP's use of the multiple-objective framework under conditions of low Program flexibility appears to have resulted in the presentation to decision-makers of non-essential and perhaps confusing information. Indeed, those SEB members interviewed for this study claimed that the maximization plans were of very little assistance to their decision-making function. Their concentration was reserved for the plan that was "implementable".

Although members expressed relatively low confidence in the "soft" measurement indicators of the non-national income accounts (i.e. poor, fair, good, very good), they were of general agreement however, that the accounting system should be retained since it forces disciplined recognition of the Program's distributional objectives.

The fact that SEB members place relatively low confidence in the "soft" indicators used in the non-national income accounts raises an additional point. This infers that relatively greater confidence is placed in the accuracy of economic measures of project/plan performance. It should be made explicit to all planning participants however, that despite the appearance of precision, economic analyses (in all cases) are also only relatively rough estimates of what will happen in the
future. Simply because the "language of economics" implies accuracy does not necessarily mean that projected results will actually occur. This consideration is important in light of the fact that economics appears to be a powerful influence in decision-making.

In spite of any weaknesses inherent in SEP's application of the multiple-objective planning framework, or the impressions of precision that economic analyses invariably convey, Program planners appear to make a sincere and committed effort to communicate to advisory bodies the perceived consequences and policy implications of annual enhancement plans. SEP staff are available at all advisory body meetings to clarify technical issues should questions arise. A considerable amount of informal discussion between interests and SEP personnel also occurs at most meetings.

It is suggested that a clearer articulation to advisory groups of the mechanics and underlying intentions of the multiple-objective technique might be appropriate at the outset of Phase 2 planning, particularly if Phase 2 proceeds without a pre-set emphasis of any of the Program's objectives.

Indicator II-5: Consideration of the "Information Problem"

There are essentially two "information problems". The first is that, should external groups want to generate some of their own technical information (to enhance their relative positions in the planning process) they often face two difficulties: (i) the high costs of generating technical information, and (ii) the "monopoly" over technical information and expertise by the
proponent agency which makes it difficult for outside groups to conceptualize viable alternatives that are consistent with their priorities.

The second "information problem" concerns the issue of uncertainty -- How can we minimize the potential for undesirable and costly surprises?

Referring to the difficulties faced by outside groups, SEP currently provides all of the funding for SETG and the SEB operations. This funding does not however, include money for external technical study. The question is, would the SEP planning process be enhanced if these groups were given additional funds to conduct independent studies?

On the surface, such funding appears inappropriate for one main reason. SEP is supported as a desirable resource development Program by all groups. The objectives of the interests generally coincide with those of government.

Despite this commonality of objectives, the level to which various interests are affected by SEP is sensitive to the direction pursued by SEP. That is, some interests could benefit either more or less than others. Naturally, the interpretation of "benefit" need not be purely economic. Benefit might be received by an interest, simply knowing that salmonid enhancement has proceeded in a particular manner that is consistent with the philosophy of that interest. For example, in general terms, the SETG will have benefited collectively simply knowing that greater attention is being given to a certain class of enhancement activities.

This consideration relates to the issue regarding the
opportunity that interests have to participate in SEP planning. From our previous discussion of the criterion of representation of interests we have seen that a wide range of appropriate interests has been invited to take part in SEP planning, that their transaction costs of participation have been subsidized, and that they are provided with a forum for representation. However, beyond simply asking who and how these interests participate in SEP planning, it is vital to determine the role that participants play. In this regard it is suggested that the role of participation is a function of information available to interests. That is, inadequacy of representation may result from inadequacy of information. (Fox, 1976). The question being raised here is, have the SETG and the SEB been presented the type of information that they feel is important so that they can effectively input their concerns to SEP planning?

In response to this question it is perhaps instructive to briefly review the main elements of the theoretical perspective, developed earlier.

Public choice theory says that self-interest will determine which enhancement activities an individual (government or non-government) will consider important. Further, self-interest is determined by perceptions and attitudes. It follows then, that the conceptualization of SEP projects must reflect the range of interests or results will be biased in favour of those proposing the projects. Also, empirical evidence (Downs, 1967) suggests that evaluations of these proposals will be biased in accordance with the objectives of individuals or organizations undertaking the evaluation.
Our preceding analysis shows that all projects/plans are conceptualized and evaluated internally by SEP personnel. In addition, we have shown that too few project options are being developed, all small-scale projects are not fully evaluated, not a good range of alternative plans is presented, that information presented on incidence of effects is abstract, and that SEP engineering staff have shown a tendency to dominate certain aspects of SEP plan-making.

Perhaps the most important point (in relation to the theory) is that all SEP planning activities are conducted internally. The role of public participation in planning is simply to respond to that which is presented.

This is not to insinuate that SEP intentionally generates biased or inaccurate information, or indeed, that any of their information is biased or inaccurate. SEP planners have shown a remarkable willingness to provide free access to "planning, budgeting and organizational information not usually available outside of government". (SEB, 1979). This access has been combined with numerous briefings at the request of SEP's advisory groups on a variety of planning topics. The suggestion here, is merely that, given what we know of the political-administrative behavior of individuals in such settings, that the information SEP generates for public scrutiny may not and cannot always correspond with what outside interests may feel is important. Accordingly, it does not seem inappropriate to suggest that the SEP planning process would be enhanced if these groups were provided with the resources to conduct independent analyses.
Further consideration of the "information problem" in light of our theory, is provided later.

**Dealing with Uncertainty**

The traditional response to uncertainty is to ignore it. (Hickling, 1975). Obviously however, it is preferable to try to design policies which take more explicit account of the potential costs of the unexpected.

To this end, recall that Holling (1978) suggests that the challenge is to design policies that are "resilient" -- that is, policies which are capable of absorbing and adapting to unexpected change and disturbance, and still remain effective for the problem for which they were designed.

The key requirement of this "adaptive" approach to policy design is that the actions which flow from a policy should not result in irreversible conditions which foreclose upon future options.

SEP, in many ways, takes steps to ensure that the policies that it derives are adaptive:

1. Before a new enhancement technology is declared as "proven", trial experimentation is usually initiated in the form of pilot projects.

2. The effects of major projects are monitored to permit the input of knowledge into future designs.

3. A "head recovery" program (where nose-tagged fish from particular drainages are identifiable upon capture) is funded by SEP to try to reduce uncertainties of stock movements and interactions, and also to determine what techniques of artificial rearing are most successful.

4. The technical selection criterion of project "desirability" is (in theory) designed to consider if a proposed project is useful in generating new and relevant information for planning, and whether or not a proposal forecloses on future enhancement options.
5. The fact that SEP is a two-staged Program where Phase 2 is contingent upon the success of Phase 1, also permits a significant element of adaptability in policy design.

6. The multiple-objective planning framework itself, is suited to adaptive policy design (providing that there are no pre-set conditions, such as the current national income emphasis, which determine the policy alternatives which are evaluated and implemented).

Lending support to the notion that Program objectives ought not to be pre-determined Holling (1978, p.8) has said:

"Even the ultimate objectives of environmental policies and developments are uncertain. A renewable resource industry might have as an initial high priority objective stabilized employment over the short term, which then shifts to a major concern for environmental standards, then to diversity of opportunity, and then to simple economic objectives. A design that assumes that objectives are immutable can rapidly foreclose options if those objectives shift". (emphasis added).

