GENERATING AND ASSESSING FOREST LAND USE OPTIONS:
A CASE STUDY OF THE CLAYOQUOT SOUND SUSTAINABLE DEVELOPMENT STRATEGY

by

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ABSTRACT

This thesis examines how stakeholder values should be clarified in consensus-based processes in order to provide the framework for the generation of options, the collection of technical information and the assessment of options. The specific context is forest land use planning in British Columbia, particularly with respect to creating protected areas. A case study approach was used.

The case study used was the Clayoquot Sound Sustainable Development Strategy Committee planning process (begun in January 1991). This particular case study was chosen because it was the first effort to use negotiations to provide advice to the provincial government on a regional sustainable development issue. It was also highly contentious and very public, therefore it is reasonably well-documented.

One of the major flaws in how options were generated and assessed in this process was that insufficient time was spent clarifying stakeholders' values and underlying interests. This had repercussions throughout the negotiations. The problem was not well-defined and this meant it was difficult to generate options that met stakeholders' objectives. Option generation was hasty and was rooted in the status quo. In addition, technical information was collected at the beginning of the process, before objectives were clarified or options generated. This meant there was not a clear idea of how the information would be used to support the decision-making, and resulted in reports heavily loaded with descriptive information. Assessing the options generated was also subject to flaws: the first was that the analysis was based on values that were largely implicit and came primarily from technical experts. The second was that the status quo (the current state of conditions) was used to assess the impacts of proposed options. This led to the consistent overestimate of jobs losses caused by the reduction in harvest level associated with withdrawal of forest land from the commercial land base. Despite these difficulties, this process
greatly increased stakeholders' understanding of both the technical issues involved and the difficulties of governing.

The social learning aspect of the process is an important legacy and may make future decision-making processes in the area easier. However, improvements in the generation and assessment of options are needed to improve negotiations.

Importantly, the problem needs to be well-defined and well-structured. To achieve this, the objectives hierarchy approach is promoted here. It is relatively simple to use in practice, and forces stakeholders' to examine their values and underlying interests. This means that they are more able to generate options that meet these interests (rather than their well-entrenched positions). To help move beyond the status quo to create imaginative options, it also useful to ask stakeholders to think about how to achieve their objectives.

Once objectives have been clarified and imaginative options have been generated, then the technical information required to assess options can be identified and collected. This leads to the collection of more functional, and less descriptive, information which will be more useful to inform the decision-making. When assessing options, uncertainty in the data, and implicit judgments by technical experts should be made explicit and bounded with probabilities. This improves confidence in the data. Lastly, the base case, which incorporates current trends and is a more reliable predictor of future conditions than the status quo, should be used as a basis for comparing options. It is especially important to consider the effects of declining rates of employment due to mechanization and the fall-down effect in the base case scenario, in order to get a more realistic estimate of the true jobs losses due to reduced harvests, with and without land withdrawals.
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1.1 Background

There has been a fundamental shift in public values regarding forest land use in the last decade. Since the turn of this century, the forests of British Columbia were seen primarily as an economic resource, managed for commercial timber production to provide revenue to the Crown and jobs to workers. Increasingly, this view is being challenged. Around the province, demands for both different economic (e.g. tourism, recreation) and non-economic (e.g. preservation of biodiversity, wilderness) uses of the forests continue to grow.

In response to this shift, the government of British Columbia has made a commitment to set aside 12% of the province as "protected areas" (Cashore, Miller and Edwards 1993). The term protected areas has not been precisely defined, and the choice of the 12% target has been criticized on many grounds. For example, critics charge that it is an arbitrary political compromise emphasizing biophysical over social criteria (B.C. Mountaineering Club 1993). Further, they charge that the biophysical rationale lacks scientific justification (Ibid.). However, the 12% target is in line with the international standard popularized in the Brundtland Report (World Commission on Environment and Development 1987). It serves a powerful political purpose. The overall decision to increase the amount of protected area in British Columbia has been made.

But how will this 12% target be met? What specific areas will be protected? These questions raise two broad planning issues: What process will be used to make these decisions? What substantive information is required to make these protected areas decisions?

In terms of process, the British Columbia government created the Protected Areas Strategy to coordinate "all of B.C.'s protected area programs and objectives" (Province of British Columbia 1992). The Protected Areas Strategy is a part of the larger Commission on Resources
and Environment (C.O.R.E.), which has responsibility to "oversee all land use planning processes, including recommendations for park and wilderness area designations" (Province of British Columbia 1992).

The British Columbia government has also encouraged the use of multi-stakeholder negotiations to resolve the long-standing timber/wilderness disputes. These negotiations are based on consensus, and disputing parties attempt to come to a mutual agreement about the distribution of resources. A group of stakeholders, with the aid of a mediator, attempts to negotiate an agreement on how to re-allocate forest resources. It is important to note that forest resources have been already allocated, primarily to timber harvesting concerns, and the issue is how to re-allocate these resources based on changing and strongly conflicting public values, as noted above. If consensus is reached, the government has a powerful incentive to adopt the plan. If consensus is not reached, the government is solely responsible for making the difficult allocation decision.

Using negotiations to resolve conflicts regarding regional forest land allocations is relatively new in British Columbia. Examples include disputes surrounding the Height-of-the-Rockies (B.C. Round Table on the Environment and the Economy 1991b) and Chilko Lake (Chilko Lake Study Team 1993) areas, the Clayoquot Sound Sustainable Development Strategy (Clayoquot Sound Sustainable Development Steering Committee 1992a), and the C.O.R.E. round tables for the Kootenays, Vancouver Island, Cariboo-Chilcotin (C.O.R.E. 1992). In the first two cases, negotiations led to the creation of a wilderness area and a new provincial park, respectively. In the round table for the Kootenays, consensus was achieved on a majority of issues but has been difficult to implement (O’Gorman 1995, pers. comm.). In the remaining cases, consensus has proven to be elusive. The Clayoquot Sound, Vancouver Island and Cariboo-Chilcotin round tables have broken up without reaching a consensus.

1 For a complete discussion of consensus decision-making, see B.C. Round Table on the Environment and the Economy, 1991a.
2 However, for simplicity, these will be referred to as "allocations" rather than "re-allocations" in this thesis.
Both the process and substance of the negotiations are important (Cormick and Knaster 1986). The goal is to produce a wise, efficient agreement that does not damage (and strives to improve) the relationship of the disputants (Fisher and Ury 1981). A wise, efficient agreement is particularly important for complex, multi-party public policy disputes where considerable time, effort and resources are used to try and fashion an agreement, and where disputants are likely to meet again as the issue evolves.

In terms of substantive information, an assessment of the economic, social and environmental impacts of proposed land use options is desirable. This type of analysis provides the factual basis for the negotiations.

In fact, one of the key components in these negotiations is the generation and assessment of these impacts. However, a common problem is the lack of a framework to determine what information is needed to support the negotiations. This often leads to the collection of a voluminous amount of detailed biophysical information, which is expensive to collect, nearly impossible to absorb, and often irrelevant to the decision. It also over-emphasizes the importance of technical information from experts, at the expense of collecting value information from the public. Clarifying stakeholder values at the beginning of the negotiations provides this framework and assists in generating options, collecting technical information, and assessing the impacts of the options. Since use of these negotiation processes is likely to continue, it is important to structure these decisions to make effective use of available resources.

1.2 Purpose and Scope

The purpose of this thesis is to analyze how stakeholder values should be clarified in negotiations in order to provide the framework for the generation of options, the collecting of technical information, and the assessment of options. More specifically, this thesis will:

a. Briefly review current methods of generating and assessing forest land use options, especially as related to protected areas;

b. Describe and analyze how stakeholder values were clarified in a case study and examine the effect on the generation and assessment of options in a specific protected areas decision;
c. Use the results of this specific analysis to recommend general improvements to the protected areas decision-making process.

The geographical focus of the thesis is British Columbia, although insights may be applicable elsewhere. This thesis will be limited to examining how forest land uses affect decisions to create protected areas. Other land use considerations may also be very important, (e.g. mining in the Tatshenshini), but forest policy has the most pervasive influence on land use over large tracts of the province. Finally, this thesis is not a critique of the mechanics of negotiations, for example, the selection of stakeholders, the role of the mediator, and so forth. Rather, it is more narrowly focused on how to improve the communication of stakeholder values to define the problem and provide the framework for the generation of options, the collection of information, and the assessment of options.

1.3 Methods and Organization

This thesis uses a case study approach (Simon 1978). This method, common in the social sciences (particularly in planning), allows an in-depth analysis of a specific case. This analysis can be compared to existing theory and practice, and recommendations for improvements made. The weakness of this approach is that only one case study is examined in detail, and generalized recommendations based on a single study may be misleading. The strength of the case study approach is that specific events and their underlying ideas are closely scrutinized and potential strengths and weaknesses revealed. The case study "serves to focus subsequent studies" (Simon 1978, 44).

The case study approach was chosen because of the evolving nature of the theory and practice of how to resolve forest land use conflicts. Theories of how to conduct multi-stakeholder negotiations have been developed (Fisher and Ury 1981, Susskind and Cruikshank 1987) and some experience has been gained in settling a wide range of environmental disputes (Bingham 1986, Dorcey and Riek 1987). However, application of these theories is relatively new and experience with them limited in difficult forest land use conflicts in British Columbia.
In addition, the method of data collection for the case study is straightforward and inexpensive. For the analytical framework, the negotiation, decision analysis and impact assessment literature was consulted. For the case study itself, secondary sources, particularly government and quasi-government documents (Nachmais and Nachmais 1976), were heavily relied on. Primary data collection was limited to informal interviews with key informants (Attig 1989) in the government and the private sector where gaps in documents were noted or where additional insight was required. A list of these informants is provided in Appendix 1.

The case study used for this analysis is the recent Clayoquot Sound Sustainable Development Strategy. It was chosen because it was the first attempt in British Columbia to create a regional sustainable development strategy using a consensus decision-making model. In addition, the most contentious issue in the Clayoquot Sound process, and common in British Columbia, was the debate over forest land use. The insight gained from this experience may be applicable to other areas.

The thesis is organized as follows: analytical framework; case study; and, prescriptive analysis. The analytical framework provides the context for the case study, and includes a discussion of the importance of clarifying stakeholders values to the generation and assessment of land use options. The questions to be considered in the case study are also introduced. This is followed by the case study, which describes how stakeholder values were clarified in the Clayoquot Sound Sustainable Development Steering Committee process, and describes the implications for generating options, information gathering, and assessing and selecting an option. The prescriptive analysis outlines how to clarify stakeholders' values, and discusses how this may benefit subsequent negotiations.
CHAPTER 2. ANALYTICAL FRAMEWORK

2.1 Background

The generation and assessment of land use options is a complex, iterative process. Options need to be generated; the implications of those options need to be assessed for their economic, social and environmental impacts at the provincial, regional and local levels; and public preference for an option needs to be incorporated in the decision-making process. As new information and as learning occurs, the process repeats itself. Thus, the process can be seen as a series of decisions over time, rather than a single, final decision at a fixed point in time. This view is consistent with much of planning theory (Altshuler 1965, Lindblom 1959, Perin 1967).

All of the above steps are closely tied, but the line between generating options and incorporating public preferences is particularly fuzzy. These are the most political aspects of decision-making and the most fundamental and value-oriented aspect of planning. The current attempt to allocate some forest lands to non-timber uses is an attempt to accommodate changing public values to provide a wider range of forest land use options for current and future generations.

Resolving the conflicts raised by these changing public values is difficult. Traditionally, authoritative and consultative modes of decision-making have been used to resolve these conflicts. Under these modes of decision-making, the discussion of trade-offs and the responsibility for decision-making rests with the government. As its name implies, the authoritative mode has very little scope for public involvement in either the discussion of trade-

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3 The definitions of the modes of decision-making used in this report follow Dorsey and Riek 1987. Briefly, authoritative decision-making occurs when an individual or organization makes trade-offs alone and imposes the decision on others. Consultative decision-making occurs when an individual or organization consults with other individuals and organizations before making the trade-offs and imposing the decision. Negotiative decision-making occurs when individuals or organizations make the trade-offs amongst themselves and adopt an agreement.
offs or in decision-making. In the consultative mode, the government solicits public opinion to inform the discussion about trade-offs, but retains decision-making authority. However, as the problems have become more complex, some have made the argument that these traditional modes of decision-making no longer work well.

Environmental disputes are often characterized by interdependence, complexity and uncertainty, and fall into a class of problems known as *wicked* problems (Dorcey 1986, Knight 1991a, Mason and Mitroff 1981a). Wicked problems have many variables with significant but poorly understood relationships, and many of the variables have values that cannot be readily reduced to a common metric, such as dollars (Dorcey 1986). This precludes the use of a simple analysis and makes straightforward solutions very difficult. In addition, traditional decision-making modes produce winners and losers, and potential losers have a stake in prolonging the dispute (Bingham 1986).

