

**Achieving Biodiversity Conservation Objectives:  
A Case Study of Canada's Forest Industry**

**By Candice Dorma**

**A Thesis Submitted in  
Partial Fulfillment of the  
Requirements for the Degree  
Master of Natural Resources Management**

**The Natural Resources Institute  
University of Manitoba  
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**BY**

**Candice Dorma**

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University  
of Manitoba in partial fulfillment of the requirements of the degree  
of  
Master of Natural Resources Management**

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## **ABSTRACT**

The purpose of the project was to focus on the biodiversity conservation efforts of Canada's major forest companies, and their certification status. The goals were to determine the effectiveness of the industries conservation policies, and to examine their commitment to biodiversity objectives. Another component of the study was to examine four major certification schemes, which many companies are implementing or considering showing and improving their commitment to sustainable forest management. These four certification systems are: 1) forest certification by the Forest Stewardship Council (FSC); 2) *FORESTCARE*; 3) the Canadian Standards Association (CSA); and 4) ISO 14001 certification of environmental management systems through the International Organization for Standardization (ISO 14001).

The specific objectives of the study were: to document biodiversity conservation criteria and indicators from the literature; to collect data relating to biodiversity conservation from forestry companies; to analyze and evaluate company operations in relation to biodiversity conservation criteria and indicators; and finally, to draw conclusions based on the evaluation.

This study involved eight major forest companies across Canada. Each of the companies was chosen to represent each of four geographic regions in the country; Atlantic Canada, Ontario, the Prairies and British Columbia. The companies involved in the study were: Stora Enso Port Hawkesbury; Domtar; Tolko Canada Limited; Tembec Incorporated; Weldwood of Canada; Weyerhaeuser Canada; Western Forest Products; and Canfor Corporation. Personal and structured interviews were conducted with regional managers, biologists and superintendents of forestry divisions.

The concept of conservation of biodiversity is well understood throughout the companies interviewed and progress has been made in efforts to conserve biodiversity. Implementing sustainable forest management plans to enhance and conserve biodiversity is often a complicated and frustrating process.

Research involving biodiversity conservation and certification needs to be continued. Greater detail into these issues is required to provide unbiased and intelligent information for the entire forest industry and government.

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## Chapter One

### *INTRODUCTION*

#### 1.0 BACKGROUND

*“Biodiversity (biological diversity) refers to the variability among living organisms and the ecological complexes (ecosystems) of which they are a part. It is measured or observed at three different levels – ecosystems, species and genes.”*

- CCFM 1997

Conserving biological diversity is one of the most important environmental issues that we are facing today. It is now recognized that human activities are threatening natural resources, resulting in the loss of key elements and processes that characterize biodiversity.

If conservation of biodiversity is not seriously considered, elimination of life forms, loss of genetic material, and disruption of natural processes will continue to increase (Baydack and Campa 1999). Loss of biological diversity will also generate costs to society that can be described in terms of traditional economic indicators, social implications, ethical considerations, aesthetic factors, and spiritual components.

Over approximately the last 15 years, concern over the conservation of biological diversity has grown world-wide (Baydack and Campa 1999). A major contributor to this recognition was the Rio Conference on Environment and Development in 1992. A result of that meeting was that the United Nations Convention on Biological Diversity was refined and ratified on December 29, 1993. Canada was one of the first nations to ratify the convention and there are now about 150 countries that are signatories.

The purpose of the Convention was to stress the need for the further development of scientific, technical, and institutional capabilities concerning information and knowledge about biological diversity. The response has been for most countries to start developing general strategies and assessments to show commitment to the basic principles of the Convention (Baydack and Campa 1999).

The Canadian Biodiversity Strategy has been developed as a guide to implementing the Biodiversity Convention in Canada (CBS 1995). The Strategy recognizes current constitutional and legislative responsibilities in Canada, while promoting intergovernmental cooperation to further advance ecological management. Federal, provincial and territorial governments, along with the general public and stakeholders, will pursue the strategic directions detailed in the Strategy in accordance with their policies, plans, priorities and fiscal capabilities. The conservation of biodiversity and sustainable use of resources must be sought in conjunction with social and economic goals. In order to protect Canada's natural legacy, decisions must be made that consider both current and future generations.

In Canada, the Canadian Council of Forest Ministers (CCFM) launched a process to define criteria and indicators to be used in the sustainable management of Canadian forests (CCFM 1995). The process was managed by a Steering Committee made up of representatives from government, industry, environmental organizations, Aboriginal groups, associations of small-woodlot owners, and the academic community. This work was also supported by a Science Panel and a Technical Committee of experts picked from a variety of organizations. A diverse group provided a broad range of views, and ensured that the criteria and indicators would represent the best available knowledge. The guidelines that have been developed are intended to provide a common understanding of what is meant by sustainable forest management in the Canadian context, and the criteria and indicators are to be used by companies to evaluate their operations in meeting biodiversity objectives.

In addition, The Wildlife Society (TWS) has established a Technical Committee on Wildlife Performance Measures for Ecosystem Management. This Committee is in the process of developing indicators for wildlife performance at the genetic, species/populations, communities/ecosystems and regional landscapes levels. These measures could again be useful to organizations in determining their success in conserving biodiversity. The Committee began meeting in July 1998, with the final draft to be submitted to TWS Council in September 2000 for discussion at TWS 7th Annual Conference in Nashville, Tennessee.

At the regional and local levels, industry must also make a commitment to the policies and guidelines for the conservation of biological diversity. The Earth's natural resources must also be managed in order to achieve sustainability for future generations. Many industries realize the importance of these goals and are committed to their success. The problem however, is that industry has not been able to assess their progress toward meeting biodiversity policies because of a general lack of suitable and objective criteria against which to compare their operations.

### **1.0.2 Importance of Forestry to Canada**

Forests cover nearly half of the Canadian landscape, about 418 million hectares. Forests are integral to the environment, economy, culture and Canada's history (CCFM 1998).

The public owns the majority of the forests, with 71 percent controlled by the provinces. Twenty-three percent are federally owned; some are managed by or in cooperation with the territorial governments and the remaining forested land is under private control (CCFM 1998). Of the 417.6 million hectares, 22.8 million are considered as "heritage forests" and are protected by law to remain in their natural state. Another 27.5 million hectares are recognized as "protection forests," where timber harvesting is not permitted. Commercial forests, which are capable of producing timber and a range of other benefits, cover 235 million hectares. Of this area, 119 million hectares are managed primarily for timber production, while the remainder has not been assessed. The balance consists of open forests comprised of natural areas of small trees, shrubs and muskeg (CCFM 1998).

The forest industry is Canada's largest single employer. According to Pricewaterhouse Coopers, in 1998, more than 200,000 people were directly employed in all aspects of the forest industry – from mill workers to tree planters (Dialogue 1999).

Forestry is Canada's number one economic force. In 1997, total industry sales exceeded \$52 billion; industry payments to all levels of government (taxes, etc.) were close to \$5 billion; and employee salaries and benefits exceeded \$15 billion (Dialogue 1999). In addition to timber harvesting, forests also support other industries, which

provide billions of dollars in sales. These industries include tourism, recreation, wild foods, fur trade, Christmas trees and maple products (CCFM 1998).

Not only do forests contribute significantly to Canada's economy, they also provide habitat for wildlife, which includes plants, animals and microorganisms. Forest ecosystems moderate climate and provide clean air and water. They enrich soil, prevent erosion, and regulate water flow. They also provide wild and managed areas for the cultural, spiritual and recreational benefit for all Canadians (CCFM 1998).