We have seen that SEP has considered the national income objective "immutable". The upshot is an emphasis on major production facilities, which often aggravate the mixed stock manageability problem. The viability of weak natural stocks is endangered when they are fished simultaneously with large numbers of artificially produced fish. If we make a decision now to "write-off" some of this natural production in the pursuit of short-term economic justification, we will have forever foreclosed upon the opportunity to reverse that decision, should the current strategy not work-out.

Another method that SEP should (and does intend to) initiate to take more explicit account of perceived uncertainties is to incorporate risk assessment into their economic evaluation procedures.

The explicit inclusion of risk (as a social cost), is
relevant to SEP planning in that it could, in the future, have a significant impact on the types and scales of projects that are implemented by SEP. For example, the probability of failure of a major SEP facility may be relatively low, but the potential for economic loss upon failure is very high. On the other hand, while the probability for failure of a "lesser" enhancement project may be somewhat higher, the anticipated losses are significantly lower. Accordingly, cost-benefit analyses that included risk assessment might show that major projects are less desirable economically than originally believed, and that the opposite might be true for smaller projects.

Further to the controversy over "scale", the potential for retreat from a policy is, in all probability, inversely proportional to the capital invested in SEP projects. In this regard Holling (1978) says:

"...when errors are not, in principle, irreversible, the size of the original investment of capital and prestige often makes them effectively so. This behaviour has its roots in a very human characteristic of industrial man: we do not like to admit and pay for our past mistakes, we prefer to correct them. And the consequences of correcting an inflexible plan is often increasing investment, increasing costs for controlling and maintaining the system, and progressive foreclosure of future decision options".

Indeed, SEP appears to have already experienced the problem of irreversibility at one of its major facilities -- the Pinkut and Fulton spawning channels on the Skeena River system. It was determined in 1980 by DFO that enhanced Pinkut and Fulton stocks cannot be harvested using current management regimes, without risking decimation of smaller and weaker natural stocks. In order not to "write these stocks off" two solutions were identified by DFO:
1. shut the channels down and rebuild other stocks to historic optimum to maintain a balanced production; or

2. "de-emphasize" Pinkut and Fulton channel production and harvest only at a rate the natural stocks can withstand while they are being rebuilt. (Darnell, 1980).

It was decided to go with the second option which implies a greater cost of controlling the fishery and maintaining the natural stocks. It is suggested that this response can be largely explained by precisely what Holling has referred to. The decision is, in effect, irreversible because of the size of the original investment and reluctance to take actions that would admit that a mistake had been made.

Therefore, in order for SEP to maintain flexibility in light of uncertainty, it is re-iterated that in planning for Phase 2, SEP should not endorse the imposition of a pre-set emphasis of objectives. Secondly, risk assessment should be incorporated into the economic evaluation of project options.
III. EFFICIENCY OF THE PROCESS

This criterion of evaluation asks the question, could SEP planning produce a similar product with the use of fewer resources (time, manpower and money)? Or alternately, could the investment of more resources significantly improve the SEP planning process? In this sense, is SEP planning cost-effective; effectiveness being measured subjectively in terms of how well the criteria of representation and information are satisfied?

Two reasons however, permit only a relatively superficial assessment of SEP planning using this criterion:

(1) the notion of efficiency of a process is especially subjective -- there is no agreed-upon "cut-off" point below which a process may be considered inefficient and above which efficiency automatically occurs.

(2) efficiency of the SEP planning function cannot logically be considered in isolation from other components of the Program (i.e. engineering, facilities operations, public education, etc.), without which there could be no planning. Since this study did not research the activities of these components, an assessment of overall SEP decision-making efficiency is not appropriate.

Recognizing these limitations, the following questions are suggested as indicators of whether or not the SEP planning process can generally be regarded as efficient.

Indicator III-1: "Cost-Effectiveness" of Representation

The public advisory function within SEP represents a sizable cost (in time and money) to the Program. In subjective terms, is SEP decision-making improved because of this outlay?

Indicator III-2: Duplication of Function

Are there any duplications of function within SEP planning which if eliminated, would not significantly impair the quality of SEP planning decisions?
Indicator III-3: "Cost-Effectiveness" of Information

Does SEP generate any information that is of only marginal value to the planning process?

The following discussion applies the three above "indicator questions" to SEP planning.

Indicator III-1: "Cost-Effectiveness" of Representation

In total, SETG and SEB operations have to date, cost roughly in the order of quarter of a million dollars. This outlay does not include the financial costs of hiring a consultant to set-up the Task Group, or the costs of two rounds of public inquiries. Aside from financial outlay, a great deal of time is spent by SEP planning personnel generating information for review by these two groups. Private members also give-up a significant amount of time to SEP planning. All in all, the investment of resources to the public advisory function has been considerable.

Certainly this investment is justified in the sense that it provides the basis for SEP to satisfy the normative requirement of representation of interests in planning. But, is that representation as good as it might be? Earlier we questioned the role of the Task Group in SEP planning and suggested that the advisory function might be improved if the Task Group were given the opportunity to participate beyond simply responding to plans proposed to them. Therefore, although SEP's involvement of external interests in planning is a positive step towards improving the decision process, there remains room to make public involvement in planning more effective, and thereby improve upon the efficiency of the process. Recommendations to
improve the effectiveness of the advisory mechanism are presented in the next chapter.

Indicator III-2: Duplication of Function

There is one potential duplication of function that appears to result from the current structure of the advisory mechanism. That is, both the SETG and the SEB aspire to provide broad management level policy advice to the Program. This apparent "overlap" may in part, be a result of the historical development of these two groups.

The SETG was initiated in 1976 as the sole group to provide a broad-based perspective to Program implementators on the "social and traditional values of the community to Salmonid Enhancement". (SETG, Terms of Reference).

In 1978 the SEB was formed with powerful advisory terms of reference which essentially usurped the SETG function. Accordingly, the SETG went through an "identification crisis", adjusting and re-adjusting their terms of reference in search of an institutional niche that was compatible with that of the SEB. A sub-committee of the SEB was struck to look at this very question. Eventually, it was resolved that the SETG would report to the SEB, providing them with a "window" on the priorities of the wider public. The relationship was likened to the SEB being the Board of Directors of a corporation and the Task Group being the shareholders, vitally interested in the success of the Program. (Deans, 1978).

The success of this relationship however, rests upon the ability of the Task Group to liaise closely with their
respective groups, reporting SEP activities to them, and also
the level to which the Task Group influences SEB decision-
making. We have seen however, that difficulties have been
encountered with both these requirements. As a result, there are
now two bodies providing a similar service to SEP planning,
albeit with somewhat different perspectives and mandates.

A restructuring of the advisory mechanism (as set out
later) to reduce any overlap in the roles of the SETG and the
SEB could perhaps better achieve the intent of the public
advisory device and at the same time, produce a more efficient
planning process.

Indicator III-3: "Cost-Effectiveness" of Information

Other than the fact that the SEB may not have found the
generation of maximization plans to be too useful for decision-
making, there appears to be no other "information
inefficiencies" that can be readily identified. Although SEP
planning makes wide use of private consultants to research
selected issues there is no objective indication of the extent
to which this information is of only marginal value to planning.
Indeed, those individuals interviewed for this study generally
indicated that SEP planning was a very efficient process
relative to most other government operations.
CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

Using normative criteria this study appraises the procedural aspects of planning the implementation of the Salmonid Enhancement Program - a program whose primary aim is to revive the Pacific salmonid resource to historic levels of abundance. The rationale for this study approach, is that SEP implementation decisions that evolve out of a "good" planning process are more apt to be "better" resource management decisions than those made in the recognizable absence of "good" planning.