To address the complexity inherent in environmental disputes, the negotiative mode of decision-making has become popular for resolving a variety of environmental disputes (e.g. Bingham 1986, Dorcey and Riek 1987). The negotiative mode of decision-making provides greater public access to both generating options and making the difficult trade-offs required. Its strength is that many points of view must be considered, and underlying assumptions are constantly challenged. This critical examination "improves the final judgment on assumptions" (Mason and Mitroff 1981a, 50), making them more robust and less likely targets for contentious debate. Negotiations themselves are based on an assumption that the stakeholders involved adequately represent the broader public interest, although this is open to criticism (Gunton and Flynn 1992, Knight 1991b).

The key innovation in negotiations over traditional decision-making is the conscious effort to make all parties better off with an agreement. In the negotiation literature, this is known as an integrative win/win agreement - an agreement that is more than the sum of its parts (Susskind and Cruikshank 1987). The basis for creating a win/win agreement is to identify areas of mutual (or joint) gain (Fisher and Ury 1981, Raiffa 1982, Susskind and Cruikshank 1987). These are the areas where "disputants value the same things differently" and provides the basis
for an agreement (Susskind and Cruikshank 1987, 120). Understanding how disputants value things is thus critical to generating options, and is the subject of the next section. This is followed by a section more specifically focused on generating options, which in turn is followed by sections on collecting technical information and assessing options.

2.2 Clarifying Values

The most critical rule-of-thumb for structuring decisions is that stakeholders "focus on interests, not positions" at the beginning of the negotiations. These 

interests

are defined as stakeholders' "underlying needs, desires, concerns and fears" (Fisher and Ury 1981, 42) and this usage has been propagated in the negotiation literature (e.g. Bingham 1986, Susskind and Cruikshank 1987). Others advocate that understanding values is important. 

Values

are defined as "what we care about" (Keeney 1992, 3) and these may either be revealed in systematic and constructive debate (Mason and Mitroff 1981a) or can be explicitly expressed by use of a simple exercise (Clemens 1991, Edwards and von Winterfeldt 1987, Keeney 1992, McDaniels 1994).

The intent is the same in either case: the rationale for articulating interests and values is that they "define the problem" to be addressed in the negotiations (Fisher and Ury 1981, 42). Joint definition of the specific decisions to be made is critical (Cormick and Knaster 1986, Edwards and von Winterfeldt 1987, Mason and Mitroff 1981a, Keeney 1992). It allows the negotiations to proceed from a common set of assumptions.

For the sake of clarity, it is necessary to make a further distinction between interests and values. Interests are the distribution of costs and benefits of a particular course of action (Dorcey and Riek 1987). Values determine our preference for a certain outcome. Interest conflicts are about deciding if \( x \) is forgone for \( y \), then who bears the cost, who gets the benefits, and how extensive are they? In contrast, value conflicts are about the desirability of forgoing \( x \) for \( y \) (Dorcey and Riek 1987\(^4\)). This author believes that value conflicts are the more dominant and

\(^4\)Dorcey and Riek (1987) also note two other types of conflicts common in environmental disputes: behavioral conflicts, which are rooted in the personalities, experiences and circumstances of the parties and cognitive conflicts, which are rooted in a different understanding of the facts.
fundamental issue in forest land use disputes and need to be understood before the distributional questions can be resolved. "Value-focused thinking", as proposed by Keeney, may produce useful insights for structuring forest land use debates.

Values can be articulated by stating objectives (Keeney 1992). Stakeholders are asked what they consider to be important and these perceptions are structured into an objectives hierarchy (Keeney 1992, McDaniels 1994). This structuring process helps improve communications among stakeholders, diagnose conflicts and identify areas of mutual gain. It provides the insight that stakeholders have shared and compatible, as well as conflicting values (or interests, to follow Fisher and Ury's usage): A clear set of objectives provides the framework for subsequent substantive negotiations, providing insights for generating options, identifying the technical information needed to evaluate those options, and providing a measure against which options can be assessed (Keeney 1992).

Typically, values are not well-articulated in multi-party negotiations. Stakeholders may not know their own values except in very general terms (Susskind and Cruikshank 1987), they may have difficulty communicating them, and others may misunderstand them. Even when stakeholders have some understanding of their values, they have likely not examined them very carefully and they may rest on a set of assumptions not shared by other stakeholders.

Poorly articulated values mean a poorly defined problem. This means valuable time and resources are used attempting to resolve either the wrong problem (Mason and Mitroff 1981a), or a vague and fluid problem. This has implications for both the generation and assessment of options.

Without insights into the true nature of the problem, the generation of options is unimaginative. There is a reliance on the status quo, or on an obvious compromise option, which serves to anchor option generation (Keeney 1992). Stakeholders try and find options that are "incrementally better" (Keeney 1992, 27). This is classic positional bargaining. Positions are the stances taken - and then given up - throughout a negotiation without regard to underlying concerns. Focusing on positions may lead to an agreement, but the agreement is likely to be a "mechanical splitting of the difference between final positions" rather than an agreement crafted
to meet the legitimate interests of the stakeholders (Fisher and Ury 1981, 5). This may be "less than satisfactory" to each party (*Ibid*). Also, often there is no mid-point in public policy disputes (Susskind and Cruikshank 1987).\(^5\) The following section focuses specifically on generating options.

2.3 Generating Options

As argued in the foregoing section, it is necessary to get beyond *positions* and focus on underlying *interests*. To again rely on Fisher and Ury's terminology, these interests are the basis for *inventing options for mutual gain*. Their choice of the word *inventing* is appropriate because it correctly connotes that generating options is a highly creative process requiring flexibility; a willingness to examine assumptions, and the ability to suspend judgment. The requirement for *mutual gain* means the options created must serve these underlying interests at an acceptable cost to others (McDaniels 1992).

The inherently creative process for generating options means there is not a single set of rules to follow. Rather, there are a set of underlying principles that need to be considered, including: as many options as possible need to be created; creating must be considered separately from deciding; and stakeholders should aim to make others' decision as easy as possible (Fisher and Ury 1981, Keeney 1992). In addition to these underlying principles, it is important to note that generating options should be a highly iterative and thoughtful process.

Clearly, some suggestions are needed to stimulate thinking for creating options. Fisher and Ury's common sense suggestions for generating options reads like a checklist, are deliberately general in scope, and are meant to be used in negotiations. A partial list of their suggestions is listed below:

\(^5\)For example, a controversial facility can be sited or not sited, but it cannot be half-sited.
Mason and Mitroff (1981a) argue that, at the beginning of a problem-solving exercise, people with a diversity of views should systematically challenge the underlying assumptions of the problem. This process reveals the values of the participants and promotes a critical assessment of those assumptions. This is very useful for advancing the substance of the negotiations.

The goal of this approach is laudable, but is not without criticism. The adversarial nature of Mason and Mitroff's approach may be difficult to apply to a large, multi-party negotiation. They emphasize the importance of being constructive, and acknowledge that how and when assumptions are challenged is critical to maintain dialogue (Mason and Mitroff 1981a). Mason and Mitroff (1981b) emphasize that stakeholders are "not asked to necessarily accept alternate assumptions, (they should) merely attempt to understand them" (p. 82). The next step is to try

Adapted from Fisher and Ury 1981.
and synthesize an entirely new set of assumptions "that bridge the old policies and go beyond them" (p. 82). This step provides insights for generating options.

Thus, while Mason and Mitroff's method is potentially powerful, it needs to be carefully applied to succeed. For example, stakeholders must have developed some basis for trust and must feel comfortable being challenged. In addition, a skilled facilitator is needed to manage this delicate process.

These conditions may not be met in large, multi-stakeholder negotiations where parties may have a history of confrontation and posturing. Knight (1991a) writes Mason and Mitroff's techniques may only be useful for small groups (although she does not specify how small). This author feels the explicit application of Mason and Mitroff's ideas are best suited to groups where there is a high level of trust and possibly, to experts designing research (who tend to share similar goals and are trained to probe and question).

Due to the variety of stakeholders in a negotiation, assumption surfacing may occur although not necessarily systematically or explicitly. Values may slowly be revealed, but this slowness means it is not possible to create the necessary framework for structuring and focusing the negotiations.

Similar in spirit to both Fisher and Ury's and Mason and Mitroff's ideas, Keeney (1992) advocates acting contrary to past practices and identifying and removing perceived constraints, claiming this helps move away from strongly held biases and stimulates creative thinking. However, as introduced in the previous section, he advocates that stakeholders explicitly state their objectives. Stating objectives may well lead to a probing of underlying assumptions. Also, once objectives are clearly stated, Keeney maintains that thinking of ways to achieve them will foster creative options. Keeney also stresses that specifying the various attributes of objectives, and how to measure those attributes, further defines their meaning and provides insights into creating options. McDaniels (1992) expands on Keeney's ideas and outlines strategies for generating options specifically for forest planning issues. These are discussed later in this thesis (Section 4.2).
Once objectives have been clearly identified, providing a structure for the decision-making, and imaginative options have been generated, the technical information needed to assess options becomes more clear. Issues associated with collecting technical information are discussed next.

2.4 Collecting Technical Information

It has been argued here that identifying objectives to structure the decision-making is critical to provide a framework for the subsequent negotiations. Without insights into the true nature of the problem, it is difficult to generate imaginative options. Without insights into the true nature of the problem, it is also unclear what technical information is needed or how this information will be used to support the negotiations. Consequently, the technical information collected is heavily biased towards descriptive inventory and bio-physical information and is of limited use to decision-making. This is a major flaw in how negotiations are now conducted.

For example, Gunton and Flynn (1992) recommend collecting technical information before options are generated. In their model (Figure 1), technical information is collected in the pre-negotiation stage, and is referred to as joint fact-finding. The next step is to "negotiate issues"; that is, to identify options for mutual gain and select a preferred option (Gunton and Flynn 1992).

The purpose of the joint fact-finding step is to provide a common base of information for negotiations. This is to avoid the "whose facts" syndrome\(^7\), where stakeholders select evidence to support their positions (Dorcey 1986, Susskind and Cruikshank 1987). Hired experts sympathetic to a stakeholder's point-of-view may also be employed to provide evidence (Susskind and Cruikshank 1987). However, engaging in joint fact-finding before knowing what information is important or how it will be used generally results in a series of background

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\(^7\)The "whose facts" syndrome is rooted in a different understanding of the facts. This is Dorcey and Riek's (1987) cognitive conflict, referred to earlier. This type of conflict is common in disputes where scientific and technical issues are involved, such as forest land use disputes.
reports, heavily biased towards descriptive inventory and biophysical information. Valuable resources are dedicated to collect information without a clear idea of how it will be used to inform decision-making.

Figure 2. Components of a Negotiation Process

<table>
<thead>
<tr>
<th>Stage One: Pre-Negotiation</th>
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<tbody>
<tr>
<td>1. Identify issue.</td>
</tr>
<tr>
<td>2. Determine if negotiation process is applicable</td>
</tr>
<tr>
<td>3. Identify stakeholders.</td>
</tr>
<tr>
<td>4. Determine stakeholders representatives.</td>
</tr>
<tr>
<td>5. Establish rules of procedure:</td>
</tr>
<tr>
<td>6. Establish deadlines and alternative decision process if no consensus.</td>
</tr>
<tr>
<td>7. Prepare agenda.</td>
</tr>
<tr>
<td>8. <strong>Identify and collect information.</strong></td>
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<tr>
<th>Stage Two: Commence Negotiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Negotiate issues.</strong></td>
</tr>
<tr>
<td>2. Prepare draft agreement.</td>
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<tr>
<td>3. Ratify agreement.</td>
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<tr>
<td>4. Identify implementation and monitoring strategy.</td>
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<tr>
<th>Stage Three: Implementation</th>
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<tbody>
<tr>
<td>1. Implement agreement.</td>
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<tr>
<td>2. Implement monitoring program.</td>
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<tr>
<td>3. Identify enforcement mechanism.</td>
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</tbody>
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It is more important to have a joint definition of the specific decisions to be made, identify a wide range of creative options, and specify objectives important in selecting between those options before investing in joint fact-finding. Knowing how the information will be used allows research to be focused on collecting the functional, predictive knowledge essential to inform decision-making (Dorcey 1986, Dorcey and Hall 1981). Functional knowledge aims to understand cause-effect relationships. Improving functional knowledge is important to reduce

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8Dorcey (1986) and Dorcey and Hall (1981) outline the difference between descriptive and functional knowledge. Descriptive knowledge describes the elements within a system. It is generated by inventory and monitoring activities. In contrast, functional knowledge specifies cause-effect relationships. It is generated by testing an hypothesis and this involves experimental research, experimental management or desk analysis.

9Gunton and Flynn (1992); based on an earlier model by Susskind and Cruikshank 1987.
the uncertainty inherent in both scientific and evaluative research. In the very least, knowing what information is important to the decision-making means the areas of uncertainty in the current state of functional knowledge can be clearly identified. Also, new functional knowledge may lead to the creation of new options.