## **1.1 PROBLEM STATEMENT**

Presently, industry has an ideal opportunity to develop strategies and undertake actions to proactively manage for biodiversity conservation. This opportunity has grown from increased public pressures to conserve our environment for current and future generations, and the key to this challenge is the conservation of biodiversity (CCFM 1998). To try to conserve biological diversity, many companies are implementing unique approaches to decrease their impacts on natural systems. In particular, the forest industry in Canada appears to have successfully replied to these challenges by integrating sustainable practices into their everyday operations. However, there has been confusion concerning which guidelines this important industry can use to judge their actions.

## **1.2 PURPOSE AND OBJECTIVES**

This project focused on the biodiversity conservation efforts of eight major forest corporations in Canada. The main purpose was to determine the industries understanding of biodiversity, the effectiveness of their conservation policies, and to examine their commitment to conservation objectives. A close look was also taken at the four dominant certification systems in Canada. An evaluation of these systems was critical to understand the challenges and confusion industry is faced with when developing conservation objectives and biodiversity targets and measures.

The research objectives of this project were to assess the effectiveness of the forest industry's biodiversity conservation strategies. Specifically, this included:

1. To document biodiversity conservation criteria and indicators from the literature and other sources.
2. To collect data relating to biodiversity conservation from forestry companies.
3. To analyze and evaluate company operations in relation to biodiversity conservation criteria and indicators.
4. To draw conclusions and recommendations based on the evaluation.

This study focused on four forest certification schemes, which many companies are considering or have implemented to improve and show their commitment to sustainable forest management. These four certification systems include: 1) forest certification by the Forest Stewardship Council (FSC); 2) *FORESTCARE* certification by the Alberta Forest Products Association; 3) the Canadian Standards Association (CSA); and 4) ISO 14001 certification of environmental management systems through the International Standards Organization (ISO 14001).

The forest industry must be committed to conservation of biodiversity in order for certification systems and policy and guidelines to be effective. It is important to have commitment throughout the industry for the smooth implementation of strategies and increase cooperative relationships with other sectors, such as the general public and government. A study conducted by the Canadian Pulp & Paper Association (CPPA), using certification intention surveys, reveals a clear indication of Canada's strong commitment to leadership and excellence in the field of forestry (Bulletin 2000).

### **1.3 METHODS**

This study was completed over a 1-year period in a series of stages, which relate to the above objectives. The first stage (3 months) was the collection and classification of biodiversity conservation criteria, measures and indicators. Sources of information for this stage included the Internet, various libraries, and offices of government and other



organizations. A list of companies to be included in the study was compiled to represent the various regions throughout Canada. Contact with the companies was conducted by e-mail. A request was made for a copy of their latest annual report.

The second stage (3 months) involved data collection from eight Canadian forestry operations. With the information contained in the annual reports and from the literature, data was compiled into a matrix table to represent the status of each company's certification process. During this stage, an interview guide was developed and sent by e-mail to each of the companies. This gave the individuals to be interviewed some time to prepare in advance. Personal interviews with the companies were completed in a four-week period. The companies involved in the interviews were: Stora Enso Port Hawkesbury; Domtar; Tembec Incorporated (Pine Falls Paper Company); Tolko Canada Limited; Canfor Corporation; Western Forest Products; Weyerhaeuser Canada; and Weldwood of Canada. The companies were interviewed in that order, respectively.

The third stage (3 months) was the analysis and evaluation of the data collected. The information gathered from the literature and interviews was compiled into a matrix table to determine each company's status concerning certification (see Table 1).

The fourth stage involved the development of conclusions and recommendations from the previous 3 stages. Conceptually, the project should be able to identify the most appropriate indicators to be used in determining the success of biodiversity conservation in the forest industry. Forest companies and/or countries throughout the world in judging their operations could then utilize this set of guidelines, with modifications for different locations. Of course, the work for this project will also be of considerable benefit to the forest industry. Not only will the study help to determine the effectiveness of their individual biodiversity conservation efforts, but also perhaps more importantly it will establish a national standard for all companies to follow in achieving biodiversity objectives.

#### **1.4 ASSUMPTIONS AND SCOPE**

The scope of this project included information gathered through interviews with eight forestry operations throughout Canada. The research involved evaluating company

operations and producing a report detailing what policies and guidelines are most effective for the conservation of biological diversity. These policies and guidelines can originate from within the company itself, or from a defined certification system. The report identifies what certification system is the most successful and where there is need for improvement. Finally, the project will help to establish the most effective policies and guidelines for use in the forest industry on a worldwide basis.

### **1.5 IMPORTANCE OF RESERACH**

The importance of this research cannot be overemphasized. Biological diversity must be maintained and conserved for current and future generations. The forest industry can serve as a model for the achievement of this goal by implementing the most effective policies and guidelines for the conservation of biodiversity. Canada can lead the way in the development of the appropriate indicators for industry to use in judging their success in meeting biodiversity objectives. These criteria can then be applied to any forest or other resource-based industrial application throughout the world, establishing our country as a world leader in the conservation of biological diversity.

## **Chapter Two**

### ***METHODS***

#### **2.0 DATA COLLECTION PROCESS**

##### **2.0.1 Literature and Document Review**

The first phase of the data collection process began with an extensive review of the literature on forest management and biodiversity conservation. Literature concerning biodiversity objectives, measures and indicators was also evaluated in great detail. The author to achieve an in-depth understanding of the issue and current status of forest biodiversity conservation in Canada used this information.

A review of the four major certification systems in use in the world was then completed. A document review of the each system was also carried out at this time. This review was used to supplement the literature and design of the interview guidelines. The main avenues of research were library searches and personal requests for more peer-reviewed journal articles. Other sources included government documents and Internet searches.

A list of major forest companies was provided to the researcher with names of key individuals from each. The list was compiled with help from the members of the advisory committee and external consultants, in particular Greg Wickware of GeoSpatial International. This single-stage sampling procedure was chosen because the researcher had access to names in the population and could interview them directly (Creswell 1994). From this initial list of names, more contacts were discovered through a method known as snowball sampling (Babbie 1998). Snowball sampling is suitable when the members of a special population are difficult for the researcher to locate (Babbie 1998).

The snowball technique allows a researcher to begin the sampling process with an identified, primary individual from an organization or agency who is used to identify other key informants (Babbie 1998; Chadwick, Bahr and Albrecht 1984). The initial person is selected on the basis of criteria of importance to the study objectives. In this case, individuals selected were senior members of each company's forest management team who had a working knowledge of biodiversity conservation. From discussions with

the primary contact, additional individuals are identified of that same population whom they happen to know (Babbie 1998; Chadwick, Bahr and Albrecht 1984). The result is the aggregation of a large body of individuals from an organization (i.e. 'snowball') who accumulate to provide a much greater amount of information that could have been offered by the primary contacts (Babbie 1998). These additional contacts provided information that proved valuable to the research. Interviews were conducted with individuals from the Canadian Pulp & Paper Association in Montreal, and Natural Resources Canada in Ottawa.

Annual reports were obtained through the mail from each of the companies in the study. This was in response to an e-mail sent out by the researcher requesting information. This initial e-mail was delivered to senior management within each company.

Eight of the forestry companies responded to the request and provided the annual reports in addition to several other informative documents. These documents included forest management plans and information on the company's position regarding the conservation of biodiversity. A second email was delivered to each of the senior managers to provide further details concerning the research project, and to determine their willingness to participate in the study.

## **2.0.2 Development of Interview Guide**

The second stage of the data collection involved the development of an interview guide. The guide was used to conduct personal interviews with the chosen people from each forestry company.