As a precept, it is accepted that the key elements of "good" planning ought generally to parallel the normative elements of liberal democratic theory, since these are the basic values which determine the type of public policy-making processes that are acceptable in our society. Accordingly, the criteria used to assess the SEP planning process are:

1. opportunity for representation of interests in SEP planning
2. adequacy of information for SEP decision-making
3. efficiency of decision-making

The analysis is complemented with a theoretical perspective of behavioral aspects of collective decision-making. A basic understanding of this theory of public choice is considered important so that recommendations that could potentially improve the SEP planning process are practicable, in the sense that they are consistent with what is known of political-administrative behavior.
Based upon the preceding analysis and theoretical framework the following conclusions and recommendations are offered.

A. STRENGTHS OF THE SEP PLANNING SYSTEM

Recognizing that there are limitations which, in many cases, offset the strengths of SEP planning, there remain a number of positive features of the process that deserve mention.

1. Representation Of Interests In SEP Planning

In many ways, SEP is unprecedented in its commitment to representation of external interests in resource planning. Two sets of public inquiries were conducted throughout the Province and SEP planning staff are available upon request to meet with any group that has a legitimate interest in salmonid enhancement. The primary mechanism however, that has been developed by SEP to integrate public/client priorities into planning is the 30 member Salmonid Enhancement Task Group (SETG). This advisory body is composed of representatives from a wide diversity of groups (see Appendix II) that have a particular interest in the management of the salmonid resource.

Membership in this group incurs no financial cost to individual interests. In this sense, members' "transaction costs of participation" have been met by government, thereby removing in part, the common source of the "representation problem". Recall that Olson (1971) has shown that interests will not be motivated to participate if the costs of participation exceed anticipated benefits from doing so.

The maintenance of the SETG also provides a forum for
interest representation, encouraging negotiation and information exchange among groups and with government that would not otherwise occur. As O'Riordan and O'Riordan (1979) suggest, advisory groups (such as the SETG), that have been invited to participate as "consultants" on Program development, operate potentially from a position of relative influence.

In terms of integration of other government resource agency interests, several devices are used by SEP planning to help ensure that the effectiveness of enhancement investments is protected. Projects that involve Provincial lands are subject to traditional referral processes to highlight where potential conflicts might arise, and some Provincial interests are represented at the policy level, on the SEB and the SEP Management Committee. As indicated earlier however, there remains room for improved coordination of Provincial interests with SEP planning.

A problem encountered by SEP planning, due to its initiation under a separate DFO mandate, has been the difficulty of integrating the interests of the other two main dimensions of salmonid resource management. (i.e. habitat protection and regulation/management). Recognizing the necessity to coordinate all salmonid resource management functions, SEP planning has "nurtured" the GWG mechanism to provide SEP with advice on stock manageability issues. To assist this mechanism, a separate component of SEP planning has developed to maintain close liaison with GWG's. SEP has also funded numerous manageability studies to ensure that managers have the information necessary to properly regulate fisheries that include enhanced stocks.
Recently, a regional planning function has been initiated to try to integrate the multiple dimensions of salmonid resource management, a function long overdue. It remains to be seen how well all aspects of fisheries management will be integrated via this mechanism.

2. Information for SEP Decision-Making

The systematic presentation of relevant information is a central requirement of planning and SEP in many ways, has made aggressive efforts to meet this requirement.

Programs and plans are evaluated for technical feasibility and also to determine the level to which they meet Program objectives. To this end, evaluations are conducted within a multiple-objective planning framework. This framework consists of a system of accounts which attempt to systematically and separately consider economic, social and environmental consequences of enhancement projects and plans. Thus, there is no attempt to "mix" economic with non-economic values as traditional cost-benefit analyses often do.

In terms of communication of evaluative information, SEP planning staff present annual expenditure plans to advisory groups for their review and to solicit their comments. As well, staff members are available at all advisory group meetings to respond to questions and to make presentations on topics selected by advisory groups. In this way, interests are kept informed of Program developments.
B. WEAKNESSES OF THE SEP PLANNING SYSTEM AND PROPOSED IMPROVEMENTS

The above discussion suggests that, in terms of two of our normative criteria, the SEP planning process appears to be a relatively "good" one. While this is true in many respects, the analysis contained in Chapter Five shows, on the other hand, that there are a number of weaknesses of SEP planning in connection with the evaluative criteria. The following discussion outlines the major weaknesses, and on the basis of our theoretical perspective, proposes some changes that could potentially improve the process.

1. Representation of Interests in SEP Planning
   (a) Weaknesses of the public advisory mechanism

   It was suggested earlier that if "consultants" such as the SETG are to be truly representative of the interests with which they are affiliated, they must communicate closely and be accountable to their "constituents". The SETG itself however, has suggested that their group does not communicate sufficiently with their respective interests.

   A possible explanation for why this communication might be difficult can be found in public choice theory. For reasons of its length of term and its consensus-seeking and policy/management level mandate, the Task Group appears to have evolved to a level of sophistication where the objectives of the individual member interests have been sublimated by the objectives of the larger integrated group. Accordingly, it might be difficult for members to communicate and justify Task Group activities to the more narrowly self-interested perceptions of
individual public/client groups.

So long as the Task Group is retained as an independent organization that must present a single, common position, theory tells us that we cannot expect information channels to the "wider constituencies" to significantly improve. Yet, unless this two-way communication occurs, inputs to planning may continue to be more representative of the Task Group itself, than of the real aspirations of affiliated interests.

Proposed Improvements

To resolve this problem, while ensuring that the sophistication of the SETG remains intact, it is recommended that a second level of regional public advisory input be operationalized. This would give the SETG a focus for communication and would also encourage representation of local interests at the local level where enhancement activities are actually conceptualized and implemented.

Although it is not the purpose here to develop a detailed operating scenario for regional Task Groups (RTG's), it is suggested that four RTG's might be formed, each connected in some way with the four GWG's (e.g. a GWG member invited to participate at RTG meetings). The public participation component of SEP (i.e. volunteer groups involved in actual enhancement activities) might also be linked somehow with RTG's.

Each RTG would be responsible to the "constituency" it served. Meetings could occur as often as necessary and all RTG's might meet together occasionally. The emphasis of these groups would be more on local issues and less on Province-wide policy
concerns.

The existing SETG would remain involved with the policy level concerns of salmonid enhancement, but would be accountable to their regional affiliates. Current SETG members, many of whom already reside in the regions, could perhaps contribute their considerable SEP expertise to the successful initiation and operation of the RTG's.

There are several other important justifications for the proposed RTG arrangement:

(i) The idea of regional task groups is not new—the SETG itself has strongly endorsed the concept.

(ii) The idea of RTG's is consistent with a recommendation that came out of a SEB investigation of the role, representativeness and size of the SETG. The SEB (1979) suggested that, "...more involvement at the local level by SETG members would be most useful in providing public understanding of SEP".