The focus on improving functional knowledge has implications for how scientific research is designed (Cormick and Knaster 1986). Stakeholders ensure that the right questions, those that reflect stakeholders' values, are asked (B.C. Round Table on the Environment and the Economy 1991a). They also jointly select experts to produce the research design, and monitor and implement research results. The role of the experts changes from the current norm: rather than challenging each other once the research is complete, experts work together to systematically challenge assumptions and probe the advantages and disadvantages of various research proposals, until a consensus research design is agreed upon. Research proceeds from the basis of common assumptions and aims to provide common data for the negotiations. This process is a microcosm of the negotiation process.

Once the structure for the decision is in place, imaginative options generated, and information needs clarified, the specific analytical technique used to assess impacts is less important (Keeney 1992). This is because "decision-making is fundamentally a question of values" (Gunton 1992, 62). Evaluation techniques provide technical information on impacts to improve decision-making, but they cannot resolve difference in values (Gunton 1992). However, the quality of the information is useful for clarifying the trade-offs that need be made and

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10 Cormick and Knaster (1986) outline a research process with the following elements: stakeholders jointly define the problem and appoint a panel of mutually acceptable experts in relevant technical fields. The stakeholders and panel produces consensus recommendations for a research design. On the basis of this design, stakeholders send out a request for proposals, select a contractor, and monitor and review results in consultation with the panel. Results are used to feed back into the management decision-making process.

11 Both de Bono (1970) and Mason and Mitroff (1981a) discuss the importance of challenging assumptions. The intention is "to create discomfort with any explanation" to force a fresh look at a problem (de Bono 1970, p. 91) and to critically examine a problem from several points of view to provide "the strongest possible critical evaluation" of the assumptions used (Mason and Mitroff 1981a, p. 50).
informing the decision-making. The following discussion focuses on the various impact assessment techniques used to evaluate and clarify trade-offs among forest land use options.

2.5 Assessing Options

Much effort has been devoted to critiquing and improving the analytical techniques used in economic, social and environmental impact assessment. With respect to forest land allocation issues in British Columbia, the literature includes a series of background reports prepared for the Forest Resources Commission (Fletcher 1990, Gunton, Van Kooten and Flynn 1991, McDaniels 1991, Stanbury, Vertinsky and Thille 1991) and the B.C. Round Table on the Environment and the Economy (e.g. Gunton 1991). Many of these works were subsequently published (Gunton 1992, McDaniels 1992).

Historically, the analyses used to support forest land allocations have been a biophysical assessment projecting the amount of timber available for harvest through time. They are known as timber supply analyses, and as their name suggests, are heavily biased towards timber. Non-timber values are poorly accounted for in these biophysical timber supply analyses (M'Gongile, Gunton et al. 1990) and are seen as "constraints on the amount of timber produced" (Province of British Columbia 1979).12 Timber supply analyses are conducted on a regional scale, and are the major input into the annual allowable cut determination.13

Timber supply analysis is rooted in the concept of sustained yield, which has been "the foundation of forest policy since the Sloan Commission in 1945" (M'Gongile, Gunton et al. 1990, 9). Sustained yield is based on the nineteenth century utilitarian maxim of highest and best use, which uses economic efficiency as the main criterion for decision-making (M'Gongile,

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12 This quote is from Section 7(3)(a)(v) of the Forest Act from a version including amendments up to June 3, 1986. Ministry of Forests staff have adopted the more neutral term "cover requirements" for such non-timber values as visual quality, green-up and adjacency requirements, etc. (Lang 1994, pers. comm.).

13 It is the responsibility of the Chief Forester, the second-highest ranking bureaucrat within the Ministry of Forests, to determine the annual allowable cut. Note this is based on his judgment on a variety of factors, and is not a calculation. The Chief Forester must provide a written justification for his decision, although prior to a recent court challenge, no written justification was required (Lang 1994, pers. comm.).
This type of biophysical analysis, based on an inventory of forest resources, has been used as a proxy for a more complicated socio-economic analysis (Lang 1994, pers. comm.).

Biophysical analyses alone simply do not provide sufficient information for today's complex decision making, particularly for protected areas decisions which involve conflicting, multiple objectives. As Fletcher notes in his critique of biophysical analyses, they "tend to be data-oriented rather than decision-oriented" (Fletcher 1990, 98). There is also a strong reliance on the judgment of technical experts, who are not required to make their judgments explicit. Finally, although there may be considerable uncertainty in the data used in the analysis, this uncertainty is not necessarily bounded. This may result in a lack of clarity over the reliability of the data. In timber supply analyses, this latter problem has been addressed by using sensitivity analyses to assess the robustness of the assumptions (Lang 1994, pers. comm.). Although use of sensitivity analysis is not new, its application to timber supply analyses is a recent innovation.

To meet the needs of a more complex decision-making environment, the use of socio-economic analyses has become more common. Socio-economic analyses were first used in local, contentious disputes, but have been formally adopted as a standard complement to timber supply analysis (Lang 1994, pers. comm.). They are meant to be used to assess the major economic, social and environmental impacts of timber supply scenarios (e.g. Bridges 1994). A standard set of guidelines has been developed, known as multiple accounts analysis (Province of British Columbia 1993a, Shaffer 1991).

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14 The basic idea of sustained yield is to set a timber harvest rate (the annual allowable cut) that is sustainable in the long run. The objective is to maximize long-term economic benefits, and the assumption is that maximizing economic benefits automatically maximizes social benefits. For example, a continuous supply of harvested timber, in addition to providing a continuous source of revenue to the Crown, is thought to provide a constant level of employment and community stability. Forest land allocations, and the creation of Tree Farms Licenses and Timber Supply Areas, were created to serve the sustained yield ideal. An excellent critique of this policy can be found in M'Gongile, Gunton et al. 1990.

15 This issue is also common in environmental impact statements (EIS) and is discussed in detail in Gregory, Keeney and von Winterfeldt (1992).
As the name implies, multiple accounts analysis (hereafter referred to as MAA) uses a variety of accounts to assess the economic, social and environmental impacts of a proposal. Economic impacts are generally measured at two scales, provincially and regionally. Proponents of MAA assert that it is a framework incorporating the best of the conventional economic, social and environmental assessment techniques (Gunton 1992, Gunton, Van Kooten and Flynn 1991, Gunton and Vertinsky 1991, Schaffer 1993). Gunton asserts MAA has two main strengths: it is comprehensive, and it disaggregates impacts, allowing decision-makers to rank objectives in terms of their importance.

However, MAA has several weaknesses. Firstly, its very comprehensiveness means it is time consuming and expensive to undertake, and even Gunton recommends using it only where "land use options cannot be adequately assessed by biophysical analysis" (Gunton 1992, 62). This is essentially an endorsement of past practices, where a reliance on biophysical analysis was common. In the view of this writer, this is insufficient for decisions about forest land use.

Secondly, while the technique allows decision-makers to rank objectives in terms of their importance, it does not require that this be done explicitly, thus decision makers do not need to provide a rationale for their decision.

Thirdly, these analyses use the status quo as a basis for comparison, rather than the base case. The status quo is a snapshot view of the current situation and is not a realistic predictor of future conditions. Comparing options to the status quo fails to account for recognized trends, such as the well-documented expectation of a decline in the volume of timber harvested as the industry switches from old growth to second growth (known as the fall-down effect) and the decline in forest employment due to mechanization (e.g. H.A. Simons 1990). These trends are likely to occur even if there are no forest land withdrawals. Consequently, comparisons to the status quo lead to an overestimate of the impacts of proposed forest land withdrawals, particularly with respect to the highly emotional issue of forest sector employment. On the other hand, the base case predicts what is likely to occur without any forest land withdrawals, given current trends (McDaniels 1992). Because it provides a more realistic account of what is likely
to occur, it should be used as the benchmark to assess the impacts of various options. In
addition, it can also be used as an option in its own right.

Lastly, MAA relies on contingent valuation, the weakest aspect of conventional
cost/benefit analysis, to assess non-market values. This means it poorly accounts for
environmental values. However, admittedly, this is an improvement over past practices, where
environmental values were not accounted for at all.

Dorcey (1988) argues that it is necessary to explore perspectives "that go beyond the
limitations of conventional environmental and economic impact assessments and monetary
assessments" (p. 13). He writes that there are a number of theoretical and practical limitations
inherent in both bio-physical and socio-economic analyses that make it difficult to integrate these
analyses to generate information for decision-making (e.g. lack of knowledge about functional
relationships, lack of local data, etc.). Further, he asserts that some types of analyses do not do
lend themselves to computer or physical modeling. This is particularly true for assessing non-
utilitarian values (such as environmental values). These are often viewed as rights or duties, and
conflicts are more appropriately addressed by "deliberative reflection" and moral judgment, not
by cost-benefit analysis (p. 7).

The difficulty of integrating bio-physical and socio-economic analyses, and the reliance
on "deliberative reflection", implies that considerable judgment will be required when using any
analytical technique. Thus, explicitly incorporating judgment becomes very important for
communication among stakeholders and for assessing the reliability of the analyses. Dorcey
argues that given the importance of judgments, it is essential to consider "the processes for

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16 For a full discussion of the errors and biases in the contingent valuation method (CVM), see
Gunton (1991), McDaniels (1994) or Roessler (1993). Briefly, CVM attempts to simulate
market behaviour by asking consumers through a survey what they would be willing to pay for a
good or service. An example of biases and errors include the following: people that respond to
hypothetical choice situations may have difficulty expressing their preference; people may try to
intentionally bias results by misrepresenting their true willingness to pay; and how the question
is posed may significantly influence results. These errors and biases may result in estimates that
are accurate with plus or minus 50 per cent of market values (Cummings, R., D. Brookshire and
making them" (p. 14). For example, what information should be generated, what assumptions should be made, what models and what data should be used, what analytical techniques should be used, and who should conduct the analyses are all important procedural questions and can be addressed through the use of negotiation. In addition, to avoid premature judgment about the merits of the options, Dorsey advocates use of Fisher and Ury's succinct insist on objective criteria prescription. This states that parties should negotiate a set of explicit criteria that can be used to evaluate options, in terms acceptable to all. It commits the parties to consider the merits of each option, and builds confidence that each party's underlying interests will be considered fairly. It may also spur further creative thinking on generating options. Other authors, focusing on the substance of the judgments being made, assert that uncertainties associated with incomplete knowledge should be identified, made explicit and quantified using probabilities (e.g. Clemens 1991, Gregory, Keeney and von Winterfeldt 1992; Keeney 1982). Again, great importance is placed on being explicit and clear.

2.6 Summary

Two types of information are important to inform negotiations, value information and technical information. Stakeholder values need to be clarified at the beginning of negotiations in order to provide a clear set of objectives for the substantive negotiations: generating options, collecting technical information and assessing options.

Without a clear focus, it is difficult to know what technical information will be required. This leads to the squandering of valuable resources to collect descriptive, rather than functional, knowledge that does not significantly contribute to the decision-making. Technical information can be either scientific or evaluative. The former provides insights into how systems work; the latter provides insights into the trade-offs between various proposals.

The next section examines in detail how options were generated and assessed, and how information was used, in a specific case study. The case study will be used to examine four questions. The first is: how were stakeholder values clarified in the beginning of the negotiations? The next three are related to the first. What was the effect of how stakeholder
values were clarified on the generation of options, the collection of technical information, and the assessment of options? The insights from this case study will be used to show how to improve the generation and assessment of forest land use options.
CHAPTER 3. CASE STUDY: GENERATING AND ASSESSING LAND USE OPTIONS IN CLAYOQUOT SOUND

3.1 Background

3.1.1 Location

Clayoquot Sound is an area on the west coast of Vancouver Island which includes "an array of islands, fjords, narrows, estuaries, mud flats, rocky shores, sand beaches, mountains, forests, lakes, streams and ocean" (Clayoquot Sound Sustainable Development Steering Committee 1992b, p. 2-1). The resources within the 350,000 hectares are numerous and include old growth forests, rare marine species, and abundant fisheries. The majority of the land area in Clayoquot Sound is forested (244,000 out of 262,000 hectares) (McCallum 1993). It is a part of the Regional District of Port Alberni, and the economy "heavily depends on natural resources: timber, tourism, fisheries, and aquaculture" (Clayoquot Sound Sustainable Development Steering Committee 1992b, 2-2).

3.1.2 Complexities of the Issue

The land use issue in Clayoquot Sound is very complex. It began as a logging versus wilderness debate, and reaching agreement on how much and which areas to protect has remained the main obstacle to resolving this conflict. The issue has the following important characteristics, common to many contentious forest land planning issues in British Columbia:

- large number of administrative units
- large number of stakeholders with deeply held, fundamentally opposed values
- scientific/technical uncertainty
- irreversibility of decision
- high stakes both economically and symbolically
- local, regional, and provincial implications
The boundaries used to delineate Clayoquot Sound for planning purposes were superimposed upon an array of existing administrative boundaries associated with federal, provincial, regional and community governments. Agencies associated with these governments have jurisdiction in the area, and each agency has its own set of administrative boundaries and, importantly, its own set of values and objectives.