The survey design was cross-sectional, which is the most frequently used study design, versus a longitudinal survey (Babbie 1990). The data was collected at approximately point in time, not collected at different points in time, where changes in descriptions and explanations are reported (Babbie 1990; Creswell 1994). A cross-sectional survey design allowed for data collection from a sample selected to describe the larger population of Canada's forest industry (Babbie 1990). Due to time and budget constraints, this was the most effective method to utilize for the research. The cost of

conducting face-to-face interviews is higher than other methods, such as telephone surveys, which limits the number of interviews that can be afforded (Chadwick, Bahr and Albrecht 1984). However, personal interviews were chosen over a mail and telephone surveys for several reasons as discussed below.

The interview guide contained open-ended questions, which required significant detail and explanation from the respondent. A major disadvantage of telephone interviews is that they tend to be very brief and limiting (Chadwick, Bahr and Albrecht 1984). A face-to-face interview allows for more probing of the respondents in order to clarify answers and questions (Dillman 1978). It can be argued that personal interviews can also allow for personal interpretation of respondent answers (Babbie 1990; Dillman 1978). The researcher was aware of this point and, therefore, detailed notes were taken throughout the interview, with no room for personal opinion.

With a mail survey or questionnaire, the absence of an interviewer allows for an increase in the number of “don’t know” and “no answers” (Babbie 1990). Interview surveys; have characteristically achieved higher completion rates than self-administered ones (Babbie 1998). A face-to-face interview can minimize these types of responses by the interviewer probing for answers. A face-to-face interviewer can also ask questions which might arise during the interview, and observe the respondents behavior. For example, whether the respondent had difficulty communicating was hostile, or appeared to be lying (Babbie 1990).

Another advantage of the personal interviews was that there was no substitution of the respondents. It is common practice in mail and telephone surveys for the substitution of an available person for one that cannot be contacted (Dillman 1978). It has also been suggested that when dealing with a complicated issue, such as the conservation of biodiversity, the mail survey is less effective because of the lack of communication between the researcher and the respondent (Babbie 1989). With conducting in-person interviews instead of telephone surveys, the researcher was able to obtain the information in the natural field setting instead of a designated “place” (Creswell 1994). Although telephone interviews and mail surveys or questionnaires are much less expensive, face-to-face interviews are much more appropriate for complicated issues (Babbie 1998).

There are several different types of interviews (Punch 1998). Three main types of interviews are described as: the informal conversational interview, the general interview guide approach and the standardized open-ended interview (Patton 1980 in Punch 1998).

An interview guide method was used instead of a standardized questionnaire to allow for flexibility with no pre-set response categories, while still providing structure during the interview (Punch 1998). The guideline provided the framework for both the researcher and the respondent. The questions were purposely structured to start in a broader context concerning biodiversity, and then increasingly focus on what methods each individual company was utilizing to achieve their goals. There were eleven questions in total. (Please see Appendix 1).

The interview guide was developed with the help of the advisory committee, and was reviewed by the Ethics Committee at the Natural Resources Institute, University of Manitoba.

### **2.0.3 Interview Process**

The third stage of the data collection involved the interview process. This process was carried out with each of the companies involved in the research project (Please see Appendix 2). Each interview was administered by Ms. Candice Dorma.

Prior to the visits to each of the companies, the final interview guide was faxed or emailed to the individual in the company who would be participating in the interview. The purpose of this was to provide the respondents within the company time to consider the questions and prepare their responses.

The companies chosen for the interviews were determined from an initial contact list. Companies that responded to the initial email requesting Annual Reports were chosen to participate further in the project. An additional contact was made to each company to request a convenient time to conduct a personal interview. Regional representation across Canada was essential with Atlantic Canada, Ontario, the Prairies and British Columbia chosen to be in the study.

The first trip was to Nova Scotia, Ontario and Quebec in November of 1999. A total of three interviews were conducted. Two were with forestry companies and one with

a government agency. Upon return to Winnipeg, another two interviews were conducted with two forestry companies from Manitoba. Each interview was approximately two hours long.

The next trip took place in December of 1999 to British Columbia, with visits to Vancouver and Williams Lake. A total of four interviews were conducted with four forestry companies. These interviews took approximately 1 to 1.5 hours each.

Before each interview began, an open discussion was held between the researcher and the respondent to determine each person's level of understanding of biodiversity and how he or she defined the concept. Each respondent was informed in greater detail of the scope and purpose of the research. During the interview, they were also given opportunities to ask any questions at any time. The discussion and respondents answers were recorded by hand during the interview session and were later typed into a computer.

## **2.1 DATA ANALYSIS PROCESS**

The amount of data that was collected through the face-to-face interviews was voluminous. In the analysis of qualitative data, several simultaneous activities occur, such as the collecting information from the field, developing categories for the data, formatting the information into a story or picture, and writing the qualitative text (Creswell 1994). The analysis of this vast amount of data requires that the researcher must be comfortable with creating categories and making comparisons and contrasts (Creswell 1994). It is also critical that the researcher be open to possibilities and contrary or alternative explanations for the results (Creswell 1994).

The qualitative analysis was based on data reduction and interpretation (Marshall & Rossman 1989 in Creswell 1994). This process can also be called "de-contextualization" and "re-contextualization", where the analysis consists of taking apart the data to form a larger picture (Tesch 1990 in Creswell 1994).

The data from the personal interviews was categorized by questions from the interview guide, and interpreted to develop five matrix tables. Matrices are an effective method to display the information (Miles and Huberman 1984 in Creswell 1994). It is a spatial format, which presents the data to the reader systematically. Each table highlights

important questions from the interview guide, and compares and contrasts the information collected during the interviews. The questions extracted from the guide were:

1. What does conservation of biodiversity mean to your company? (Table 1)
2. Has your company established biodiversity objectives / targets? (Table 2)
3. How is each level within your company achieving its objectives relating to the conservation of biodiversity? (Table 2)
4. What is your company's response to the Canadian Council of Forest Ministers Criteria and Indicators? (Table 3)
5. Is your company working towards certification / registration? If yes, what guidelines are being followed? (Table 4)
6. Where does your company see the need for the most improvement conserving conservation of biodiversity? (Table 5)

These questions were analyzed, because they provided the best picture of where the eight companies stand concerning the conservation of biodiversity and certification. Information from these questions related directly to the first four criteria of the Canadian Council of Forest Ministers Criteria & Indicators (Please see Appendix 3). The matrices allow the reader to understand the basic framework behind each company's conservation objectives and certification goals. The matrix format also depicts the differences and similarities between each company. Overall, the matrices show the relationship among the various categories of information in an effective and straightforward manner, both for the researcher and the reader (Creswell 1994).

## **2.2 EVALUATION OF EFFECTIVENESS**

To evaluate the effectiveness of company strategies, the evaluation process must assess whether or not the actions of the companies has conformed to the procedures outlined in each management plan and certification standard (Freeman 1970). The success of the certification standards and sustainable forest management policies depends on whether the operating personnel are conforming to the mandates of policy-making personnel (Freeman 1970).



The evaluation of the effectiveness of the actions taken to achieve sustainable forest management and certification was done by comparing each of the companies to the Canadian Council of Forest Ministers Criteria & Indicators (CCFM C&I). This document was used because of its national significance, and its widespread use throughout the forest industry as a framework for management plans.

Through the data collection and interview process, company strategies were compared to Criteria 1, 2, 3 and 4 from the CCFM C&I documents (Please see Appendix 3). Each of the companies uses the CCFM C&I, some more than others, as a basis for their individual forest management plans. The companies, which have implemented the criteria into action plans, are deemed to be more effective in their efforts towards conservation of biological diversity and sustainable forest management.