(iii) The concept is also perfectly consistent with the two levels of advisory input envisioned in the original SEP proposal to Cabinet.

"Two levels of advisory input will be sought:

(i) At the British Columbia regional level through a Task Group which will act as a forum for: review of policy proposals; consideration of strategies and plans for achieving approved policy; and, for suggesting new thrusts and strategies to management of the salmonid enhancement program..."

(ii) At the community level, through local Task Groups which will review and advise on technical enhancement proposals from the point of view of local impacts". (Fisheries and Environment Canada, 1978, p.86).

It is suggested that the current SETG is in place to potentially fulfill the requirements of the first level of
advisory input, and that the formation of RTG's could provide this second level of community/local advice. Fisheries personnel involved in project conceptualization and implementation could work with RTG's, taking account of local perceptions and values, and making use of local knowledge.

(iv) In addition, the proposed RTG arrangement is generally in line with the type of institutional structure advocated by Ostrom (1973) and Sproule-Jones (1972). Recall that these authors suggest that "administrative pluralism" in the provision of public goods encourages increased accountability. That is, fragmented authority means that no one authority enjoys independence in the making of particular decisions. In this sense, RTG's would place a "check" on the authority of the SETG, as well as on the government members with whom they are in contact.

(b) Weaknesses of the decision-making function

According to its terms of reference, the prime responsibility of the SEB is to provide broad management and direction to salmonid enhancement by making recommendations and advising the Ministers on such things as SEP policy options and priorities, budgeting and allocation of resources, and Program implementation. SEB membership is composed of five senior bureaucrats (plus two who attend in an ex-officio capacity) and seven private members. (see Appendix IV).

Although this group is ostensibly an advisory body only, it has in the past, also functioned effectively as a decision-making body. There are however, two issues evident with regard
to this role of the SEB. The first is that according to democratic principles, it is inappropriate that private, non-accountable interests should be involved in the allocation of public funds. (Haefele, 1973). The second is that, even though the most senior government members on the SEB may be bona-fide political decision-makers, it is inappropriate for them to be providing advice to themselves, routed through an advisory mechanism. We have also seen that a tendency for SEB proceedings to be dominated by senior bureaucrats raises the question of whether or not the SEB can function objectively in an advisory capacity.

Proposed Improvements

In light of these issues, it is proposed that the SEB should be made purely a decision-making body and that private interests be excluded from SEB membership. This would satisfy Haefele's (1973) concern that non-accountable private interests should not be in a position of allocating public funds. Also, there would be no confusion as to the role of the SEB relative to the public advisory mechanism (as there as been in the past) -- the SEB would receive advice on SEP policy and direction from the SETG, a distinct and separate entity.

Implicit in the above argument is one very important requirement. The SETG must be well-informed so that it can provide an effective "check" on bureaucratic discretion. Public choice theory tells us that individuals (including bureaucrats) behave in their self-interests. Accordingly, SEB decisions will reflect the inherent bias of that group. Yet, these individuals
are only accountable through the "chain of political command". This is less than ideal accountability, but nonetheless may be adequate, if the SEB is vulnerable to complaint if they do not heed the desires of the general public (i.e. through the Task Group). For this reason, the Task Group must have the technical knowledge of whether or not alternative enhancement strategies, that are consistent with their priorities, do in fact exist and are practicable. With this information, it would theoretically be possible, through a process of interaction, to arrive at an enhancement approach acceptable to both groups. If the Task Group is not satisfied that its position is receiving adequate attention in planning, the option remains with them to appeal to a higher political level.

(c) Consideration of the "general interest"

Since the outset of the Program, SEP has taken the position that the "identifiable" beneficiaries of SEP shall "repay" the costs of Program implementation that have been borne by the general taxpayer. "Cost recovery" derives from the philosophy that it is inequitable to benefit few at the expense of many. To this end, SEP has aggressively pursued economic efficiency in its planning and implementation, and current estimates show that economically, cost-recovery is possible.

Our theory however, tells us that it is impractical to expect implementation of cost-recovery because of political reasons. It is easier for government to divert tax funds from the unorganized general public to satisfy the more intense demands of organized interests, than vice versa. It is in fact,
probable that this issue of "distributive policies" (Lowi, 1972) is a primary reasons why cost-recovery has not yet been implemented.

Yet without cost-recovery, there appears to be no other way for SEP to explicitly account for the unorganized general interest. Thus, unless the government takes action that is inconsistent with our theory, the issue shall remain unresolved.

(d) Weaknesses in Provincial involvement

The involvement in the planning process of Provincial agencies whose responsibilities affect, or are affected by SEP decisions, is important for two reasons -- first, to increase the assurance that the long-term effectiveness of SEP investments will be protected from the external effects of other resource users (e.g. forestry); and second, to ensure that SEP does not impose unreasonable costs on other resource interests.

The analysis showed that although some mechanisms are in effect to accommodate this integration, their effectiveness is limited. Not all projects are subject to referral among potentially interested agencies, and even if a referral is made, agreement is not necessarily forthcoming that future conflicts will not arise; and although the Ministry of Environment is well-represented on the SEB, this interest cannot be expected to speak for other potentially interested agencies.

Proposed Improvements

It is suggested that improved coordination of other government interests with SEP planning could be met through a
referral process which sought written agreements as an end-product. Such agreements would constitute formal commitment among interests that enhancement investments will not be jeopardized; and in making an agreement, agencies will ensure that SEP does not impose unreasonable costs on them.

Tentative agreements would then be part of what is laid before the SEB. If the SEB did not approve, agreements can be referred back for renegotiation. A fundamental requirement of this suggestion is that all projects should be subject to referral.

2. Information for SEP Decision-Making

(a) Information deficiencies in SEP planning

The basic categories of information that are currently generated for SEP planning are:

(i) generation and technical evaluation of individual project options
(ii) formulation and evaluation of economic, social and environmental effects of annual expenditure plans (i.e. mixes of enhancement projects).

With regard to the first category of information we have seen that there are three main deficiencies:

(i) Too few project options are currently being developed, which means that choice regarding the overall balance and direction of the Program is constrained. Furthermore, projects are limited by the perceptions of SEP professionals, which raises the question of whether or not options that are presented adequately reflect the full range of interests. A limited selection of projects also creates the potential for a hasty implementation of unproven options.
(ii) Project options have often in the past, been developed and implemented before the manageability criterion of project selection has been fully satisfied. This practise, which derives largely from the differences of perceptions and attitudes among SEP professionals, can result in sub-optimal enhancement activities.

(iii) SEP currently does not submit all projects costing less than $500,000 to full five account evaluation prior to their incorporation into an annual plan, and sometimes not even prior to their implementation. These typically small-scale projects receive justification mainly due to their contributions to the non-national income objectives of SEP, as opposed to their economic efficiencies. However, evaluative information should be known earlier in the process so that these options receive consideration for implementation on the basis of their relative merits.

In terms of the second major category of information generated for SEP planning (i.e. formulation and evaluation of annual enhancement plans) there are also some deficiencies:

(i) Information on the anticipated incidence of effects of annual plans is presented in a highly aggregated fashion. This information gives interests only a relatively poor understanding of how their respective self-interests will be affected by proposed plans.

(ii) Interests and decision-makers are not presented with a range of alternative enhancement plans from which to choose. Although alternative "maximization plans" are presented, these plans are generated only to show the trade-offs among objectives...
that are inherent in the single plan recommended by SEP to interests.