One of the most important administrative units to consider in the context of Clayoquot Sound is the Tree Farm Licenses (T.F.L.s) held by MacMillan Bloedel and Fletcher Challenge. Their T.F.L.s extend beyond Clayoquot Sound. However, these corporations, through their T.F.L. holdings, had rights to 98% of the valuable timber in the area. The remaining 2% was part of the Arrowsmith Timber Supply Area (T.S.A.) and was administered by the Ministry of Forests (Sterling Wood 1991).

There were a large number of stakeholders with deeply held, fundamentally opposed values. In addition to government and corporate interests, native, labour unions and citizen groups had an interest in the outcome of any land use decision in the area. Natives had pending land claims and an interest in improving their access to the economic resources. Labour unions had an interest in protecting their forest-related jobs. Citizens groups had an interest in protecting the non-economic values associated with the wilderness and old growth forests of Clayoquot Sound, both for current and future generations.

Scientific uncertainty is also common in a number of aspects of the issue. For example, the rationale for creating protected areas is often based on scientific arguments. However, there is considerable uncertainty over how much protected area is required to provide habitat for most species, and how that habitat should be distributed over the landscape. Scientists are beginning to provide some estimates to answer these type of questions, but they are best guesses rather than definitive answers.

The land use decisions were also seen as irreversible, at least on a scale that is comprehensible to most people. Once an area has been given over to timber interests and has been lo
more importantly, it is also difficult to change the status quo and retrieve the logged land from those interests.

Another characteristic of the Clayoquot Sound debate was the high stakes involved, both economically and symbolically. Economically, valuable old growth forests predominated, and accounted for 86% of the forests on the productive forest land base (Sterling Wood 1991). Symbolically, decisions about land use in Clayoquot Sound gained importance in the larger debate about the state of the environment and the current generation's obligation to future generations. This symbolic value ensured coverage in the international media. At a minimum, decisions regarding land use in Clayoquot Sound had implications locally, regionally and provincially, and it could be argued, nationally and internationally.

3.1.3 Overview of the Planning Processes

There has been a series of planning processes initiated to resolve this conflict using a variety of modes of decision-making (Table 1.). An historical overview of these planning processes is available in a number of reports (McCallum 1993, Province of British Columbia 1993b).

Table 1 shows how quickly the mode of decision-making for these type of land use issues has changed. The creation of the Clayoquot Sound Sustainable Development Steering Committee (hereafter referred to as the "Steering Committee") marks the first time the B.C. government adopted the negotiative mode of decision-making in regional planning forest allocation. Note, however, that these were not negotiative in the fullest sense; rather, they were negotiations within a consultative process, with ultimate decision-making responsibility residing with the government. And, despite problems in reaching consensus in these negotiations, the departure from traditional authoritative decision-making is likely to continue. Thus, the focus here is on the Steering Committee negotiations, begun in January 1991.
Table 1. Chronology of Clayoquot Sound Planning Processes

<table>
<thead>
<tr>
<th>Date</th>
<th>Planning Process</th>
<th>Predominant Mode of Decision-Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. 1980</td>
<td>Traditional interagency government planning processes</td>
<td>Authoritative/Consultative&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>January 1989</td>
<td>Ministry of Forests, TFL holders create integrated planning process</td>
<td>Consultative&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>August 1989</td>
<td>Clayoquot Sound Sustainable Development Task Force</td>
<td>Consultative/Negotiative&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>January 1991</td>
<td>Clayoquot Sound Sustainable Development Steering Committee</td>
<td>Negotiative&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>April 1993</td>
<td>Government decision on land use in Clayoquot Sound</td>
<td>Consultative&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> A local resource use planning team was formed to prepare a resource use plan for Meares Island (McCallum 1993). The lead agency in this type of planning process is the Ministry of Forests and the level of public participation is at the discretion of the Regional or District Manager (Ness 1992).

<sup>b</sup> This process was unsuccessful at getting all the stakeholders involved. The Tofino Municipal Council, Friends of Clayoquot Sound and the Tofino-Long Beach Chamber of Commerce formed their own sustainable development steering committee and the two processes never amalgamated (McCallum 1993).

<sup>c</sup> The Task Force, created by government, was responsible for preparing a consensus-based sustainable development strategy for Clayoquot Sound. However, stakeholders were not introduced to the concepts of consensus building until six months after the process was underway, and, after a one day training session, did not make significant changes to their process (Darling 1991). In addition, important stakeholders were not included, particularly the Ministry of Forests (McCallum 1993).

<sup>d</sup> The Steering Committee was similarly charged with preparing a consensus-based sustainable development strategy for Clayoquot Sound (McCallum 1993). All important stakeholders were included, although one chose to leave.

<sup>e</sup> Government met with various interests and citizens to solicit their views on the most appropriate land use options for Clayoquot Sound (Province of British Columbia 1993b). These were behind-closed doors meetings.

3.1.4 Chronology of the 1991 Negotiations

The negotiations begun in 1991 in Clayoquot Sound generally followed the three stage structure outlined in Gunton and Flynn (1992): pre-negotiations, substantive negotiations, and post-negotiations<sup>17</sup>. However, Gunton and Flynn's model is a neater conceptual process than

<sup>17</sup> Post-negotiation seems more appropriate than Gunton and Flynn's implementation designation, since there was only a partial agreement to implement in this case.
occurs in practice. In reality, although there are distinct stages, the boundaries between steps are fuzzy. In addition, the generation of options, analytical assessment and incorporation of public preferences is highly iterative. In this negotiation, this pattern was repeated through each of the these stages. Gunton and Flynn's model of the components of a negotiation is adopted here to understand the general flow of events.

The pre-negotiation stage was primarily devoted to addressing procedural issues: the \textit{how to} aspects. This was followed by the negotiation stage, which was concerned primarily with substantive, or \textit{what} aspects of the negotiations. In the post-negotiation stage, the areas of agreement identified by the Strategy Director (R. Prescott-Allen) and Chairman (J. Walker) in a confidential report were used to fashion a compromise solution declared by government. A chronology of events is shown in Table 2 (p. 27). The following discussion focuses on the generation and assessment of options within these negotiations, rather than the procedural aspects.

3.2 Pre-Negotiations

3.2.1 Generating Options

When the Steering Committee was set up in January 1991, they did not follow Gunton and Flynn's model (p. 14) and settle procedural issues, nor did they spend time clarifying their objectives. Rather, some of the first tasks they undertook were to generate options and collect technical information. Both were hastily undertaken in this first round of the negotiations.

The reason for the haste in generating options and gathering technical information was logistical. The Steering Committee was operating on government funds leftover from the previous Task Force, and these funds needed to be spent by the end of the 1990 fiscal year, that is, March 1991. The prospect of budget delays and uncertainty over the level of continued funding forced the Steering Committee to act quickly (Prescott-Allen 1994a, pers. comm.).
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-NEGOTIATIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 1991</td>
<td>option generation</td>
<td>Strategy Director suggests three options, agreed to by Steering Committee</td>
</tr>
<tr>
<td></td>
<td>analytical assessment</td>
<td>sectoral consultants provide inventory and analyses</td>
</tr>
<tr>
<td>March 1991 - July 1991</td>
<td>public preference</td>
<td>public review of sectoral consultants' inventory and analyses reports</td>
</tr>
<tr>
<td>August 1991</td>
<td>public preference</td>
<td>Steering Committee negotiations</td>
</tr>
<tr>
<td>January 1, 1992</td>
<td>public preference</td>
<td>first draft of Steering Committee document published for public review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steering Committee negotiations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>revision of first draft of Steering Committee document</td>
</tr>
<tr>
<td><strong>DURING NEGOTIATIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 1992</td>
<td>option generation</td>
<td>Steering Committee proposed three options in second draft document for public review</td>
</tr>
<tr>
<td></td>
<td>analytical assessment</td>
<td>Steering Committee requested assessment of proposed options by consultant (Holman)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>close association between consultant hired to prepare assessment and Steering Committee</td>
</tr>
<tr>
<td></td>
<td>public preference</td>
<td>Steering Committee negotiations</td>
</tr>
<tr>
<td>October 1992</td>
<td>analytical assessment</td>
<td>Holman submitted final assessment to Steering Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steering Committee, unable to come to consensus, disbands</td>
</tr>
<tr>
<td><strong>POST-NEGOTIATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 1993</td>
<td>option generation</td>
<td>Strategy Director and Chairman submitted confidential report to Cabinet outlining reasons why consensus was not obtained</td>
</tr>
<tr>
<td></td>
<td>analytical assessment</td>
<td>Strategy Director and Chairman recommend broad compromise option</td>
</tr>
<tr>
<td></td>
<td></td>
<td>government bureaucrats refine this option and prepare twelve scenarios for Cabinet consideration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>government bureaucrats use Holman's analysis as basis for assessment both option generation and assessment confidential</td>
</tr>
<tr>
<td>April 1993</td>
<td>public preference</td>
<td>government makes decisions regarding land use in Clayoquot Sound</td>
</tr>
</tbody>
</table>
Three broad options were outlined and consultants were commissioned to provide background reports and analyses of those options.

The three broad options were suggestions by the Strategy Director and agreed to by Committee members (Prescott-Allen 1994b, pers. comm.). Limited brainstorming was used, and *what if* questions were posed to try and get stakeholders to suspend judgment. Prescott-Allen viewed the former as a useful way to air concerns (more than to generate options) and the latter of limited use due to varying levels of enthusiasm for it among stakeholders (Prescott-Allen 1994c, pers. comm.). No formal use of Fisher and Ury's techniques were employed throughout the negotiations, nor of any other techniques other than those already mentioned (Prescott-Allen 1994c, pers. comm.). The Steering Committee hired experts to gather technical background information and were asked to assess the impacts of the three loosely defined options. Experts were chosen by their availability on short notice, and were given the same broad terms of reference (Prescott-Allen 1994a, pers. comm.).

This haste exacerbated the usual problem of not having a clear idea of how the information would be used to inform the decision process. Options were generated before any attempt at clarifying stakeholder values was made. This meant the issue to be resolved was not well-defined. Given that the 1991 negotiation process was the third attempt in as many years to try and resolve the conflicts in Clayoquot Sound, hindsight suggests spending more time properly defining the problem would have been time well-spent. The major conflict was whether logging should occur in particular areas, but the mandate of the Steering Committee was "to develop a strategy that will achieve sustainable development in Clayoquot Sound" (C.S.S.D.S.S.C. 1992b, 1-2). The vagueness of this mandate meant it was difficult to set specific, achievable objectives for the Steering Committee. Their objectives were all means to ends, rather than ends, and are paraphrased below:

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18 Ends objectives are the what to be achieved whereas means objectives are the how to achieve those ends (Edwards and von Winterfeldt 1987).
• what parts of Clayoquot Sound should be designated for particular purposes;
• how resources use in Clayoquot Sound should be managed;
• how to improve the economy;
• how to maintain heritage values, natural diversity, environmental quality; and
• how to implement the strategy (C.S.S.D.S.S.C. 1992b).

While it is useful to understand sustainable development as the more fundamental issue, the weakness in focusing the negotiations on sustainable development meant that much time was spent skirting the forest allocation issue. Paradoxically, this weakness can also be seen as a strength: stakeholders were able to find agreement on issues of lesser importance and build a working relationship. According to the Strategy Director, this is in fact what happened (Prescott-Allen 1994a, pers. comm.).

However, because insufficient time was spent clarifying stakeholder values and options were generated very quickly, only three options were generated and they were firmly rooted in the status quo. In addition, while there was recognition that the annual allowable cut would likely be reduced in the area, (Prescott-Allen 1994a, pers. comm.) the options presented did not include manipulating key variables to mitigate potential effects of that reduction, such as phasing in harvest reductions over time.

Instead, the three options were simple and starkly cast: how much area will be protected and how much area will be logged? The options were: high wilderness protection, a combination of protection and timber harvesting, and the status quo. The high protection option was based on a proposal by the Western Canada Wilderness Committee, which proposed extensive areas of wilderness reserves (Prescott-Allen 1994a, pers.comm.). This was essentially a statement of their position when they came to the negotiating table. For the combination option, a system of smaller reserves and timber harvesting areas was envisioned. The difficult issue of delineating specific areas for protection was not addressed. The status quo meant the primary use of the forests would continue to be timber production.

The options generated show that the Steering Committee was stuck in positional bargaining. They were not addressing underlying interests, they were seeking a compromise. The high protection option is the extreme option, while the protection/timber mix option is the
"mechanical splitting of the difference" (as noted by Susskind and Cruikshank 1987) between the extreme and the status quo.

This initial set of loosely defined options was amongst the broadest considered throughout the negotiations. This is shown in Table 3, where the values of a set of variables common to most of the options and analyses in these negotiations are compared (the amount of timber land base, protected area, new protected area and annual allowable cut). The compromise option, with small adjustments, reappears in every round of option generation in these negotiations.

There was an additional problem in the pre-negotiations that re-surfaced to affect the generation of options during the negotiations phase. There was not a clear idea of what consensus meant among all the stakeholders at the negotiating table. This step is crucial (B.C. Round Table on the Environment and the Economy 1991a). In the Clayoquot Sound process, a key stakeholder group representing environmental interests left the negotiating table over a dispute about the decision to log in two areas important to them. The environmentalists believed that by leaving the process, the decisions made by the Steering Committee would no longer be consensus-based decisions (Brail 1994). Although not at the negotiating table, this group continued to influence how options were generated, as discussed more fully in the next section.