## Chapter Three

### ***THE NEED FOR GUIDELINES***

#### **3.0 UNDERSTANDING THE NEED FOR BIODIVERSITY CONSERVATION**

##### **3.0.1 The Questions Surrounding Biodiversity Conservation**

Concern for the conservation of biological diversity has grown worldwide, as people have begun to recognize the degree to which human activities are threatening the Earth's natural ecosystems (CCFM 1998). Industry has its place in this global dilemma as they are faced with increasing responsibility. This is combined with the expectation that solutions must be developed in order to maintain competitiveness (CCFM 1998). But how can industry judge its effectiveness in meeting biodiversity conservation? What standards or guidelines exist, and how have they been developed? Are existing criteria the most appropriate, or should they be modified to ensure maximum efficiency? What systems are in place for companies to achieve sustainable forest management? What is the level of company commitment towards biodiversity conservation objectives? This chapter provides the background to help answer these questions and provides details on the issue of forest certification.

##### **3.0.2 Canada's Biodiversity Strategy**

In response to the *Convention on Biological Diversity* (the Convention), federal, provincial and territorial governments, with input from a wide range of non-government interests, developed the *Canadian Biodiversity Strategy* (the Strategy). Released in 1995, the Strategy consists of a comprehensive set of measures to address the Convention commitments and provides policy guidance for those making decisions about biodiversity (Government of Canada 1997). The underlying theme of the Strategy is improved coordination and increased harmonization of policies, programs and legislation in order to develop a cohesive policy framework for conserving biodiversity and sustainable use

of natural resources. The Strategy also commits governments to report on the specific policies and programs that are currently being undertaken, or that will commence to implement the measures contained in the Strategy (Government of Canada 1997).

### **3.0.2.1 Key elements of the Canadian Biodiversity Strategy**

The vision of the Strategy is to see “*a society that lives and develops as part of nature, values the diversity of life, takes no more than can be replenished and leaves to future generation a nurturing and dynamic world, rich in its biodiversity*” (Government of Canada 1997).

Guiding principles of the Strategy include the following (Government of Canada 1997):

- Biodiversity has ecological, economic, social, cultural and intrinsic values.
- All life forms, including humans, are ultimately connected to all other life forms.
- All Canadians are dependent on biodiversity and have a responsibility to contribute to biodiversity conservation and to use natural resources sustainably.
- All Canadians should be encouraged to educate themselves on the concept and values of biodiversity and to participate in decisions involving the use to air, water, land and other resources.
- An ecological approach to resource management is central to conserving biodiversity and using resources in a sustainable manner.
- Development decisions must represent ecological, economic, social, and cultural values.
- The knowledge, innovations and practices of indigenous and local communities should be respected, and their use and maintenance carried out with the support and involvement of these communities.
- The conservation of biodiversity and the sustainable use of natural resources should be carried out using the best knowledge available and approaches refined as new knowledge is gained.

- The conservation of biodiversity and the sustainable use of resources require local, regional, provincial, territorial, national and global cooperation and a sharing of knowledge, costs and benefits.

The five goals of the Strategy are: (Government of Canada 1997):

**1. Goal One – Conservation and Sustainable Use**

To conserve biodiversity and use biological resources in a sustainable manner

**2. Goal Two – Ecological Management**

To improve our understanding of ecosystems and increase our resource management capability.

**3. Goal Three – Education and Awareness**

To promote an understanding of the need to conserve biodiversity and use natural resources in a sustainable manner.

**4. Goal Four – Incentives and Legislation**

To maintain or develop incentives and legislation that supports the conservation of biodiversity and the sustainable use of natural resources.

**5. Goal Five – International Cooperation**

To work with other countries to conserve biodiversity, sustainably use resources and share equally the benefits that arise from the utilization of genetic resources.

**3.0.2.2 Success of the Strategy**

The Canadian Biodiversity Strategy is critical building block in Canada's efforts to achieve sustainable development and to maintain and enhance biodiversity. The degree to which the Strategy is able to strengthen Canada's capacity to conserve biodiversity and achieve sustainable development will be the measure of its success (CBS 1995). Some indicators that will determine if the Strategy is making a difference will be:

- The value and importance of biodiversity is reflected in the actions and decisions of all areas of society, from corporations to individual consumers, private property owners, and various levels of government.
- Existing information is being utilized to generate new knowledge about biological resources and communicating that knowledge in a useful, timely and efficient way.
- Planning and decision making is no longer based exclusively on a species-by-species or sector-by-sector basis, but are practicing ecological management.
- Opportunities are being created through technological innovation, application of traditional knowledge, scientific discoveries and new applications of sustainable use.
- Biodiversity is being maintained for future generations and contributing to conservation and sustainable use efforts worldwide through financial assistance, knowledge, expertise and exchange of genetic resources.

Successful implementation of the Strategy will require a coordinated approach between various levels of government and all sectors of society. This includes local and indigenous communities, businesses and industries, conservation groups, research and educational institutions, and individuals. It is critical that all stakeholders cooperate to achieve sustainable development and to successfully manage biodiversity.

### **3.0.3 Wildlife Habitat Canada**

The majority of the literature on biodiversity emphasizes the combined impacts of resource exploitation and modification of natural environments, which threatens many species by reducing their ranges and populations (WHC 1996). Many of these impacts affect habitats and, among other things, the maintenance of biodiversity encompasses

maintenance of habitat (WHC 1996). Wildlife Habitat Canada (WHC) has supported forest companies in their efforts to manage for biodiversity and is a project funder in the development of Canada's National Forest Strategy. Currently, there is little government regulation of activities designed to conserve biodiversity and companies have an ideal opportunity to develop the strategies and the expertise necessary to proactively manage for biodiversity conservation. Unfortunately, many do not have the resources or staff to implement an effective program (WHC 1996).

The Wildlife Habitat Canada Forest Biodiversity Program was created to meet this challenge (WHC 1996). The program is a partnership between WHC and forest companies wanting to develop management strategies that include objectives to conserve biodiversity. The purpose of the program is to allow companies to integrate policies and guidelines for conservation of biodiversity into their operations. Companies will have to develop objectives for biodiversity conservation and design and implement the measures necessary to meet the objectives (WHC 1996). The WHC Forest Biodiversity Program has been created to be flexible, and is guided by a Steering Committee composed of representatives from WHC and participating companies. A Science and Management Advisory Committee, with members from outside industry, review the process and products of the program to ensure they are technically sound.

#### **3.0.4 Canadian Council of Forest Ministers**

The Canadian commitment to sustainable forest management is described in the National Forest Strategy called *Sustainable Forests: A Canadian Commitment*, endorsed in March 1992 by governments and others concerned with Canada's forests (CCFM 1995). This commitment is further strengthened by a number of initiatives at the provincial, territorial, and local levels. The 1992 United Nations Conference was recognized as an important starting point, with the adoption of a Statement of Forest Principles as part of Agenda 21.

The development of criteria and indicators for sustainable forest management is a critical step in implementing Canada's commitments in the national forest strategy, and

the forestry commitments made at the UN Conference (CCFM 1995). The Canadian framework of criteria and indicators reflects an approach to forest management that is based on:

1. The need to manage forests as ecosystems in order to maintain their natural processes;
2. The recognition that forests simultaneously provides a broad range of environmental, economic, and social benefits to Canadians;
3. The view that an informed, aware, and participatory public is critical in promoting sustainable forest management; and,
4. The need for forest management to evolve to reflect the best available knowledge and information.