**Improved information through improved representation**

Logically, recommendations to improve upon the information used in SEP planning would address each of the information deficiencies identified above. For example, we can say that: (i) SEP should develop and evaluate a greater number and diversity of project options and plans so that the potential for choice in Program planning is enhanced; (ii) more explicit and coordinated consideration of the manageability issue should occur; (iii) efforts should be made to subject small-scale SEP project proposals to the full five account evaluation methodology at the appropriate time; and, (iv) to encourage more intelligent advisory input to SEP planning, SEP evaluations should link "enhancement means" to "tangible ends" (i.e. better information on the incidence of effects).

While it is perhaps instructive to highlight what these recommendations might involve, it is doubtful that simply recommending such changes will have the desired effect in actually improving the information used in SEP planning.

In order to try to effect an improvement, one must look into the reasons why these information inadequacies exist in the first place. In this regard, public choice theory tells us that planning information is generated in the manner that it is, because of the organizational behavior of SEP. In other words, informational weaknesses of the SEP planning process are a result of the inherent bias of the organization, and simply to
recommend that those biases be replaced with purely objective and comprehensive rationality, would be unrealistic and futile.

Public choice theory tells us furthermore, that the way to improve the information generated for SEP decision-making is to introduce to the planning process a countervailing influence on organizational bias. That is, to bring to the SEP planning process a different set of perceptions and attitudes to act as a check on the excesses or omissions of the proponent agencies' plans.

This "solution" relates to the representation and role of external interests in SEP planning. While the SETG has not been initiated for the express purpose of acting as a countervailing influence to planning, it is suggested here, that this might be the primary value of such a group. There is after all, no other group (government or non-government) that is motivated to involve itself at such a level, with the specific subject of SEP planning. Accordingly, we can identify the SETG as a prime mechanism that could potentially improve the information used in SEP decision-making.

Our previous analysis however, has shown that there are limitations on the extent to which the SETG is fully active in planning. SEP planning is currently an internal operation from beginning to end. The role of the Task Group has been simply to respond to that which is provided to them. The problem however, is that, given the technical complexity of the subject of salmonid enhancement, lay persons cannot really query that which a team of technical experts has produced. While the SETG might disagree with a particular enhancement strategy, it cannot
justify its position in technical terms. This is the basis of the "information problem".

In light of this problem, it does not seem unreasonable to suggest that SEP's public advisory group should have accessibility to independent technical expertise, such as a professional biologist and socio-economist (not necessarily full-time staff). With the availability of such "resources", the Task Group could evaluate some of the issues and implications of proposed SEP plans from its perspective, rather than having to accept on faith that which is presented. Topics of concern could be explored that they feel are important, but which government is not strongly motivated to pursue.

Such independent analyses need not involve exhaustive field research; nor should they duplicate information already generated by SEP. The primary purpose of such staff (that would report to the SETG) would be to critically evaluate projects/plans in order to help the SETG know: (1) if SEP's evaluations "stand up" as reliable estimates of project/plan consequences, and (2) whether or not the range of alternatives is being considered that adequately reflects the different perspectives of different Task Group members. The staff might also provide a liaison between the SETG and the RTG's, to ensure that regional concerns are also being taken into account.

With these changes in effect, the focus of advisory input to the planning process might not only be at the broad policy level, as it is now. But, if the Task Group had a policy level concern, it would also be in a position to offer specific advice on how to approach that concern, through an implementation
strategy.

Some of the funds currently allocated to the Task Group function could perhaps be used for the purposes described. Some additional funding might also be required but this added expense must be viewed in relation to the improved effectiveness of the planning process it can be expected to bring. As suggested earlier, the planning process and hence, the decision outcome, will be enhanced if all interests are able to interact using information that is considered relevant by the value frameworks of affected interests.

**Improving the multiple-objective planning framework as an information tool**

Development and evaluation of annual SEP expenditure plans is conducted within the multiple-objective planning framework. The essence of this framework is explicit recognition that the social and environmental objectives of government are often achieved at an opportunity cost to economic efficiency, and vice versa. To this end, the multiple-objective tool involves the systematic presentation of alternative scenarios (i.e. plans), showing to decision-makers the nature of the tradeoffs among objectives that are inherent in and among plans.

The rationale of the multiple-objective framework is that ultimately, SEP allocation decisions must be derived politically, not analytically. Theoretically, this information display system will encourage decisions that more accurately reflect the changing aspirations of the public.

SEP's aggressive pursuit of the 50 million pound production target (to occur at no expense to government) appears however,
to have compromised the potential effectiveness of the multiple-objective tool. This issue is discussed below briefly.

Projects are currently developed in search of the greatest production in the least cost manner. While this is unquestionably desirable, it has meant that relatively few projects are conceptualized which, although they might have relatively modest production potential, would be particularly good at satisfying non-economic Program objectives. Accordingly, the potential to construct alternative annual plans that fully emphasize non-efficiency objectives is constrained. If diversity among alternative plan options is low, the trade-offs that "might have been" cannot be shown to decision-makers -- hence, the multiple-objective information tool cannot work to its fullest potential.

This problem arises above and beyond any political-administrative behavior of the SEP organization that might constrain project/plan choice. Rather, it is a function of the pre-set political judgement that cost-recovery should occur.

This pre-set condition however, reduces the potential for planning flexibility. Changing priorities of government cannot be easily accommodated because projects and thus, plans are not being conceptualized that correspond to those potential changes in priorities.

This relates also to the issue of uncertainty in SEP decision-making. In order to manage uncertainty using "adaptive" principles, SEP should not proceed under the influence of pre-set conditions that can lead potentially to biological or financial irreversibilities, thereby foreclosing future options.
Recall Holling's (1978, p.8) warning that, "Even the ultimate objectives of environmental policies and developments are uncertain... A design that assumes objectives are immutable can rapidly foreclose options if those objectives shift".

Removal of the economic constraint might increase the potential for a wider range of project/plan options to be developed -- options which are more sensitive to the Program's non-national income objectives. This does not mean however, that cost-recovery cannot occur. Decision-makers can still choose and advisory groups can still recommend selection of an appropriate plan within which cost-recovery can be accommodated. Their choice however, will be made on the basis of full knowledge of what is being given up (in terms of progress foregone in other account areas) to achieve the economic emphasis. Similarly, if in their political wisdom, decision-makers choose to forego an economic emphasis, they can select an alternative plan with knowledge of how much that particular strategy will cost. Political (and hence, theoretically public sentiment), as well as adaptability, can be more easily accommodated if this potential for informed choice is enhanced.

In light of the above, it is recommended that future SEP planning should proceed in the absence of a pre-set emphasis of any of the social or economic objectives. Furthermore, planning should proceed in the absence of production and time targets. The questions are raised, why has it been so important for SEP to try to attain 50 million pounds incremental production, and why must this be accomplished in a short seven year period? What makes these seemingly arbitrary targets so immutable?
The consequence of "chasing" these targets appears to have pushed the Program into a particular direction—a direction which is not agreed universally to be the most desirable. Evidence of this is found in SETG directives to SEP for the balance of Phase I planning. They state that SEP should:

(i) "sacrifice fish production if necessary in order to satisfy the other accounts (i.e. regional development, native people, environmental, resource management).
(ii) sacrifice production if necessary to solve the management problems...
(iii) save threatened stocks. To say 'there isn't enough information' isn't a good enough reason not to do anything for them." (SETG, 1980).