3.2.2 Assessing Options

Experts in the eight sectors (cultural heritage, fisheries and aquaculture, mining, natural environment, Nuu-chah-nulth interests, timber and tourism) were asked to assess the impacts of the proposed options on these sectors. In addition to these technical reports, a community values survey similar to an earlier survey conducted in Tofino was also undertaken in Ucluelet and Alberni Valley.
Table 3. Amount of Timber Land Base, Protected Area and Annual Allowable Cut for Various Land Use Options in Clayoquot Sound

**PRE-NEGOTIATIONS**

**OPTION GENERATION**

<table>
<thead>
<tr>
<th>WCWC proposal</th>
<th>Protection/timber mix</th>
<th>Status quo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy Director proposed; Steering Committee agreed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Prescott-Allen 1994, pers.comm.*

**OPTION ASSESSMENT**

<table>
<thead>
<tr>
<th>Timber land base (ha)</th>
<th>Protected area (ha)</th>
<th>Annual Allowable Cut (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>74,887</td>
<td>not given</td>
<td>500,000</td>
</tr>
</tbody>
</table>

*Source: Sterling Wood 1991.*

**SUBSTANTIVE NEGOTIATIONS**

**OPTION GENERATION**

<table>
<thead>
<tr>
<th>Option</th>
<th>Timber land base (ha)</th>
<th>New protected area (ha)</th>
<th>Total Protected area (ha)</th>
<th>Annual Allowable Cut (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>109,337</td>
<td>59,865</td>
<td>169,195</td>
<td>351,000</td>
</tr>
<tr>
<td>Option 2</td>
<td>112,524</td>
<td>55,849</td>
<td>168,373</td>
<td>392,000</td>
</tr>
<tr>
<td>Option 3</td>
<td>115,711</td>
<td>59,865</td>
<td>175,576</td>
<td>676,000</td>
</tr>
</tbody>
</table>


**OPTION ASSESSMENT**

<table>
<thead>
<tr>
<th>High Protect</th>
<th>Strategy 1</th>
<th>Status quo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber land base (ha)</td>
<td>64,620</td>
<td>115,711</td>
</tr>
<tr>
<td>New protected area (ha)</td>
<td>97,155</td>
<td>59,865</td>
</tr>
<tr>
<td>Total Protected area (ha)</td>
<td>136,302</td>
<td>99,011</td>
</tr>
<tr>
<td>Annual Allowable Cut (m³)</td>
<td>351,000</td>
<td>676,000</td>
</tr>
</tbody>
</table>

*Source: Holman 1992.*

**POST-NEGOTIATIONS**

**OPTION GENERATION**

Based on Strategy 1.

*Source: Prescott-Allen and Walker 1993.*

**OPTION GENERATION AND ASSESSMENT**

Twelve options, based on Prescott-Allen and Walker's recommendations, presented to Cabinet based on "mixed and matched drainages". Assessment based on Holman's work. All information confidential.

*Source: G. Townsend, pers. comm., 1994.*

**GOVERNMENT DECISION**

<table>
<thead>
<tr>
<th>Timber land base (ha)</th>
<th>Special management area* (ha)</th>
<th>New protected area (ha)</th>
<th>Total protected area (ha)</th>
<th>Annual Allowable Cut (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>117,400</td>
<td>46,500</td>
<td>48,500</td>
<td>87,600</td>
<td>600,000</td>
</tr>
</tbody>
</table>

*Source: Province of British Columbia 1993c.*

*Recreation, wildlife, scenic corridors*
The broad terms of reference and loosely defined options meant that experts collected as much descriptive information as possible on a particular resource. This led to reports loaded with inventory and biophysical information, and weak on impact information. This is especially true for the cultural heritage and mining reports. The cultural heritage report (Wilson, Bouchard Kennedy and Heap 1991) simply catalogues significant cultural resources. The mining report (Carter 1991) assesses the economic potential of the deposits in the areas proposed by the Western Canada Wilderness Committee, but does not make preliminary impact assessments of any of the options nor does it propose or assess more specific hypothetical land use scenarios.

The rest of the technical reports are somewhat stronger because they make some assessment of the proposed options, although the assessments are based on biophysical impacts. These include the fisheries and aquaculture (Entech 1991), natural environment (Madrone 1991), Nuu-chah-nulth interests (Archeo Tech 1991), and tourism (MacLaren Plansearch 1991). The only technical report that also estimated social and economic impacts was the timber report (Sterling Wood 1991). For this reason, the following discussion will rely heavily on examples from this report. This timber report used the results of a local timber supply analysis19 to predict the employment and revenues effects of the three options.

A common disclaimer in the technical reports was that there was insufficient data, resources and time to make a thorough assessment. For example, there was a "dearth of most resource data specific to the planning area" (Sterling Wood 1991, 1) and there was..."no

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19This was the first use of a local timber supply analysis (Sterling Wood 1991). Regional timber supply analyses are the norm (Lang 1994, pers.comm.). Sterling Wood took the three options and analyzed the effects of three timber harvesting regimes on the long run sustained yield (which takes a 200 year view). In the first scenario, they forced the AAC down to 1 million cubic meters for the next decade. Only the status quo option could support a relatively high AAC in the long run, although the current rate of cut is not sustainable. For the other two options in this scenario, there is an immediate, steep decline in the AAC, and much lower harvests in the long run. In the second scenario, the long run sustained yield, without the imposed reduction in the first decade, is calculated. This moderates the impact of the decline in AAC, and leads to an AAC in the long term that is quite similar to that proposed in the first scenario. The third scenario calculates the maximum even flow harvest over the 200 year projection period.
information available...to include with confidence these short term effects in the present study" (Sterling Wood 1991, 22).

Thus, the experts recognized that there was considerable uncertainty inherent in the collected data. However, they made no attempt to estimate the likelihood, magnitude or uncertainty of a given impact. This made it difficult for decision-makers (in this case, the stakeholders at the negotiating table) to gauge the reliability of the information.

Instead, experts relied on their judgments to make predictions about the consequences of the proposed options. An example from the timber report makes this point clear: "It is difficult to tell what impact any curtailment in wood supply would have on local employment...without being able to anticipate these (supply substitution, threshold manufacturing levels, etc.)...we are left with our judgment of likely outcomes" (Sterling Wood 1991, 82).

Despite the considerable use of judgment, stakeholders were not blind to the values of the experts. Some of the experts were viewed by Steering Committee members as "naked advocates" of the sector they were representing (Prescott-Allen 1994a, pers. comm.). For example, the timber sector expert noted that "Since there is virtually no second-growth forest that will have attained a harvestable size for another 50 years, there is no alternative to maintaining the harvest within the old-growth forest regardless of which option is favoured" (Sterling Wood 1991, x; italics added). This expert cannot imagine that logging might be stopped altogether.

The timber sector expert also noted concern over "well-intentioned constraints", such as visual quality objectives, cut and leave policies, and operability zoning may affect the short term availability of timber (Sterling Wood 1991, v). The concern was that these policies may reduce the timber available for harvest by 85-90%. The choice of language used to describe this concern makes it clear that this expert regarded timber harvesting as the main activity, and other values were simply well-intentioned, but misguided, constraints on timber harvesting.

All the experts laboured under the requirement imposed by the Steering Committee to compare the two proposed options to the status quo. This occurred despite the clear recognition that the future would not be like the present. Again, to use examples from the timber sector report, the volume of timber harvested is expected to drop as the old growth forests disappear
and are replaced by smaller volume second growth forests. This is known as the fall-down effect. The timber sector expert acknowledged that the fall-down effect was inevitable, and would occur regardless of protecting the old growth of Clayoquot Sound. Protecting forests now would change the timing of this drop, but not its occurrence. However, this was not incorporated into their analysis.

The timber sector expert also noted other trends that are likely to occur (e.g. smaller tenures, changes in wood product, increased value-added processing, increasingly stringent forest management guidelines) that may have significant economic and social impacts, but did not make any allowance for the them in the annual allowable cut calculations. Instead, their analysis is based on "preliminary estimate of the absolute volumes which could be harvested" (Sterling Wood 1991, 22) without accounting for these trends.

In addition, the timber sector expert used a direct linear relationship between the annual allowable cut and the number of jobs, despite the well-documented trend (H.A. Simons 1990) to fewer forest jobs per cubic meter of wood harvested. In recognition of the fact that levels of employment may be dependent on factors other than the annual harvest rate, a sensitivity analysis allowing for "a 25% divergence either side of the figures given for the Western Canada Wilderness Committee proposal...and the compromise option" was conducted (Sterling Wood 1991, 83). However, this was not an estimate of future employment levels under these options: it was an estimate of what employment levels would be under current conditions with a reduced timber harvest.

Before moving on to how these technical reports were used to generate the next round of options, the community values survey must be briefly mentioned. The original intent of this survey was to provide feedback into Tofino's official community plan. It was then used by the Tofino Steering Committee for Sustainable Development. Comparable surveys were then conducted for Alberni and Ucluelet, and results tabulated for Steering Committee use (Prescott-Allen 1991).

The survey was a series of open-ended questions on a wide range of topics, including community, work, and the importance of protecting old growth forests. No alternatives or
options were considered, no ranking or trade-offs were required, nor were there any hard
questions about costs or benefits. The result was that there was a lot of agreement on
motherhood issues, and not much useful information on anything else. The usefulness of these
surveys to gauge public values (as distinct from the values of the stakeholders), and to inform
this negotiation is questionable.

There was a public review of all the background reports from March to July 1991
(C.S.S.D.S.S.C. 1992b). During this time (May 1991), the environmental representatives walked
out in protest. Negotiations to produce general principles of sustainable development proceeded
without them and continued from August to December of that year. By January 1, 1992, the
remaining members of the Steering Committee produced their first document and published it for
public review.

3.3 Substantive Negotiations

3.3.1 Generating Options

Between January and August 1992, the Steering Committee drafted a second draft
document. This document provides insights into how the negotiations were progressing. It is
very useful for analyzing how stakeholder values were being revealed, how much learning about
the technical issues was occurring, and how stakeholders were dealing with the hard trade-offs.

The first part of the second draft document is based on the first draft document, and
outlines sustainable development principles. The principles and goals outlined in the first
document have been fleshed out in more detail in the second document to include increasingly
specific targets and detailed targets to put those principles into practice.(see C.S.S.D.S.S.C.
1992b) The four levels (principles, goals, targets, and detailed targets) suggest a conceptually
hierarchical set of stakeholder values. Taking this conceptual hierarchy and making a literal
hierarchy is revealing (Figure 3).20 It becomes clear that the principles of sustainable

20Due to space limitations, the most specific level of the hierarchy is not given in Figure 2. An
example of the detailed target is found in Appendix II.
development and goals and targets are descending levels of means objectives. Fundamental objectives are missing.

Also, the detailed targets are meant to operationalize these objectives. However, in general, these do not get specific enough to actually become operational. Where they are specific, they are often controversial. For example, in Target 1.1.a, where it is stated "at least 10% of each major natural ecosystem of Western Vancouver Island" should be kept natural, it is also noted that "several members of the Steering Committee have reservations about this target" (C.S.S.D.S.S.C. 1992b, 5-4).

It also becomes quickly apparent that this hierarchy is very unwieldy. Seven pages are devoted to detailing the targets that are not included in Figure 3. Attention is focused on details rather than the larger issues, and it is overwhelming to try and comprehend its detail. It shifts the argument to the details, rather than to the much harder question of trade-offs on the larger issues. The aforementioned example about protecting 10% of each major natural ecosystem of Western Vancouver Island, a detail that all the stakeholders were unable to come to an agreement over, illustrates that even the details may be difficult and time-consuming issues to settle, and ultimately may be of little consequence without agreement on the broader issues. Prescott-Allen (1993c, pers. comm.) noted that broader the issue under discussion, the less likely the Steering Committee was able to agree. As a tool for learning and for finding agreement for building trust on less important issues, it may be useful.

The difference in scope between the first and second documents does suggest a period of intense learning about the technical issues. For example, the latter part of the document outlines a series of progressive forest management guidelines, essentially steps for implementing change. These were based on an impressive synthesis of technical information from the background reports prepared for the Steering Committee, regionally-focused background reports prepared by others outside the process (ARA Consulting 1991, Novacorp Consulting 1990), and standard forestry technical documents (Chatwin et. al. 1991, Pojar et. al. 1991).
Figure 3. Value Tree Constructed From Principles, Goals and Targets outlined by Clayoquot Sound Sustainable Development Strategy Steering Committee, 1992b.