The criteria and indicators create a framework for describing the state of forests and forest management, and for demonstrating successes in implementing sustainable forest management. Canada's national Criteria are:

- Conservation of biological diversity
- Maintenance and enhancement of forest ecosystem condition and productivity
- Conservation of soil and water resources
- Forest ecosystem contributions to global ecological cycles
- Multiple benefits to society
- Accepting society's responsibility for sustainable development

These Criteria identify those elements of the forest ecosystem, including the social and economic system, that must also be sustained or improved (CCFM 1995). They are further intended to:

- Clarify sustainable forest management and provide a framework for describing and assessing progress at a national level;

- Provide a benchmark for the development of policies on the conservation, management, and sustainable development of forests;
- Contribute to the clarification of issues related to environment and trade, including product certification;
- Provide concepts and terms to assist with the on-going domestic and international dialogue on sustainable forest management; and,
- Improve the information available to the public and decision-makers.

Under the six Criteria that are listed above, there are 22 elements and 83 indicators. Some of the Elements include: ecosystem diversity, species diversity; genetic diversity; disturbance and stress; global carbon budget; non-timber values; Aboriginal and treaty rights; and informed decision making. There is a minimum of one and a maximum of eight Indicators under each of the twenty-two Elements. (Please see Appendix 3 for the complete CCFM chart).

No single criterion or indicator can measure sustainability independently (CCFM 1997). The significance of the criteria, indicators and elements is that together, they can highlight trends or changes in the status of forests (CCFM 1997).

Some of the indicators deal with rather new ideas, and to date there is no process in place to monitor them across Canada. It is easier to evaluate traditional indicators such as timber values because the data for those indicators have been collected for several years (CCFM 1997). It is a much greater challenge to assess indicators for non-timber values. For example, measuring the area of forestland available for subsistence purposes or conserving biodiversity at the genetic, ecosystem or species level (CCFM 1997). The CCFM (1997) recognize that forests produce much more than timber, and these non-timber values must be incorporated into forest management plans.

Canada has been actively involved in two initiatives for the purpose of defining criteria and indicators for boreal and temperate forests (the "Montreal Process"), and for forests in Europe (the "Helsinki Process"). The Canadian criteria and indicators have been created to work with these international processes, while providing more detail and precision on values of importance to Canada (CCFM 1995). This framework will



facilitate Canada's international reporting and provide the basis for future cooperation on developing and harmonizing international criteria and indicators.

### **3.0.5 Other Features of Indicators**

Indicators can and no doubt will be used extensively in future to measure biodiversity. Some general principles that should be applied to the selection of indicators need to be considered. Ideally, an indicator should be (Cook 1976; Sheehan 1984; Munn 1988, Noss 1989):

1. Sufficiently sensitive to provide an early warning of change;
2. Distributed over a broad geographical area, or otherwise widely applicable;
3. Capable of providing a continuous assessment over a wide range of disturbance;
4. Relatively independent of sample size;
5. Easy and cost-effective to measure, collect, assay, and/or calculate;
6. Able to differentiate between natural cycles or trends and those induced by anthropogenic stress; and
7. Relevant to ecologically significant phenomena.

### **3.0.6 Guidelines for the Conservation of Biodiversity**

Presently, adequate processes have not been developed for the maintenance and conservation of biological diversity. A successful process must be ecologically sound; partnership based, derived from adaptive management principles, and has the support of all interested parties (Kernohan and Haufler 1999). Conservation of biodiversity requires

recognizing and balancing trade-offs, while at the same time maintaining the complete range of ecological processes.

In order to assess what policies and guidelines will have the most significant impact on the conservation of biological diversity, certain factors must be considered. To implement the best strategy the following guidelines must be part of the process (Kernohan and Haufler 1999):

1. Identify objectives and limiting factors;
2. Identify the extent of the planning landscape and plan duration;
3. Select an appropriate classification system and map it at an appropriate resolution;
4. Identify biological diversity problems based on limiting factors;
5. Involve needed partnerships;
6. Design public relations and involvement steps; and
7. Monitor in an adaptive management framework.

#### **3.0.6.1 Describe Objectives and Identify Limiting Factors**

One of the biggest challenges facing the conservation of biological diversity is understanding how biodiversity should be measured and maintained across a planning landscape (Kernohan and Haufler 1999). The conservation strategy that is chosen will determine how biodiversity is measured. For successful implementation of the strategy, the first step of each approach is the clear statement of the objectives and limiting factors.

An approach described by Haufler et al. (1996) is one that combines a coarse-filter that is defined as adequate amounts of inherent ecosystems with a species assessment as a check on the coarse-filter. This method uses an ecosystem diversity

matrix as a tool to describe the landscape with regard to land potential and vegetation growth stages. The objective is maintenance of adequate ecological representation (i.e., sufficient amount and distribution of inherent ecosystems to sustain viable populations of all native species - Haufler 1994). The limiting factor in this approach is landscapes lacking the threshold level for adequate ecological representation of one or more inherent ecosystems.

### **3.0.6.2 Identify Appropriate Spatial and Temporal Extent**

Appropriate spatial and temporal scales must be identified in order to maintain biodiversity. Determining the complexity and organization of spatial scales is best achieved by using hierarchical theory (Kernohan and Haufler 1999). Temporal scales must be considered to understand the duration of natural and human induced disturbances, successional trajectories, appropriate planning horizons, and the length of any historical perspectives.

There are four criteria that should be considered when delineating a planning landscape (Haufler et al. 1996):

1. Similar biogeoclimate conditions that influence site potentials,
2. Similar historical disturbance regimes that influence vegetation structures and species compositions,
3. Adequately sized landscape to provide sufficient ranges of habitat conditions to insure population maintenance of the majority of native species that historically occurred in the planning landscape, and
4. Recognition of maximum size to avoid practical limitations of data management, implementation restrictions, and number of cooperating landowners necessary for successful plans.

Also, acceptable levels of variation for characteristics of ecological land units within the planning landscape must be set to properly delineate a planning landscape.

### **3.0.6.3 Identify and Map an Appropriate Classification System**

All policies and guidelines concerning the conservation of biodiversity will require some type of map to successfully implement the necessary actions. All maps are based on a classification system of land units. The appropriateness of a classification system will vary depending on the conservation strategy (Kernohan and Haufler 1999). The resolution of the mapped units of the classification system will also influence the effectiveness of the strategy. The classification system and the resolution of Geographical Information Systems (GIS) mapping are important components for effective conservation strategies.

The combination of existing vegetation structure and site potential gives an ecologically based classification system that will provide a description of uniform units based on predictable and repeatable site characteristics within the landscape (Russell and Jordan 1991). Haufler et al. (1996) defined ecological land units by combining vegetation growth stages (i.e., units capable of differentiating the various biological communities represented within successional stages) with site potential. This method incorporates historical disturbance regimes to identify inherent ecosystems. It also has sufficient detail to map existing vegetation and describe habitat features for selected species. The map resolution must be able to define homogenous habitat conditions for the selected species assessments.

### **3.0.6.4 Identify Biological Diversity Problems Based on Limiting Factors**

Identification of biological diversity problems should be obvious with clearly stated objectives and an understanding of the limiting factors of the strategy (Kernohan and Haufler 1999). This also assumes that an appropriate classification system has been developed and mapped.

When a coarse-filter with a species assessment approach is used, problems are discovered when individual ecological land units decrease below appropriate ecological representation, either in amount or distribution, or across the landscape (Kernohan and Haufler 1999).