These statements infer that continued pursuit of production targets and emphasis on the national income objective is not the socially desirable enhancement solution. The pre-set conditions which are largely responsible for current SEP direction were derived politically, and to change these conditions will require a change in political viewpoint.

3. Decision-Making Efficiency

Improving the efficiency of SEP planning

Efficiency of the SEP planning process has been considered in terms of inputs to planning (i.e. time, money and manpower) and the level to which planning is improved on account of these inputs. In this sense, we have asked if the planning process is cost-effective; effectiveness being measured subjectively in terms of how well representation of interests and the generation of information has improved the overall planning process.

Our analysis has shown that representation of interests via the advisory mechanism is a costly activity in both financial
and temporal terms, and that although this activity has increased the effectiveness of the planning process, there remains room for improved effectiveness. That is, the public advisory mechanism could function more effectively and thereby improve planning, if its role was elevated beyond simply having the opportunity to attend meetings and respond to information provided to its members. As previously suggested, this could be accomplished by providing the necessary resources so that the SETG has access to independent technical expertise.

In addition, it is suggested that by moving the SEB into a purely decision-making role, an inefficiency in terms of potential duplication of function is eliminated. No longer would there be two groups, both aspiring to provide policy-level management advice to SEP.

Both of the above suggestions have been justified earlier for reasons other than improving SEP planning efficiency. The efficiency argument serves to substantiate further the validity of these recommendations.
To this point, this thesis has focussed on the mechanics of the SEP planning process. We have been concerned more with procedural principles than with substantive issues.

But, procedural principles cannot be considered in complete isolation of Program "consequences". In this regard, preliminary estimates indicate that SEP will attain 85% of the Phase 1 50 million pound production target. As a further premium, estimates show that this production will have been achieved in an economic manner. (i.e. with an overall Phase 1 cost-benefit ratio of 1.34:1). (DFO, 1981).

It remains unclear however, whether or not Phase 1 production estimates represent an incremental 50 million pounds, over and above natural base production (i.e. a net increase), or if this figure represents production for which SEP activities alone are responsible, in isolation of the natural base production question.

Logically, SEP's production targets must be interpreted to mean a net increase of 50 million pounds from the total system. The policy implications of this interpretation are clear: concurrent with the augmentation provided by SEP, the natural stocks that we already have, must not be permitted to fall below current production capability.

The ways of ensuring this conservation of the natural base are by regulating for optimum escapements and through habitat protection.

The problem however, is that many of SEP's major production facilities exacerbate the regulator's role.
Natural stocks of low abundance/resilience that are fished simultaneously with artificially produced stocks of high abundance will decimate those natural stocks. This trend towards system homogeneity appears, in any case, to be an eventual consequence of the practice of mixed-stock fishing.

Marshall (1981) however, provides a graphic explanation of how a SEP emphasis on major facilities could accelerate this trend.

"It is well documented that major new production in mixed stock fisheries creates conservation problems rather than resolving them...As an example of what might happen in a mixed stock fishing situation, let's assume that the hard-pressed fishery manager near the end of a dismal fishing season, knows that remaining migrating stocks are below normal abundance. Then, along through Johnston Strait comes a bumper run of hatchery-produced chums worth about $15.00 apiece. What does he do? Well, he probably isn't going to tell industry that we build multi-million dollar hatcheries just to watch the fish swim by".

Unless the regulator can do his job effectively, we will end up with a transfer of low-cost natural production to high-cost artificial production, with little or no increase in overall production (DFO, 1980(a), p.2).

The truth of the matter is that, despite SEP's estimated Phase 1 contribution of 42 million pounds, it is currently not known how effective the combined efforts of enhancement, regulation and habitat protection will be in effecting an increase in overall system productivity. These present estimates are "best-guesses" only -- it is impossible to know the actual success of SEP until the end of Phase 1 and beyond.

With this uncertainty in mind, it is questionable whether or not we should go ahead with a similar enhancement strategy for Phase 2. As yet, Phase 1 is unproven as a net producer of
fish in the quantities targeted, with the largest element of doubt for Program success arising out of the mixed stock manageability issue.

It appears that SEP's potential aggravation of this manageability problem to which Marshall refers, can be traced to two phenomenon (ignoring for the moment the real cause of the problem -- the difficulty of regulating excess fishing capacity):

1. the inability of SEP biologists and the GWG's to keep pace with SEP engineering staff, who have aggressively supported major facility construction

2. the political requirement that Phase 1 produce 50 million pounds, in a seven year period, with a cost-benefit ratio of 1.5:1. Accordingly, "natural" enhancement strategies (i.e. small scale enhancement/rehabilitation projects), which do not appear to pose significant manageability problems, have not received equal consideration in overall planning because they are generally considered not as economically efficient.

It is posited here however, that despite the obvious desirability of economic efficiency, it may simply not be possible to attain that objective in the short run, if we are going to do what is best for the resource in the long run. The problem with the economic decision criterion is that it does not consider the costs which major facilities might impose upon the total system. If these hidden costs were calculated, it is doubtful that such facilities would be so attractive, economically. On the other hand, projects which are considered uneconomic in the present, may in the long run be economically
justified, because of their contribution to overall resilience/stability of the resource.

If SEP is sincere in its objective to "preserve, rehabilitate, and/or enhance natural habitats, and maintain and/or enhance vestigial salmonid stocks..." (Fisheries and Environment Canada, 1978, p.63), it will have to consider these hidden costs. A reasonable interpretation of this objective is that SEP should be trying to offset and indeed, "repay the debt" of reduced system stability that is a consequence of habitat deterioration and the historical practice of mixed stock exploitation.

If indeed we do "maintain and/or rehabilitate vestigial salmonid stocks" it is suggested that the economic requirement, and also the other distributional objectives of the Program will, in the long run, take care of themselves. It is perhaps a question of a short-term loss, for a long-term gain.

In terms of future policy direction for SEP planning, Phase 2 should not "make promises" to try to attain arbitrary production targets that lock the Program into an inflexible commitment to a particular enhancement strategy. Adaptability must be the goal of the Program in the interest of the resource itself, and ultimately the owners of the resource.
BIBLIOGRAPHY AND REFERENCES CITED


Department of Fisheries and Oceans, SEP. 1979(b). "Policy Implications of the Salmonid Enhancement Program". Vancouver, B.C.

Department of Fisheries and Oceans, SEP. 1979(c). "1980/81 Program Proposals". Memorandum from L. Edgeworth to members of the SEB. Vancouver, B.C. August 25, 1979.


Department of Fisheries and Oceans, SEP. 1980(b). "SEP Update
'78: Public Inquiry Proceedings. Vancouver, B.C.


Fisheries and Environment Canada. 1978. The Salmonid Enhancement Program. Vancouver, B.C.


Gregory, Robin. 1979. "Development of Key Indicators and Evaluation Methodology for the Resource and Environmental Preservation Account". Department of Fisheries and Oceans, Vancouver, B.C.


McAllister, Donald, M. 1980. Evaluation In Environmental Planning: Assessing Environmental, Social, Economic, And
Political Tradeoffs. The MIT Press. Cambridge, Massachusetts.