<table>
<thead>
<tr>
<th>Principles of Sustainable Development</th>
<th>Goals of the Strategy</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. limit human impact on the planet</td>
<td>1. maintain the viability of ecosystems and keep within their carrying capacity</td>
<td>1.1 as large an area as possible retained as natural</td>
</tr>
<tr>
<td>2. maintain stock of biological wealth</td>
<td>2. maintain air quality and the health of the atmosphere; water quality; and soil quality</td>
<td>1.2 as large an area as possible retained as modified</td>
</tr>
<tr>
<td>3. minimize depletion of non-renewable resources</td>
<td>3. maintain the diversity of plant and animal communities, species and genetic stocks</td>
<td>1.3 undertake intensive silviculture</td>
</tr>
<tr>
<td>4. promote long-term economic development</td>
<td>4. ensure that uses of renewable resources are sustainable and uses of nonrenewable resources are compatible with sustainability</td>
<td>1.4 no degraded ecosystems</td>
</tr>
<tr>
<td>5. aim for an equitable distribution of the benefits and costs of resource use and environmental management</td>
<td>5. develop a variety of economic activities that are both sustainable and competitive</td>
<td>2.1 limit emissions to air to levels that do not harm people or other species</td>
</tr>
<tr>
<td>6. provide for effective participation of communities and interest groups in the decisions that affect them most</td>
<td>6. enhance the viability of small communities</td>
<td>2.2 limit emissions to water to levels that do not harm health, resource users, or the viability of the ecosystem</td>
</tr>
<tr>
<td>7. promote values that help achieve sustainability</td>
<td>7. allow local communities and interest groups to participate effectively in making the decisions that affect them most</td>
<td>2.3 limit soil erosion to normal rates</td>
</tr>
<tr>
<td></td>
<td>8. foster shared values for living sustainably</td>
<td>3.1 maintain viable examples of every ecological community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2 maintain all naturally occurring species and major genetic stocks in sufficient number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.1 all uses of renewable resources to be sustainable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2 all uses of nonrenewable resources to be compatible with sustainability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.1 maximize the number of economically and socially acceptable jobs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.2 establish industries producing higher value added products using local resources sustainably</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.1 respect the Nuu-chah-nulth claim to their traditional resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.2 ensure that achievement of targets 5.1 and 5.2 benefits the small communities of the coast</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.1 establish a mechanism to enable local communities and interest groups to participate in resource management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.1 develop ways of promoting shared values for living sustainably</td>
</tr>
</tbody>
</table>
However, the discussion of the hard trade-offs necessary had not progressed far. Tucked in the middle of the document were the results of the critical discussion of proposed options and a very preliminary assessment of their implications. Three options were proposed in this round of negotiations (without maps for clarification). They were all compromise options and were very similar to each other, and were very similar to the protection/timber compromise option in the previous round (see Table 3, p. 31). These options ranged from 55,294 hectares to 59,865 hectares of protected land. The main difference between these options and Sterling Wood's compromise option was that the Steering Committee had negotiated to protect specific areas, whereas Sterling Wood had (quite reasonably) arbitrarily made assumptions for their analysis. Also, Sterling Wood had made the more technical annual allowable cut calculations, but the Steering Committee limited their discussions to land area and volume of standing timber.

All three of the Steering Committee options would have doubled the area protected in Clayoquot Sound, but "would (have) maintain(ed) 75% or more of the contributing timber land base and 70% or more of the contributing mature timber volume" (C.S.S.D.S.S.C. 1992b, 6-27). In other words, where there was little valuable timber, there was willingness to turn it into a protected area. Table 4 shows that only slightly over half of the proposed protected areas were on productive forest land; the rest of the proposed protected areas were on far less contentious non-productive forest land. The harder issue of protecting productive forest land was skirted as much as possible and the common practice of creating protected areas with low timber values was continued.

The Strategy Committee also proposed special planning processes for 13 areas. They gave no figures for how much area this encompassed. Outside these contentious areas, they proposed a variety of constraints including buffer zones around parks, a complex of forested corridors, and special management zones for wildlife/fisheries, recreation, and aesthetics. All of these constraints would affect harvesting practices and reduce the annual allowable cut, possibly dramatically.
Table 4. Percentage of Productive Forest Land in Proposed Protected Areas

<table>
<thead>
<tr>
<th>Option</th>
<th>Proposed Protected Area (ha)</th>
<th>Productive Forest Land of Proposed Protected Areas (ha)</th>
<th>Percentage of Productive Forest Land in Proposed Protected Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>59,865</td>
<td>34,681</td>
<td>58</td>
</tr>
<tr>
<td>2</td>
<td>55,849</td>
<td>31,494</td>
<td>56</td>
</tr>
<tr>
<td>3</td>
<td>55,294</td>
<td>31,330</td>
<td>57</td>
</tr>
</tbody>
</table>


This is a consensus document, however the consensus is limited, not whole-hearted. It lacks the support of a key interest group, and clearly has a rather tenuous foundation. Explicitly stated in the document is the disclaimer that Committee members have reservations about proposed actions, and each member "wishes to reserve endorsement" until the environmental and economic implications of the strategy were reviewed (C.S.S.D.S.S.C. 1992b, 1-2).

3.3.2 Assessing Options

A consultant was asked to assess the environmental, social and economic implications of three options, but not the three compromise options outlined above. Instead, the consultant (G. Holman) was asked to assess a high protection option and a medium protection option and (again) compare these to the status quo.

The reason the high protection option was chosen for impact assessment, even though it was not being discussed at the negotiating table, reflected the power and influence of the absent environmental stakeholders. Although they were welcome to rejoin at any time (Prescott-Allen 1994a, pers. comm.), their influence may have been enhanced by being outside the negotiations. They were not obligated to make uncomfortable compromises. Even this "high protection option was not high enough" for the environmental stakeholders, but it was felt the government should "be aware of the political consequences of the option being pushed" (Prescott-Allen 1994a, pers. comm).

The proposed high protection option was even more drastic in terms of reducing the timber land base and the annual allowable cut than the one proposed by the Western Canada
Wilderness Committee in the previous round of negotiations (see Table 3, p. 31). For example, the Western Canada Wilderness Committee proposal would leave a timber land base of 74,887 hectares and an annual allowable cut of 500,000 m$^3$/year (Sterling Wood 1991), slightly more than half its current rate of 900,000 m$^3$/year. The high protection option proposed here would reduce the timber base to 64,620 hectares and the annual allowable cut to 351,000 m$^3$/year (Holman 1992), approximately one-third of its current rate. Holman's assumptions for this option included "all watersheds in the Clayoquot Sound area in which logging has not yet occurred" (Holman 1992, 4). In addition, there were to be "No impacts on non-timber values...logging could occur but over much longer time period...with more stringent management guidelines and reliance on selective harvesting methods" (Holman 1992, 5).

The medium protection option was derived from the compromise option that created the most protected area put forth by the Steering Committee in this round of the negotiations. The reason for including the status quo option in this analysis is unclear, because the Steering Committee had itself dropped it in this round of negotiations. The need for more protection had been acknowledged. The questions were how much and where?

Holman made annual allowable cut reductions based on these options, and then used multiple account analysis to derive the environmental, social and economic impacts of each. However, there are problems with this analysis. When estimating the annual allowable cut reductions, Holman "implicitly factor(ed) in allowances for forest management guidelines" but acknowledged that his calculations "may not adequately reflect the impacts of establishing special management areas outside designated parks" (Holman 1992, i). Precisely what Holman did to "implicitly" factor in allowances for forest management guidelines is not clear. It is also not clear how trends in forest management guidelines were incorporated into his calculations.

Holman used the earlier background reports for sources of information. However, because uncertainty was not well addressed in these reports, and judgments about the impacts of the proposed options were vague, Holman noted that "the status quo is not static or constant" but did not incorporate these trends into his analysis (Holman 1992, 7). He simply acknowledged these trends. For example, in forestry, he noted that the "employment per m$^3$...may decrease in
the future, due to changes in market conditions and a continuation of historical technological trends" (Ibid., 7); in commercial fisheries and aquaculture, "salmon stocks are expected to continue their historical decline" (Ibid., 8); the impacts of land claims and co-management with natives are "uncertain" (Ibid., 9); and, biodiversity and land and marine ecosystems may be "significantly impacted" by a continuation of current timber levels and harvesting methods (Ibid., 10).

To analyze the impacts of the proposed options, he used multiple accounts analysis (MAA). One of the main drawbacks of this type of analysis is that it poorly estimates environmental values. For example, under the regional accounts table, the environmental values for the high and compromise option are, respectively, "protects most wilderness and recreation features/values" and "protects some key wilderness and recreation features/values" (Holman 1992, xii). Given the importance of environmental values to this debate, this is a very limited analysis. It is vague in at least two important respects: which areas will be protected, and according to whose value judgment about what is a "key" feature? In addition, there is also an account denoting the economic efficiency of resource use, which is meant "to estimate the net economic benefits affected by land use changes" (Ibid., 3). Benefits for commercial and non-commercial resources are calculated, but the assumption for non-commercial resources is very weak: "Benefits are typically measured by willingness-to-pay estimates, although a lack of data for these resources makes it difficult to quantify values" (Ibid., 3).

The compensation issue is also conspicuously absent from Holman's analysis. He explicitly "does not consider possible compensation costs for lost timber rights or private lands" (Ibid., ix). However, given that this could be a significant amount of taxpayers' dollars, it is surprising that this issue is not included at all. It is even more surprising given that MacMillan Bloedel had already taken the Ministry of Forests to court over a proposed cut reduction within this same T.S.A. (Lang 1994, pers. comm.). Measures to mitigate the impacts of reduced timber supply are given (e.g. phasing in annual allowable cut reductions, securing alternative wood or fibre supplies, implementing worker and industry adjustment programs, and new resource management approaches), although these are not explored in great detail.
It is interesting to note what the Steering Committee expected from this assessment. Its main purpose was to "inform" the decision, and "nobody believed that it could be definitive" (Prescott-Allen 1994a pers.comm.). To this end, the assessment was highly iterative, and several drafts were submitted to the Steering Committee (Ibid., pers. comm.). These iterations are not in the public domain so it is difficult to see how they changed.

However, during this iterative assessment process, negotiations were sputtering. There was considerable discomfort caused by the number of predicted job losses (Ibid., pers. comm.). By October 1992, even without the environmental stakeholders, the Steering Committee was unable to reach consensus on any of the proposed options and it disbanded. In January 1993, a confidential report was submitted to Cabinet outlining reasons for the failure of the consensus process (Prescott-Allen and Walker 1993). There were many reasons for this inability to reach consensus, but one of the most significant was a dramatic difference in values among stakeholder groups. There were "value differences that are immune to consensus" (Prescott-Allen and Walker 1993, 7). This meant the government was forced to make decisions about forest land use in Clayoquot Sound.

3.4 Post-Negotiations

3.4.1 Generating Options

Prescott-Allen and Walker's report marks the reversion to an authoritative mode of decision-making. This can be characterized by confidential reports, analytical assessments by bureaucrats, and political trade-offs made behind closed doors.

In addition to providing the reasons for failure to reach consensus, Prescott-Allen and Walker's confidential report outlined areas of agreement and disagreement. They recommended a compromise option: protect specific areas that the Steering Committee had agreed to protect, and submit areas of disagreement to C.O.R.E. for resolution (Prescott-Allen and Walker 1993). This course of action was based on what they felt to be politically acceptable. Government bureaucrats took the rather loosely defined protection/timber mix compromise option and created twelve options based on "mixed and matched drainage's" (Townsend 1994, pers. comm.).
3.4.2 Assessing Options

Government bureaucrats were also responsible for an analytical assessment of these proposed twelve options. Holman's work served as the basis for their assessment (Townsend 1994, pers. comm.). The twelve options and the analytical assessment supporting them were submitted as a confidential report to Cabinet and are not publicly available (Brubacher 1994, pers. comm.). Thus, it is difficult to directly assess them. However, the controversy generated when the British Columbia government bought shares in MacMillan Bloedel resulted in a judicial review of the bureaucrats' impact assessment (Province of British Columbia 1993d), and through this, some information has entered the public domain (Townsend 1994, pers. comm.). The bureaucrats used an annual allowable cut of 600,000 m$^3$/year as a baseline for their calculations (Province of British Columbia 1993e).

Due to the confidentiality of the impact assessment, it is difficult to ascertain if the bureaucrats ranked or recommended options to the politicians. Bureaucrats often provide this type of advice to politicians, thus their values are important but unacknowledged elements in the decision process. However, the trade-offs are left for the politicians to make, and in this case, were made by Cabinet behind closed doors (Brubacher 1994, pers. comm.). Even with the assessment in hand, political considerations would have loomed large in Cabinet's deliberations, particularly balancing the interests of two of the New Democratic Party's largest constituencies: the unions (with a large core of forest workers) and environmentalists. Public preferences were implicitly incorporated into the decision process. Aside from rumours that circulated that Cabinet agonized over the decision, no explicit accounting of how the decision was made has been provided. The government claimed their decision "balances environmental, economic and social values" (Province of British Columbia 1993f). An accounting of forgone jobs and revenue was given, and the issue of how forest companies were to be compensated was not explained.