### **3.0.6.5 Determine How to Correct Problems using a Partnership Approach**

Collaboration among organizations and individuals comprising an ecosystem management initiative is usually vital to the success of the initiative (Keystone 1996). This principle is also true for initiatives concerning the conservation of biological diversity. Creating successful partnerships is the key to true collaboration. In order for partnerships to be accepted and successful, several factors must be considered. These include: 1) voluntary involvement, 2) broad range of participants, 3) involvement from the initial stages, 4) identification of mutual goals and objectives, 5) respect for individual landowner objectives, 6) decision-making by consensus, and 7) trust (Kernohan and Haufler 1999).

### **3.0.6.6 Public Relations**

Stakeholders must become involved at all levels and strong public relations have to be a priority from the beginning to build a successful partnership approach (Kernohan and Haufler 1999). Building a public relations campaign necessitates that consideration be given to communication tools and gaining support from and education the right stakeholders at the appropriate time. Public relations and strong participation are extremely important when the issue concerns natural resources (Kernohan and Haufler 1999).

Communication tools for complex ecological theories, social uncertainties, and challenging economic positions must be simple enough for the general public to understand yet allow for the integrity of the systems to be maintained through a variety of media (Kernohan and Haufler 1999). Effective tools will have the ability to communicate trade-offs between social, economic, and ecological objectives. Unless the tools present all sides of the issue, they will be seen as biased and having hidden agendas.

### **3.0.6.7 Applying Adaptive Management Principles**

Although adaptive resource management is a relatively new approach, it has become a method of dealing with inherent uncertainties within and among ecological, social, and economic systems. Adaptive management deals with uncertainty by

structuring initiatives as experiments in which the results are used to continually correct the course of action (Walters 1986, Keystone 1996).

Long-term monitoring is a critical component when managing by experimentation (Kernohan and Haufler 1999). Long-term monitoring programs must be properly designed experiments that have the ability to adapt in a similar manner as that which is being monitored.

There are two types of adaptive management, passive and active. Passive adaptive management is a "trial by error" approach, whereas active adaptive management is a structured quantitative strategy (Keystone 1996). Policies and guidelines that are designed to conserve biological diversity should employ active resource management to ensure a fast rate of learning and higher degree of accountability of management goals. Components for successful adaptive management include: 1) an understanding of system function and outputs, 2) establishment of quantified objectives and controls, 3) initiating a course of action, 4) monitoring and evaluating the outcomes, and 5) reviewing the goals and objectives and redirecting activities if necessary.

### **3.1 CERTIFICATION SYSTEMS**

Increased demand for forest products and other forest benefits, combined with growing public concern about the management of decreasing forest resources are leading governments to move towards a convention on forests, and the private sector to consider the benefits of sustainable forest management certification (Rotherham 1996).

A survey, conducted in January 1999 by the Canadian Sustainable Forestry Certification Coalition, states that over 30 companies with 42 operations across Canada plan to certify 72 million hectares under their management by the end of 2003. This figure represent 60% of Canada's 120 million hectares of managed forest land (Bulletin 1999). Another recent survey by the Coalition states that by the end of 2003, forestry companies plan to achieve certification to the International Organization for Standardization (ISO 14001) on 92 million hectares, to Canadian Standards Association (CSA) on 36.5 million hectares, to Sustainable Forestry Initiative (SFI) on 9 million hectares, and to Forest Stewardship Council on 5.5 million hectares (Bulletin 2000).

There are several objectives of forest management and wood product certification. The overall global objective is to improve the management of all forests thereby decreasing deforestation rates and degradation of forest ecosystems. More specifically, at the national or forest level, the goal is to introduce forest management systems and practices that maintain the multiple functions of forests – ecological, social and economic. At the industry or company level, the goal of certifying wood products may be to maintain or increase market access, market share and profits, to provide better product differentiation for consumers, and to improve the company image (Crossley 1996).

### **3.1.2 The Forest Stewardship Council**

The Forest Stewardship Council (FSC) is an international non-profit organization comprised of social, environmental and industry interests. It is an association of members consisting of a diverse group of representatives from environmental and social groups, the timber trade and forest industry, indigenous people's organizations, community forestry groups and forest product certification organizations from around the world.

The mandate of the Forest Stewardship Council is to provide truly independent, international and credible labeling system on timber and timber products. This will provide the consumer with a guarantee that has come from a forest that has been evaluated and certified as being managed according to agreed social, economic and environmental standards.

The Forest Stewardship Council has developed rigorous procedures and standards to evaluate whether organizations (certification bodies) can provide an independent and competent forest certification service (Internet: [www.fsc.com](http://www.fsc.com)). This process is known as 'accreditation'. FSC accredited certification bodies are required to evaluate all forests aiming for certification according to the FSC Principles and Criteria for Forest Stewardship.

### **3.1.1.2 Forest Stewardship Council Principles**

The following are the ten Principles of the Forest Stewardship Council and their definitions (Internet: [www.fsc.com](http://www.fsc.com)):

- **Principle One – Compliance with laws and FSC Principles**
  - Forest management must respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.
- **Principle Two – Tenure and use rights and responsibilities**
  - Long-term tenure and use rights to the land and forest resources must be clearly defined, documents and legally established.
- **Principle Three – Indigenous peoples' rights**
  - The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.
- **Principle Four – Community relations and workers' rights**
  - Forest management operations shall maintain or improve the long-term social and economic well being of forest workers and local communities.
- **Principle Five – Benefits from the forest**
  - Forest management operations will encourage the efficient use of the forest's many products and services to ensure economic viability and a wide range of environmental and social benefits.
- **Principle Six – Environmental impact**
  - Forest management shall conserve biodiversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by doing so, maintain the ecological functions and the integrity of the forest.
- **Principle Seven – Management plan**



- A management plan – appropriate to the scale and intensity of the operations – must be written, implemented, and kept up to date. The long-term objectives of management, and the methods of achieving them, must be clearly stated.
- Principle Eight – Monitoring and assessment
  - Monitoring must be conducted – appropriate to the scale and intensity of forest management – to assess the state of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.
- Principle Nine – Maintenance of high conservation value forests
  - Management activities in high conservation value forests must maintain or improve the attributes, which define such forests. Decisions concerning the high conservation value forests must always be considered in the context of a precautionary approach.
- Principle Ten – Plantations
  - Plantations must be planned and managed in accordance with Principles and Criteria 1 – 9, and Principle Ten and its Criteria. While plantations can provide a variety of social and economic benefits, and can contribute to satisfying the world’s needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

Forests that do become certified are checked on a regular basis to ensure they continue to comply with the Principles and Criteria. The performance of the certification bodies is closely monitored by FSC. Products originating from forests that have been certified by FSC-accredited certification bodies are permitted to carry the FSC-logo, if the chain-of-custody has been verified.

### **3.1.1.3 The Chain-of-Custody**

The chain-of-custody is a system of tracing forest products from the forest through processing and on to the point of sale in the market (Rotherham 1996). There are two approaches:

1. Follow all of the wood from the forest to point of retail sale and audit the chain-of-custody program. The third party auditors will report on the security of the system to all customers along the line.
2. The second approach is similar to the first, but with the addition of reporting on the details of the commercial relationships and movements of the wood as well as providing an auditor's report on the verification of the system. This process will identify, record and report on all of these confidential commercial transactions for the first time.

### **3.1.3 FORESTCARE**

The Alberta Forest Products Association (AFPA) is a forest industry association. *FORESTCARE*, established in 1993, is an initiative developed by member companies to help the industry contribute strongly to the province's growth for current and future generations, while protecting the forest, the environment and the community.

The two main goals of the *FORESTCARE* program are:

- To progressively improve performance in the forest, the environment and the community; and
- To work cooperatively with community members in the common interest of the environment, economy and social prosperity.