Salmonid Enhancement Task Group (SETG). "Task Group Response to Plans for Balance of Phase 1". Vancouver, B.C.

Salmonid Enhancement Task Group (SETG). "Terms of Reference". Vancouver, B.C.


Sinclair, Glenn (public involvement consultant to SEP). Personal communication. June 24, 1980.


APPENDIX I

PERSONS INTERVIEWED FOR THE STUDY
The following persons were interviewed for the purposes of this study. All interviews (conducted in the spring and summer of 1980) were relatively informal, but were structured in the sense that candidates were asked to respond to a pre-determined list of questions.

1. Harold Swan  Acting Executive Director, SEP
2. Al Wood  Director of SEP Planning
3. Denis Deans  Chief, Special Projects Unit, SEP
4. Al Lill  Acting Director of Operations, SEP
5. Rob Morley  Economic Advisor, SEP Planning
6. Bud Graham  Program Development Biologist, SEP
7. Cindy Brown  Research and Evaluation Economist, SEP
8. Howard English  SEB member - Conservationist (private)
9. Bruce Buchanan  SEB member - Pres. B.C. Packers
10. Ed Vernon  SEB member - B.C. Ministry of Environment
11. Gerry Burch  SEB member - Vice-Pres. B.C.F.P.
12. Tom Murray  SETG (Vice-Chairman) - sports fisherman
13. Glenn Sinclair  Public involvement consultant

NB

1. In addition to the above, five "questionnaires" were received through the mail from SETG members.

2. The positions of several of the persons listed above have changed since the time of the interviews.
APPENDIX II

SALMONID ENHANCEMENT TASK GROUP:

MEMBERSHIP AND AFFILIATION
SALMONID ENHANCEMENT TASK GROUP

SETG Executive:

G. McKnight, Chairman
G. Mackie, past Chairman
G. Young, Vice-Chairman
B. Thornton, Vice-Chairman

D. Aberley, Local Government
E. Birch, U.F.A.W.U.
M. Burgess, Processor
L. Burroughs, Education
B. Cox-Rogers, Steelhead Society
B. Devitt, Council of Forest Industries of B.C.
C. Guelke, B.C. Hydro
N. Lemmen, Fisheries and Oceans
B. Lenz, Pacific Trollers Association
R. Lotzkar, Canadian Consumers Association
R. Martinolich, Vessel Owner's Association
J. Mitchell, Native Indian Food Fishery
K. Munroe, P.R. Fishermen's Co-op
T. Murray, B.C. Fed. Of Fly Fishermen
E. Newman, Pres., Native Brotherhood Of B.C.
B. Pentland, Mining
B. Rice, Pacific Salmon Society
B. Rogerson, Conservationist
S. Ross, "Consumer/Taxpayer"
J. Sewid, Native Indian Fisherman
L. Shaw, B.C. Wildlife Federation
A. Whitecross, Media

Supporting Members

T. Bird, Fisheries and Oceans
J. Boland, Fisheries and Oceans
R. Cameron, Ministry of Environment
D. Deans, Fisheries and Oceans
Dr. W. Falkner, Fisheries and Oceans
L. Hindle, Fisheries and Oceans
D Narver, Ministry of Environment
L. Straight, Fisheries and Oceans
APPENDIX III

SALMONID ENHANCEMENT TASK GROUP:

TERMS OF REFERENCE
"SALMONID ENHANCEMENT TASK GROUP" (S.E.T.G.)

TERMS OF REFERENCE

I. Purpose

The purpose of the Salmonid Enhancement Task Group (S.E.T.G.) shall be: (i) to provide the views and advice of a broadly-based, non-governmental group on matters which are within the responsibility of the Salmonid Enhancement Program, (ii) to creatively support the Salmonid Enhancement Program (SEP) to maintain the program as a positive and dynamic contribution to the needs and aspirations of the B.C. community.

II. Relationship to Organization

S.E.T.G. shall report to Salmonid Enhancement Board (SEB). As the Task Group is representative of the general public and resource user groups through its membership it also shall report its activities to them. It shall respond to requests by the Board for advice on specific policies and programs, and shall work to maintain an active dialogue between the two groups.

III. Aims and Objectives

A. The S.E. Task Group shall bring together a broad array of interest groups from throughout the B.C. community to:

1. Act as a sounding board to the Salmonid Enhancement Program and provide feedback to it.

2. Act as spokesman for the public by striving to develop a consensus perspective on Salmonid Enhancement Program policies, strategies, and issues.

B. The S.E. Task Group shall provide assistance in the educational role of SEP by:

1. Evaluation of selected educational processes relevant to salmonid enhancement.
2. Assisting in sensitizing the staff of Salmonid Enhancement to the values, views, and concerns of the general public.

C. The S.E. Task Group shall provide a perspective on social and traditional values of the community to Salmonid Enhancement.

IV. Membership

A. The membership (with alternates) shall be nominated by the S.E.T.G. and appointed by the SEB.

V. Strategies

A. To ensure that the S.E. Task Group functions adequately:

1. The Chairperson and two Vice-Chairpersons shall be elected from the S.E. Task Group membership for a one year period at the fall meeting. The position of Past Chairperson would be a non-elected position filled by the previous Chairperson, with primary responsibility for ambassadorial activities on behalf of the Task Group, both internally and externally, primarily with questions of Task Group membership, commitment, and understanding.

2. The co-ordination of the administrative responsibilities of the Task Group process should be the responsibility of the Secretariat. The Secretariat shall work with, and take direction for Task Group activities from the Task Group Chairperson. The responsibilities principally are:

(i) fiscal administration of S.E.T.G. contract with the Department of Supplies and Services,
(ii) research (prepare background or briefing papers for full, sub-group or Executive sessions; arrange for technical expertise to make presentations to full, sub-group or Executive sessions; reduce technical papers to short information packets for S.E.T.G. use),

(iii) provision of office space,

(iv) stenographic services,

(v) record keeping,

(vi) Task Group meeting organization,

(vii) postal and mailing and telephone services,

(viii) administrative and message couriering responsibilities,

(ix) and other specific and non-specific duties as may be called for from time to time.

3. There shall be regular meetings of the full group approximately once every three months, where members (or their alternates) shall be present. There will be at least one interlocking meeting with the SEB annually. Non-attendance (without alternative representation) by any member at two consecutive meetings shall cause the Past Chairman to contact the group and member regarding continuation of the member on the Task Group. Both regular and alternate members shall receive copies of all pertinent information.

4. The S.E. Task Group shall operate by consensus without prejudice to the right of individual groups to take separate positions on specific issues. In the event that consensus seems unlikely, Task Group decisions shall be made in open sessions, and shall be moved, seconded and voted upon.
5. (a) The Chairperson shall prepare an agenda for each meeting, following discussion with the SEP executive and shall submit this agenda to the Task Group two weeks prior to the meetings.

(b) The Executive shall be responsible for negotiating contracts with the Salmonid Enhancement Board for the maintenance of the S.E. Task Group.

6. The S.E. Task Group shall maintain adequate records, which shall appear in the week following the meetings, if possible.

7. The S.E. Task Group may establish sub-committees with terms of reference developed at the time of appointment.

8. The S.E. Task Group membership, while donating their time, shall however be remunerated for out-of-pocket expenses incurred in attending authorized S.E. Task Group meetings, or attending to the business of the S.E. Task Group. Rates shall be those currently in force as laid down by the Federal Treasury Board guidelines. Should S.E. Task Group members be required to attend special business activities, which take them away from their gainful employment, payment of an authorized honoraria will be permissible.