The option Cabinet choose was a compromise option, closely resembling the protection/timber mix option that had been put forward in every round of the negotiations (see Table 3, p. 31). In the first round of negotiations, this option had meant 100,147 hectares of timber land base, and an annual allowable cut of 700,000 m$^3$/year. Holman's protection/mix
option showed a larger timber land base (115,000 hectares) but roughly the same annual allowable cut (676,000 m$^3$/year). The government's choice pushed the timber land base up (117,400 hectares) but, with the addition of special management areas, reduced the annual allowable cut to 600,000 m$^3$/year$^{21}$. The government built on areas that the Steering Committee agreed to, then, rather than submitting further disputed areas to the C.O.R.E. process, made decisions on the rest of the contentious areas (Prescott-Allen 1994a; pers. comm.). The reasons for not deferring contentious areas to C.O.R.E. are purely speculative, but it is possible the government wanted to end the uncertainty in Clayoquot Sound, and wanted to be seen taking a leadership role. Another reason may be that the government wanted to protect the newly created C.O.R.E. process from a floundering right at the beginning with the hard decisions that needed to be made in Clayoquot Sound.

This process of implementing the partial agreement reached by the Steering Committee was followed up by a series of actions to mollify critics. For example, to assuage environmental concerns, in June 1993 the government announced the improved forest practices for Clayoquot Sound (Province of British Columbia 1993g). To assuage native concerns, which were not particularly well-addressed in the negotiation process, the government entered government-to-government negotiations on co-management with Nuu-chah-nulth in August 1993 (Anon. 1993).

However, the government underestimated the level of support and the media savvy of its critics, particularly the environmental stakeholders. This led to the peace camp and arrests during the summer of 1993. In further efforts to mollify these critics, in October 1993, they convened a science panel to monitor the implementation of these new practices (Province of British Columbia 1993h). The setting up of this science panel seems to be a missed opportunity. The role of the science panel is to monitor activities in Clayoquot Sound, and recommend research (Province of British Columbia 1993h). However, (potential) stakeholders are not

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$^{21}$A year after this decision, the Chief Forester officially announced the annual allowable cut for Clayoquot Sound would be 600,000 m$^3$/year (Province of British Columbia 1994, Vancouver Sun 1994). Compensation was not addressed in this news release.
involved in deciding what questions the panel should be focusing on. The public is simply not involved, and bureaucrats and scientists are deciding what is important for Clayoquot Sound.

3.5 Summary

There was an unstructured approach to clarifying and incorporating stakeholder values into this negotiation process. This meant the problem was never well-defined, and the stakeholders had the impossible task of trying to solve a vague, fluid problem. Stakeholders did not have to face the difficult trade-offs that needed to be made. This is paradoxically also a strength of the process: it allowed building of trust on smaller, lesser important issues.

However, because the issue was never well-defined, the generation of options was unimaginative and rooted in the status quo, and was hastily conceived at the beginning of the negotiations. Positional bargaining seeking compromise, rather than looking at the underlying interests and seeking a win/win agreement, was the order of the day.

Technical information was collected before it was known how it would be used, and led to the collection of much descriptive information. Although the terms of reference to the experts hired to collect this information included that they perform a preliminary impact assessment, this was inconsistently done. The resulting descriptive information, combined with other already available standard texts, was useful to help stakeholders understand technical issues better. It was not useful as an aid to decision-making. A community values survey was undertaken, but did not ask participants to rank or weight their responses and did not contribute new value information to decision-making. A research program to improve the understanding of the systems in Clayoquot Sound was only undertaken after the decision of what was to be protected was made, was limited to biophysical systems, and did not include stakeholders to ensure that the right questions were asked.

The assessment of options by Sterling Wood and Holman relied on timber supply analysis as the basis for the socio-economic analysis, although Holman's later assessment also used the multiple accounts analysis to provide more detail for explicitly making trade-offs. The final assessment was based on Holman's work, but was confidential. All of the impact
assessments in the public domain (including the preliminary assessments by the sectoral experts) were hampered by the fact that the value judgments of the experts were not made explicit, nor was the uncertainty inherent in the collected data. Environmental values, in particular, were poorly handled. Lastly, the status quo was used as a basis for comparison, rather than the base case, even when it was clear the future was not going to be the same as the past and led to a constant overestimate of job losses.

The generation and assessment of options were highly iterative throughout each step of the negotiations, from pre-negotiations to post-negotiations. However, when the stakeholders were unable to make the hard trade-offs necessary, government was forced to make decisions. The government chose the compromise option, which was similar to the compromise option proposed at the beginning of the negotiations, and which failed to adequately account for environmental stakeholders' values.
CHAPTER 4. POLICY IMPLICATIONS

4.1 Background

Prescott-Allen and Walker, with their forceful assertion that value differences in forest land disputes are *immune to consensus*, expressed strong doubt that consensus processes such as negotiations are appropriate for resolving forest land disputes. However, the experience from one case study is not sufficient grounds for abandoning consensus. Rather, the flaws and weaknesses need to be carefully examined to suggest improvements, particularly when experience in using consensus to resolve complex and highly politicized environmental disputes is limited (as it is in British Columbia). In addition, it is necessary to analyze how other similar processes have fared (for example, the recent C.O.R.E. round tables), a task well beyond the scope of this study.

Indeed, in this case study, it could be argued that several flaws and constraints mentioned earlier made it difficult for the negotiations to succeed in resolving the dispute. Inexperience likely contributed to some of the problems. For example, not clarifying what was meant by consensus, right at the beginning, caused difficulties. Was consensus all the stakeholders who had been invited to the negotiating table, or all the stakeholders who remained at the negotiating table? In addition, the uncertainty of government funding at the beginning of the 1991 negotiations had repercussions throughout the process, repercussions that may have been exacerbated by inexperience. It pressured the Steering Committee into hasty decisions before they examined their objectives. This led in turn to unimaginative options, geared to positions rather than underlying interests, and to the hasty collection of (mostly descriptive) technical data. The methods used to assess options were based on the prevailing practices at the time; however, there is debate over the technique used, and practical application reveals its weaknesses. Finally, other factors not considered in this study may also be important, for example, there may have
been inadequate attention paid to resolving existing animosity among stakeholders prior to these negotiations.

This case study does provide evidence to support the continued use of negotiations. Indeed, Prescott-Allen praised this process for providing stakeholders "with an increased understanding of the complexity of governing" (Prescott-Allen 1994c, pers comm.). In addition, the second draft document written by the Steering Committee (1992b) shows that there was significant learning about the technical issues among stakeholders. This increased understanding and learning may be the most important legacy of this process, and may contribute to future decision-making. However, for making difficult land use decisions today, negotiations were less than ideal. Some specific techniques to improve the generation and assessment of options within negotiations, to improve today's decision-making, are the subject of the remainder of this thesis.

4.2 Clarifying Values

It has been argued that a well-defined problem, as outlined by the clear expression of stakeholder values, provides the framework for generating options, and identifying the technical information needed to assess options. It has also been noted that articulating stakeholder values is difficult. Fisher and Ury (1981) and Susskind and Cruickshank (1987) both advocate listing, clustering and ranking values. They state stakeholders should "be specific" (Fisher and Ury 1981, 52) and should outline their concerns "as candidly as possible" (Susskind and Cruikshank 1987, 118.) While this is good advice, it is not a very specific how-to guide to get stakeholders beyond the more familiar positional bargaining techniques.

A simple and subtle device for articulating values is structuring an objectives hierarchy (Keeney 1992). This is a refinement of the value tree concept advocated earlier by Edwards and von Winterfeldt (1987). It is essentially a formal list-making exercise. As noted by Gunton and Fletcher (1992) it:

"ensures all relevant factors are taken into account. What is particularly important is gaining insight into the objectives of various stakeholders to identify key factors driving the decision and opportunities for achieving agreements in negotiations" (Gunton and Fletcher 1992, 3).
Structuring objectives allows what stakeholders perceive to be important to drive the decision-making process. Stakeholders are involved in the process from the beginning, and decide what they are trying to achieve in the decision-making process. This helps identify areas of agreement and disagreement, and creates a more open and defensible public decision process (McDaniels 1992).

Structuring objectives is conceptually simple, but provides a powerful communication tool, and can be used with small or large groups. Basic ideas are outlined and illustrated with an example here. Details can be found in Clemens (1991), Edwards and von Winterfeldt (1987) and Keeney (1992).

The basic idea is to identify the values that stakeholders consider relevant to the decision and to structure these into a hierarchy. Values are made explicit by the identification of objectives. Objectives are characterized by three features: a decision context, an object and a direction of preference (Keeney 1992). For example, with respect to creating protected areas, one objective is to maximize the amount of area available for wilderness. For this objective, the decision context is creating protected areas, the object is wilderness, and more wilderness is preferred to less.

Identifying objectives requires "significant creativity and hard thinking" (Keeney 1992) and a facilitator will be needed to guide the process. The basic question that each stakeholder must consider is "what do I want to achieve in this situation?". Words may act as triggers to make implicit objectives explicit, and include tradeoffs, consequences, impacts, concerns, fair, balance, and so forth (Keeney 1992, 57). Stakeholders should individually think and write a list of objectives. This is to promote diversity and prevent anchoring on other stakeholders' ideas (Keeney 1992).

The next step is to structure these objectives into a hierarchy. The hierarchy is useful for separating out fundamental (what is important) and means (how to achieve what is important) objectives, which are often confused in many peoples' minds. The two main ways to separate these are by linking fundamental and means objectives, and by identifying fundamental objectives. To link fundamental and means objectives, it is necessary to ask why a particular
objective is important. If it is important because of its implications for some other objective, it is a means objective. If not, it is a candidate for a fundamental objective (Keeney 1992). To identify fundamental objectives, the objective needs to be broken into as many specific parts as possible. This provides insight into what and why it is important, and clarifies thinking.

The next step is to combine the objective hierarchies of all the stakeholders. Edwards and von Winterfeldt (1987) warn this is an onerous, but not impossible task. They write that the resulting tree may contain redundant objectives since stakeholders are likely to express essentially the same objectives in different language. The task is to generate common meanings and to obtain a structure that contains a subset of each stakeholder's point of view. An example of a common objectives hierarchy is given in Figure 4.

This common objectives hierarchy is much simpler than the one in Figure 3 (p. 37) in the case study. It shows the major trade-off for the decision to be made is between ecological and socio-economic benefits, essentially the major difference in values noted by Prescott-Allen and Walker. This is an artifact of preparing the hypothetical hierarchy after the planning process was complete. It also typifies the conflicts in forest land use debates. However, this hierarchy is much simpler. Edwards and von Winterfeldt (1987) note conflict is typically at the more fundamental levels. This implies that spending lots of time on details does not help to make the hard tradeoffs required.

To investigate how to make tradeoffs, the next step would be to get stakeholders to attach weights to the different values in the common objectives hierarchy. The objectives derived from traditional negotiations have a tendency to include all values, irrespective of their relative importance. This leads to an unwieldy structure, as seen in Figure 3 (p. 37). Weighting forces stakeholders to consider which values are most important to them. They have to decide what is truly important to them in a particular context. This is a very important communication tool, as stakeholders gain insight into what is important to themselves and to others and allows stakeholders to move from (to use Fisher and Ury's language) positional to interest-based negotiating.
Figure 4. Hypothetical Common Objectives Hierarchy for Clayoquot Sound Sustainable Development Strategy Steering Committee

<table>
<thead>
<tr>
<th>Make Best Land Use Decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>maximize ecological benefits</td>
</tr>
<tr>
<td>minimize environmental impact</td>
</tr>
<tr>
<td>maximize socio-economic benefits</td>
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<tr>
<td></td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td>maximize social and political acceptability</td>
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</table>
This insight allows for the imaginative generation of options to meet objectives. Importantly, options are created based on stakeholders' explicit judgments about what is important, not on stakeholders' implicit judgments (common in negotiations) or bureaucrats' judgments (common in more traditional modes of decision-making). It is also important to note that this step of creating objectives and generating options is highly iterative, and allows for possibility of changes while stakeholders reassess their objectives to address their fundamental concerns.

A common objectives hierarchy may also include a set of attributes (or measures) used to determine how well each objective is met, and can be used to assess options. These attributes are difficult to ascertain, although Clemens (1991) recommends that "attributes be both meaningfully related to the corresponding objective and still obtainable without undue cost and effort" (p. 435). Thinking about these attributes also provides further clarity about the objectives. It also provides insight into what technical information is needed to evaluate options. An example of preliminary attributes for the hypothetical objectives hierarchy is listed in Appendix III (p. 61).

4.3 Generating Options

To generate options specifically for forest planning issues, McDaniels (1992), building the discussion outlined in Section 2.3, outlines three strategies and describes the key variables that need to be considered. The strategies he proposes are as follows: focus on possible consequences; ask stakeholders to construct options; and group options into generic packages. The rationale for the first strategy is that undesirable consequences of proposed options often elicit strong emotions and lead to positional bargaining. For example, an important issue in forest land planning is the effect any changes may have on local direct forest sector employment. McDaniels notes that stability of forest employment should be identified as an important objective in this context, and constructive ideas to reduce or mitigate these employment effects may help generate imaginative options. He points out that there are a number of factors, aside from withdrawals of land from the commercial forest land base, that may adversely affect forest employment. For example, the level of silviculture spending directly influences how many
workers are employed in forest sector jobs. Considering all the factors that influence the stability of forest employment and examining how changes in these factors could be used to mitigate any employment implications of withdrawals could lead to some creative options.