The *FORESTCARE* program consists of guiding principles and a Codes of Practice that directs the decision-making, and sets the standards of performance for the companies. The codes encompass or surpass government legislation and regulations (AFPA booklet). In following these codes, member companies will, through comprehensive management systems, sustain the forest resource base, consider the need of the other forest stakeholders, operate their facilities in a responsible manner, and promote the continued well-being of the forest industry, employees and communities.

### **3.1.3.1 Guiding principles**

The guiding principles of *FORESTCARE* are:

1. Member companies will ensure that harvest levels do not exceed the capacity of the forest that all harvested areas are reforested, and that harvest and reforestation methods promote a healthy new forest, supporting and maintaining biodiversity.
2. Member companies will manage their activities on forestlands for multiple uses and values, including timber growth and harvest, watershed protection, wildlife and aquatic habitat and recreational and aesthetic benefits.
3. Member companies will manage their forest and manufacturing operation to protect the environment, placing special emphasis on the quality of air, water, soil and habitat.
4. Member companies will operate in a manner that protects the health and safety of employees, contractors and the general public.
5. Member companies will be open and responsive to community views and questions concerning the industry.
6. Member companies will manage operations to ensure that the renewable forest resource provides sustainable economic activity and employment, while conserving other forest values.

### **3.1.3.2 Codes of practice**

The following Codes of Practice were developed to achieve the goals of the *FORESTCARE* guiding principles. The Codes of Practice are monitored, evaluated and reported to the public. The codes encompass three major areas of the Alberta forest industry (AFPA booklet):

1. Care for the Forest
2. Care for the Environment
3. Care for the Community

Caring for the forest entails that member companies will apply scientific, economic and social principles to achieve defined objectives. These objectives consist of: scheduling and implementation of forest harvest and reforestation; protection of the forest from insects, disease and fire; and integrating the management of other values and resources, such as wildlife habitat, that are affected by forest operations.

Practice of this code will result in:

- Management of forest lands for multiple uses and values, while making certain environmental quality and biodiversity are maintained in the long term.
- Written plans that identify goals for the uses of forest, describe the methods that will be used to meet these goals, ensure that other uses and values of the forest are respected, and prove that proposed harvest and reforestation methods will result in a continuing forest for the use and enjoyment of future generations.
- Harvest operations that produce the forest products society uses, while respecting and protecting other values and uses of the forest.
- Activities that reforest harvest areas with trees suitable for the growing site, and maintain the new forests in a sustainable manner.
- Strategies and activities designed to maintain the health of the forest by controlling agents that threaten it, such as fire, insects and disease.

As well as upholding specific government regulatory standards, member companies must also monitor, assess and respond to all potential negative impacts of company activities upon the environment. Company operations will be managed to protect the environment and, therefore, the viability of the industry.

Care for the environment code will protect the environment through:

- Use of responsible operating procedures in forest and manufacturing activities.
- Effective response to potential impacts associated with equipment or process changes.

- **Responsible management of waste materials.**

Member companies of **FORESTCARE** are committed to improving the health and safety of employees and the communities in which they work, to sharing information freely with the public regarding company operations, and to continuing the significant contribution their operations make to the provincial and local economy.

Practice of this code will create:

- A safe and healthy environment for employees, contractors and the general public.
- Regular and consistent public participation, and the timely sharing of information with employees and the public about member companies' forest and manufacturing operations.
- The continuation of a healthy, multiple-use forest, and protection of the interests of employees, businesses, and the local communities.

A member company's progress and commitment to the Codes of Practice is quantified with annual Self-Assessments, which track the company's improvements over time. As well, every three years a formal audit independently verifies company performance.

#### **3.1.4 Canadian Standards Association**

In 1994, the Canadian forest industry asked the Canadian Standards Association (CSA) to develop a technical committee to create a sustainable forest management standard (Rotherham 1996).

The CSA standard is part of a series of national forest policy initiatives, which started in 1991 with public forums leading to the National Forest Strategy. The Forest Accord was signed in 1992 at the Forest Congress in Ottawa by several important organizations in the Canadian Forest Sector to show their support for the strategy. The strategy was presented at the Rio Conference on Environment and Development in 1992 as proof that Canada was committed to moving towards sustainable management.

In 1995, the Canadian Council of Forest Ministers (CCFM) approved the criteria and indicators of sustainable forest management, developed during the Montreal Process in 1993, as national policy. These criteria and indicators are embedded in the CSA standard.

The purpose of the Standard is to describe the components and performance objectives of a Sustainable Forest Management (SFM) System that, when applied to defined forest area, will ensure that the CCFM Criteria and Indicators for sustainable forest management are being followed (CSA 1998). The CSA Standard is completely voluntary, and its goal is to complement, not take the place of current forest policies, laws, and regulations.

The CSA SFM system consists of a performance and a system framework. These are both based on the foundations of adaptive management, which are covered in the CSA Standard CAN/CSA-Z809-96, *A Sustainable Forest Management System: Specifications Document*.

The performance framework starts with the CCFM Criteria and Indicators. Crucial elements are identified for the six CCFM Criteria, all of which must be addressed by the SFM System. Through a system of public participation, local values, goals, indicators, and objectives are developed, based on the six elements and any extra local factors. The CCFM Indicators act as a guide in the indicator selection process.

To meet performance objectives, the CSA SFM System utilizes a management process that is consistent with the International Organization for Standardization (ISO) 14401 and the ISO 14004 Standards of the Environmental Management System 14000 series. This system includes commitment, public participation, preparation, planning, measuring and assessing performance, and review and improvement of the SFM System. The development of feedback loops into the system allows for the continual improvement of the integrity and performance of the SFM System, which will lead to further improvement.

The CSA sustainable forest management standard (SFM) is based heavily on the International Standards Organization (ISO 14001 Environmental Management System).

It includes:

- The concept of sustainable forest management;
- Application to defined forest area or forest management unit;
- Acceptable levels of performance; and
- A sustainable forest management framework.

Any national or international standard must include or be compatible with the national and international criteria and indicators for sustainable forest management.

The CSA standard also includes:

- Commitment by the managing organization.
- Public participation in the development of management objectives and methods to achieve these goals.
- Compliance with all forest-related legislation and regulations
- Comprehensive long and short-term plans
- Implementation
- Human resource training
- Responsibility, authority and accountability
- Control procedures
- Accurate record-keeping
- Communication with all stakeholders
- Continual improvement
- Measurement of on-the-ground applied performance and assessment

Other crucial components to this system include:

- Audit by a qualified independent third party
- A certification process
- A system to maintain or renew certification
- A system to withdraw certification for non-performance
- Control of the use of certification claims
- An appeal process.

The CSA SFM System was created in an open, inclusive, and consensus-orientated forum. It represents the voices of various individuals and groups with an interest in sustainable forest management, including the forest industry, woodlots owners, governments, academics, scientists, technical experts, and social, conservation, and Aboriginal organizations.

The CSA technical committee is composed of 32 voting members comprised from four different interests groups, which are: government forest management regulators; forest producers; forest science, academics and professionals; and general interest groups, such as consumers, native peoples, environmental and social interest groups, trappers and hunters. During the development of the standard, approximately 18 additional, non-voting observers attended meetings of the technical committee and contributed to the creation of the standard.