9. These Terms of Reference should be reviewed annually.

B. To improve the interaction and understanding between the various components in SEP:
1. The S.E. Task Group shall invite, as necessary, people involved in Salmonid Enhancement who can provide information and similar resources to improve the awareness of the Task Group membership and thus strengthen the two-way communication within SEP.

2. The S.E. Task Group receive regular briefings from the SEP Executive Director; the Executive Director, or his appointed designate, shall sit ex-officio on the Task Group.

3. The S.E. Task Group shall appoint a representative to the Public Involvement Working Group and shall accept a representative from that Working Group as a member of the Task Group.

4. The S.E. Task Group shall receive:
   
   (a) progress reports from the Secretariat on action being taken with regard to recommendations of the Task Group.

   (b) progress reports from the Executive on action being taken within SEP with regard to recommendations from S.E.T.G.

5. The S.E. Task Group in the main shall participate in the broad aspects of the philosophy and policy-making of salmonid resource management and shall leave the detailed operational activities to those so accountable.
APPENDIX IV

SALMONID ENHANCEMENT BOARD:
MEMBERSHIP AND AFFILIATION
SALMONID ENHANCEMENT BOARD: LIST OF MEMBERS

Government Members:

1. Donald D. Tansley (Chairman)
   - Deputy Minister, DFO

2. H. Douglas Johnston
   - Assistant Deputy Minister, DFO

3. Wayne Shinners (Ex officio member)
   - Acting Director General - Pacific Region, DFO

4. Dr. W.E. Johnson
   - Chairman, DFO Research Advisory Council

5. Dr. Ward Falkner (Ex officio member)
   - Executive Director of SEP, DFO

6. B.E. Marr
   - Deputy Minister, B.C. Ministry of Environment

7. Al Murray
   - Assistant Deputy Minister, B.C. Ministry of Environment

Non-government Members:

8. Bruce Buchanan
   - President, B.C. Packers Ltd.

9. Gerry Burch
   - Vice President, B.C. Forest Products Ltd.

10. Ray Phillips
    - Commercial Fisherman

11. Rodney Pierce
    - Commercial Fisherman

12. Fred Carpenter
    - Bella Bella Band Administrative Office

13. Howard English
    - Conservationist

14. George McKnight
    - Chairman, Salmonid Enhancement Task Group.
APPENDIX V

SALMONID ENHANCEMENT BOARD:

TERMS OF REFERENCE
Draft No. 3
(July 21, 1978)

SALMONID ENHANCEMENT PROGRAM

SALMONID ENHANCEMENT BOARD

TERMS OF REFERENCE

1. MANDATE

Recognizing that the responsibility and accountability for the expenditure of public funds cannot be delegated by the Minister, the Board will be responsible for the broad management and direction of the Program by advising the Minister on:

- such matters as may be referred specifically to the Board by the Minister;
- priority areas for action;
- the effectiveness of the planning and implementation of the Program; and
- the state of the salmonid stocks and indicated threats to their continuing existence.

Without restricting the generality of the foregoing, the Board, more particularly, will be expected to consider, and advise and recommend on the following aspects of the Program:

- policy and program options;
- program priorities (species, geographical areas, types of fisheries, etc.);
- performance to date, and indicated improvements;
- budgets, and allocation of resources;
- contracting policies and procedures;
- cost-recovery mechanisms and procedures;
- resource-use interactions;
- broad departmental and governmental policies and procedures; and
- any other matters relating to the planning, implementation and success of the Program.
2. **MEMBERSHIP**

The Board will comprise 12 members, as follows:

- a Chairman;
- two members, representing the Government of Canada;
- two members, representing the Government of the Province of British Columbia; and
- seven members, representing the resource-users and the public at large.

While individual members may have vested interests in the thrusts of the Program, they have not been appointed to represent those specific interests on the Board except insofar as they may coincide with the overall purpose of the Program.

The Executive Director of the Program is an ex-officio member of the Board.

3. **SECRETARIAT**

The Board will be provided with a full-time Secretary and an appropriate secretariat to undertake the administrative functions of the Board, as directed by the Chairman.

4. **EXECUTIVE DIRECTOR**

The detailed planning and implementation of the Program is the responsibility of the Executive Director, who will report to the Chairman.

5. **MEETINGS**

The initial meeting of the Board will be convened at the call of the Chairman at the earliest convenient date after the Board is formally constituted. Subsequent meetings will be called by the Chairman in the order of 3-4 times per year, or as often as he deems advisable.

6. **RULES OF PROCEDURE**

The Board may develop and adopt by-laws to govern the conduct of the business of the Board, subject to the concurrence of the Minister.

7. **ANNUAL REPORT**

Each year, not later than July 31, the Board shall submit to the Minister an Annual Report for the preceding fiscal year ending March 31, to serve as the formal record of the Board's activities for that year.
8. **RENUMERATION**

Board members may be paid per diem honaria and reimbursed for actual expenses incurred, as approved by the Minister.
APPENDIX VI

SAMPLE OF 1980/81 FIVE ACCOUNT EVALUATIVE INFORMATION

AS PRESENTED TO THE SEB
<table>
<thead>
<tr>
<th>PLAN</th>
<th>ACCOUNT</th>
<th>IMPACT</th>
<th>NATIONAL INCOME COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN I: NATIONAL INCOME MAXIMIZATION PLAN</td>
<td>National Income</td>
<td>B/C = 2.0</td>
<td>NATIONAL INCOME COST  PW to 1979 in 1976 $M at 10%</td>
</tr>
<tr>
<td>1.</td>
<td>National Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Regional Development</td>
<td>GOOD</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Native People</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Employment</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Resource and Environmental Preservation</td>
<td>POOR</td>
<td></td>
</tr>
<tr>
<td>PLAN II: MAXIMUM INCOME REDISTRIBUTION PLAN</td>
<td>National Income</td>
<td>B/C = 1.9</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>National Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Regional Development</td>
<td>VERY GOOD</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Native People</td>
<td>VERY GOOD</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Employment</td>
<td>GOOD</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Resource and Environmental Preservation</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>PLAN III: RESOURCE AND ENVIRONMENTAL PRESERVATION MAXIMIZATION PLAN</td>
<td>National Income</td>
<td>B/C = 1.6</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>National Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Regional Development</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Native People</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Employment</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Resource and Environmental Preservation</td>
<td>VERY GOOD</td>
<td></td>
</tr>
<tr>
<td>PLAN IV: RECOMMENDED PLAN</td>
<td>National Income</td>
<td>B/C = 1.8</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>National Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Regional Development</td>
<td>GOOD</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Native People</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Employment</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Resource and Environmental Preservation</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>PLAN V: SALMONID ENHANCEMENT BOARD PLAN</td>
<td>National Income</td>
<td>B/C = 1.9</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>National Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Regional Development</td>
<td>GOOD</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Native People</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Employment</td>
<td>FAIR</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Resource and Environmental Preservation</td>
<td>FAIR</td>
<td></td>
</tr>
</tbody>
</table>

* Difference between net benefits for Plan I and other plans. Bracketed figure has been adjusted to account for difference in scale between these two plans.