Secondly, asking stakeholders to construct options helps ensure a wide array of interests are represented, and are likely a source of imaginative ideas. Finally, to make the infinite range of possible options intelligible, McDaniels suggests grouping them and describing them in simple, evocative terms. He suggests that the options should be "well-defined and substantially different in their characteristics, but small enough in number to be well understood" (p. 7).

The variables that could be considered in the above strategies include the following:

- total level of harvest
- location of cuts
- cutting practices
- timing of changes in harvests
- level of spending on forest management
- utilization patterns
- compensation and/or mitigation

The total level of harvest (the AAC) is generally considered in creating options. The other variables are considered less frequently and are worthy of attention. For example, the following graph shows the implications of two alternative withdrawals of harvest, with different time frames, immediate and delayed. These are compared to the base case.

The solid line, the base case, shows that there will be a fall down even without any withdrawals of forest land from the commercial land base. The dashed line indicates the harvest level if forest land is immediately withdrawn from the commercial land base. The decline persists over the planning period. The dotted line indicates the harvest level if the reduction is delayed. Harvest levels are maintained in the short term, but the timing of the fall down effect is advanced and the drop in harvest level occurs more quickly. The difference between the base case and either withdrawal scenarios, of course, is that some forest land is protected for important values other than timber production.
Since the level of harvest is one of the factors affecting forest sector employment, it is clear that there are a variety of times for introducing the reduction that result in very different employment effects. Phasing withdrawals in over time may allow the local industry to adjust and lessen the severity of the impacts. A more detailed analysis may reveal acceptable possibilities to meet both preservation objectives and mitigate forest employment effects.

4.4 Collecting Technical Information

Once a variety of options, based on stakeholders' objectives, is generated, a simple objectives versus impacts matrix can be constructed. This means that impacts can be evaluated against how well they meet stakeholders' objectives.

It also means the technical information needed to evaluate those options becomes clear. Inventory and monitoring information may well be useful in some aspects of aiding the decision-making, for example, a basic understanding of the amount of logged and unlogged land is important in forest land use disputes. However, the limited resources available should be aimed at improving functional knowledge, both scientific and evaluative.
For example, a more proactive adaptive management approach to forest management should be considered. Briefly, the essence of this idea is to treat management practices as a large scale experiment. Benchmark data is collected, and the results of the management practices are monitored and scrutinized closely, and provide a feedback loop to improve management (Holling 1978). This approach has not been widely used in forest management in British Columbia.

To improve both scientific and evaluative functional knowledge, addressing the issues of uncertainty and judgment is important. Sources of uncertainty need to be identified, made explicit and quantified using probabilities. Where judgments are used, they also need to be made explicit, and tested with sensitivity analysis to check how much they influence outcomes. For impact assessment, it is critical to estimate the magnitude and likelihood of the impacts of the proposed options. Without this bounding, it is not possible to gauge the credibility of the data and limits its usefulness for informing decision-making.

4.5 Assessing Options

Another key issue that needs addressing in impact assessment is using the status quo, rather than the base case, as a basis for comparison. This is highly misleading. Incorporating explicitly bounded scenarios (for example, about the declining level of employment in the forest industry due to changes other than the creation of protected areas) would require a more sophisticated approach, but results in a far more informative analysis.

For example, the importance of considering the fall-down effect has been discussed in Section 2.5. It was also used as a benchmark to compare two withdrawal scenarios in Section 4.3. Comparing these two scenarios against the current harvest level, the status quo, only makes sense for a short-term analysis. It fails to show the implications for the long-term. This is important for broadening the options available, and is also is a valid concern in its own right.

To create a base case scenario, an analyst would need to look at trends in detail. In Section 2.5, both the increased mechanization and the fall-down effect were identified as important trends that reduce forest sector employment. Examining how these trends have changed in relation to the volume of timber harvested would be a starting point for a more
detailed analysis. How far back in the historical data one looks, and how much one expects the rate of decline in the past to vary in the future, are both important judgments and should be made explicit in the analysis. In addition, both assumptions should be subject to sensitivity analysis to determine how much they influence results.

In a situation where the stakes are so high, such as forest land disputes, it seems reasonable to spend more resources on this aspect of the analysis, and less on collecting purely descriptive information such as how many different species of birds inhabit one stratum of the forest canopy. The latter may be of interest to the biologist; the former is of interest to all the taxpayers of the province.

4.6 Summary

Both value information and technical information are needed to make difficult forest land use decisions. The value information is particularly important for defining the problem and building a framework to generate options, identifying the technical information needed to assess options, and guiding the assessment of the impacts of those options. The negotiative mode of decision-making has been adopted to improve the incorporation of public values into the decision-making process. However, values are poorly articulated in these negotiations, making it difficult for stakeholders to move from (to use Fisher and Ury's language) positional to interest-based bargaining. It is thus difficult to fashion a win/win agreement among stakeholders. Also, scarce resources are devoted to collecting descriptive technical information with limited usefulness to aid the decision-making, option generation is unimaginative and usually limited in scope, and impact assessment relies heavily on the implicit judgment of technical experts. A final major concern is using the status quo (what occurs now), rather than the base case (what is likely to occur) as the basis for comparing impacts. This distorts the effect of impacts, in particular it overestimates the negative effects of withdrawals of forest land from the commercial land base on forest sector employment.
CHAPTER 5. CONCLUSION

This study has shown that improvements could be made to clarifying values, generating options, collecting technical information, and assessing options when using consensus-based processes to try and resolve difficult forest land use issues. The main recommendations are discussed below.

A clear understanding and communication of stakeholders' values is critical to define the problem and provide the framework for generating options, collecting technical information, and assessing options. Therefore, adopting techniques that improve stakeholders' understanding of their own values, and their ability to communicate them with others, is critical. A variety of approaches are discussed in this thesis, and their usefulness may vary with the situation. For large, complex and highly polarized negotiations, the objectives hierarchy approach is proposed. Its main advantage is that it forces stakeholders to examine their own values by the use of a simple rhetorical approach: what is important and why? It is simple, but powerful. Objectives also provide a yardstick against which options can be compared, to see how well they perform in meeting those objectives.

The importance of generating options may be overlooked during negotiations and stakeholders may rely on their positions, rather than their underlying interests, to generate options. Thus, they reach for the familiar, the status quo, and options are generated as increments from the status quo. A better approach is to have a clear idea of these underlying interests, and think of ways to try and meet them. Simple rhetorical questions are again useful: how are objectives achieved and what measures will be used to assess whether they are achieved? This focuses thinking on trying to create options that meet those objectives, and on further defining the problem. It may also be a useful exercise to purposely abandon the familiar, and examine underlying assumptions. This will help clarify the why aspect of what is important.
and will further assist stakeholders to identify opportunities to address their underlying interests and find win/win solutions.

A classic mistake made in negotiations is to collect technical information before the problem is well defined and before options are generated. Generally, information is collected without any idea of how it will be used to support the decision-making process. This results in reports loaded with descriptive and inventory information. A better approach is to clarify values, generate options; then the technical information needed to assess those options is more readily identified and can be focused on collecting functional, rather than descriptive, knowledge. This is a much more defensible use of scarce resources, since the information collected will be used to help evaluate and inform the decision-making.

There are a myriad of techniques available for assessing options. However, a common failure is to compare the options to the status quo rather than the base case. The status quo only gives a estimate of current conditions, and can be very misleading. Of particular concern to forest planning is the decline in employment due to increased mechanization and the fall-down effect. Failure to account for these trends, by comparing options to the status quo, overestimates the effect of reducing harvest levels on employment. The base case, which accounts for these trends, provides a more realistic estimate of jobs losses with and without withdrawals for preservation. The high stakes, and the potential amount of taxpayer dollars involved, justify making analyses more sophisticated and more realistic by explicitly incorporating judgment and uncertainty to create base case scenarios, and when assessing the options that should be compared to the base case.

While it appears that a lot of learning occurs in these consensus-based processes (especially about technical issues and governance), it is difficult for stakeholders to make the necessary hard tradeoffs in these decisions. The above recommendations focus negotiations on the issue of value tradeoffs, the most fundamental conflict in forest land use disputes. Experimentation with this approach will help clarify the strengths and weaknesses of negotiations to resolve these difficult issues.
APPENDIX I: KEY INFORMANTS

Brubacher, Keith. Program Analyst, Information and Privacy Section, Ministry of Forests, Victoria, B.C.

Lang, Andrea. Timber Supply Analysis Forester, Ministry of Forests, Vancouver, B.C.

O’Gorman, Denis. Commission on Resources and Environment, Victoria, B.C.

Prescott-Allen, Robert. Strategy Director of the Clayoquot Sound Sustainable Development Steering Committee, Metchosin, B.C.

Townsend, Gary. B.C. Manager, Resource Economics, Economics and Trade Branch, Ministry of Forests, Victoria, B.C.
APPENDIX II: EXAMPLE OF A DETAILED TARGET

Source: Clayoquot Sound Sustainable Development Strategy Steering Committee 1992b, p. 5.4

Target 1.1: As large an area as possible of viable natural ecosystems.
At a minimum keep natural:

a. At least 10% of each major natural ecosystem of Western Vancouver Island, ensuring that this includes viable examples of every ecological community.* Major natural ecosystems of the land are biogeoclimatic variants and lakes. Major natural variants of the sea are the marine and coastal features listed in Box 6.6 (Chapter 6). An ecological community is a group of plants, animals and other organisms that reflects a particular combination of living conditions (substrate; microclimate; type, frequency and duration of disturbance).

b. An area suitable for baseline monitoring.

c. Areas for protecting ecological communities, species and populations that are rare or highly sensitive to human disturbance.

d. Priority areas for wilderness recreation and tourism.

e. Important heritage sites.

f. Fish and shellfish spawning and rearing habitat.

g. Areas that are highly erodible if the original vegetation is removed.

Items "a", "b" and "d" need protection in parks and reserves (Chapter 6). Items "c", "e" and "f" call for a combination of protected areas (Chapter 6) and management of forest uses (Chapter 7) and coastal uses (Chapter 8). Item "g" requires management of forest uses (Chapter 7).

The above areas could overlap. For example, an area suitable for baseline monitoring might also be suitable for wilderness recreation. However, the overlap is unlikely to be complete, so the total area kept natural will probably be significantly greater than 10% of the total land area.

*Several members of the Steering Committee have reservations about this target.
APPENDIX III. PRELIMINARY ATTRIBUTES FOR THE HYPOTHETICAL OBJECTIVES HIERARCHY

- **Objective 1. Maximize wilderness preservation.**

Describe the area to be affected and how it will be affected using the following:
- % of land area affected
- area affected by road access
- # of biogeoclimatic units affected

- **Objective 2. Minimize environmental impact.** (Constructed Scale)

<table>
<thead>
<tr>
<th>Level</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No impact</td>
<td>• no change</td>
</tr>
<tr>
<td>2</td>
<td>Low impact</td>
<td>• avoidance of effect likely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• effect short-term, recovery likely</td>
</tr>
<tr>
<td>3</td>
<td>Moderate impact</td>
<td>• effect short-term but localized</td>
</tr>
<tr>
<td>4</td>
<td>High impact</td>
<td>• avoidance of effect unlikely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• permanent or large scale effect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• lethal effect to significant portion of resource</td>
</tr>
</tbody>
</table>

- **Objective 3. Maximize economic benefits.**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>To communities:</td>
<td>Number of permanent jobs maintained.</td>
</tr>
<tr>
<td>To province:</td>
<td>Net revenues to in present value terms.</td>
</tr>
<tr>
<td>To businesses:</td>
<td>Net revenues to present value terms.</td>
</tr>
</tbody>
</table>

- **Objective 4. Maximize social and political acceptability.** (Constructed Scale)

**Affected Groups**

<table>
<thead>
<tr>
<th>Level</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Best</td>
<td>Affected groups have confidence in Clayoquot Sound planning process; viewed as progressive model for land use planning.</td>
</tr>
<tr>
<td>2</td>
<td>Worst</td>
<td>Affected groups lack confidence in Clayoquot Sound planning process; open hostility between key groups; key groups complain to media about process.</td>
</tr>
</tbody>
</table>

**General Public**

<table>
<thead>
<tr>
<th>Level</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Best</td>
<td>Widespread support for land use decision; laudatory comments in international press.</td>
</tr>
<tr>
<td>2</td>
<td>Worst</td>
<td>Widespread civil disobedience; acceleration of harvest by forest companies; world-wide negative media exposure; boycott of B.C. forest products.</td>
</tr>
</tbody>
</table>
REFERENCES


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1993e. Economic considerations in the Clayoquot Sound land use decision. Photocopied.


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