CSA International is currently reviewing its National SFM System Standard developed in 1996 (Bulletin 2000). This review is part of a continual improvement process where all CSA standards must be revised within five years of publication. The first review is being undertaken by a multistakeholder, balanced-matrix, technical committee (TC). The main objectives are to improve the clarity, efficiency and flexibility for implementation of the standard (Bulletin 2000). TC members have committed to maintain the overall rigour of the standard and to guarantee broad stakeholder consultation during the review process, including with environmental groups (Bulletin 2000).

### **3.1.5 International Organization for Standardization**

The International Organization for Standardization (ISO) is an international standard-setting body. In 1991, the Business Council for Sustainable Development, comprised of business leaders from around the world, asked the ISO to develop standards concerned with environmental management (Takahashi et al, 1999). In 1996, the ISO agreed upon ISO 14001, “Environmental management systems – specification with guidance for use”, as its formal standard (Takahashi et al, 1999). The ISO 14001 system specifies the requirements of an environmental management system for organization in



any industry or field, such as manufacturing, service, non-profit, and government organizations. There is also a specific guideline document, which applies to the forest industry. The ISO 14001 certification is a generic, system-based certification and does not lead to product labeling, such as the Forest Stewardship Council.

Several Canadian forest companies are currently pursuing or have successfully achieved certification to ISO 14001 for their mills (Bulletin 1999). Many are also committed to a high environmental standard throughout their forest management operations. By extending the application of ISO 14001 to woodlands operations, the companies are able to achieve the implementation of one consistent company-wide approach to address site-specific environmental issues.

Certification is seen by the Canadian forest industry as a tool, which respects the role of government as the legally responsible body for the management of public lands (Bulletin 1999). For this reason, Canada's National Sustainable Forest Management System Standard requires compliance with forest legislation and commitment at the local forest level to the Canadian Council of Forest Ministers' six SFM criteria and supporting critical elements.

The majority of Canadian companies that are currently making plans for ISO 14001 certification of their forest operations are already implementing sustainable forest management elements into their Environmental Management System (EMS). There is also a broad consensus among many companies that ISO 14001 is a good starting point for introducing sustainable forest management criteria and indicators, as well as public participation. The next step for these companies is to eventually proceed to towards certification to the CAN/CSA Z809 Standard (Bulletin 1999). A January 1999 survey suggests that much of the 69 million hectares currently scheduled in Canada for certification to ISO 14001 is also expected to be certified to the Canadian SFM System Standards.

### **3.2 CHAPTER SUMMARY**

The literature reviewed in this chapter focuses on two main areas. The first important area concerns the importance of biodiversity conservation guidelines.

With Canada's commitment to the *Convention on Biological Diversity*, the seriousness of the issue has grown across the country. The Convention recognizes that biodiversity, the variety of life on Earth, is of significant economic, social and ecological value, and that its unprecedented rate of loss must be addressed at both the national and international levels (Government of Canada 1997). To show its commitment to the goals of Convention, Canada developed the *Canadian Biodiversity Strategy* in 1995. The Strategy contains specific details on how to meet the commitments of the Convention and provides policy guidance for those making decisions about biodiversity.

The first section of Chapter Two also covers the important works of Wildlife Habitat Canada, the Canadian Council of Forest Ministers, The Wildlife Society and other features and indicators of biodiversity conservation.

The second section of the chapter covers the four major certification systems that are evaluated in the study. These four systems are: the Forest Stewardship Council (FSC); *FORESTCARE*; Canadian Standards Association (CSA SFM); and the International Standards Organization (ISO 14001). The guiding principles and the framework for each system is covered in great detail.

## **Chapter Four**

### ***AN ASSEMENT OF THE RESEARCH***

#### **4.0 INTRODUCTION**

The concept of biodiversity conservation is often confusing, with the term 'biodiversity' having numerous definitions. Stakeholders including: forest managers; planners; decision makers; and consumers have been dealing with this subject and related issues such as sustainable forest management and certification. To add to the confusion there are several certification systems that forestry companies can implement to promote and achieve sustainable forest management.

To break down the confusion of this subject, the first section of this chapter covers the results of the interviews held with each forestry company. The results are presented in the order in which they were interviewed, Stora Enso, Domtar, Tembec, Tolko, Canfor, Western Forest Products, Weyerhaeuser, and Weldwood. Each interview review is broken down into three sections: a general overview of the company; the company's understanding of biodiversity conservation and sustainable forest management; and finally, the company's present goals of certification and future plans.

#### **4.1 STORA ENSO PORT HAWKESBURY LTD.**

##### **4.1.1 Overview**

Stora Enso Port Hawkesbury has carried out a forestry program in Eastern Nova Scotia for over 35 years, with intensive silviculture activities since 1970 (Green Balance Sheet 1998).

STORA ENSO is an international industry group that is ranked as one of the world's leading forest industry companies. The company was formed through the combination of the Finnish company Enso and the Swedish company Stora. STORA ENSO is an integrated forest products group that manufactures magazine paper, newsprint, fine paper and packaging boards. The company holds leading global positions

in these product areas. In total, STORA ENSO owns 2.1 million hectares of productive forestland and conducts extensive saw milling operations.

Stora Enso Port Hawkesbury is part of the STORA ENSO Magazine Paper division, which manufactures and markets coated and uncoated paper in Europe and North America. Approximately 750 full-time employees operate the paper and newsprint mill, and its woodlands operations in Nova Scotia. Another 1000 contractors and their employees harvest the forest, regenerate and tend new growth, and truck wood throughout the eastern counties of the province.

The woodlands division of Stora Enso Port Hawkesbury has forest management responsibility for approximately 607,000 hectares of licensed provincial Crown land and owns an additional 23,000 hectares of forestland in the eastern part of Nova Scotia. About 71% of this 630,000 hectares is productive forestland. Additional roundwood and wood chips for the production facility are bought from other Nova Scotia forest owners.

#### **4.1.2 Environmental Policies**

The most recent environmental policy implemented by STORA ENSO was adopted in 1994. The company-wide environmental policy provides the basis for the environmental policies adopted at the local level (STORA Environmental Report 1997). STORA ENSO uses the term 'ecobalance' as method of communicating its environmental policy to a wider circle.

Ecobalance includes (STORA Environmental Report 1997):

- **Forestry.** Forests shall be managed on a sustainable basis, maintaining a high volume of wood production while also preserving biodiversity.
- **Industrial Operations.** Wood products, pulp, paper and board shall be manufactured using resource and energy-efficient technology that ensures a high level of raw-material utilization. Emissions that occur should be so low that normal biological activity can be maintained even in the immediate area of a production facility.
- **Transports.** Transports shall be regarded as a vital part of product life cycles and therefore be included in environmental quality work.

- **Suppliers.** Suppliers of goods and services shall be encouraged to develop their operations along environmental lines, thereby contributing to environmental improvements throughout the forest industry product cycle.
- **Product Stewardship.** Product development shall concentrate on achieving the best possible functional capability combining with the lowest possible consumption of resources. Product design shall be directed at minimizing the amount of material used.

Responsible management of the company's resources characterizes Ecobalance. Only those environmental commitments that are also compatible with economic feasibility are sustainable for the long term (STORA Environmental Report 1997).

STORA ENSO has chosen to work with environmental management systems, which direct operations toward a continuous improvement process and are pursued in open communication with external interests to achieve the company's goals of ecobalance. The most critical environmental aspects of operations shall be identified at the local level. Goals will be established locally to meet environmental improvements, and environmental programs shall be based on solid action plans and timelines (ibid.). The overall concept of ecobalance is encompassed by Stora Enso Port Hawkesbury Ltd. in their long-term planning.

## **4.2 DOMTAR**

### **4.2.1 Overview**

Domtar is a major manufacturer and distributor of fine papers, packaging, pulp and forest products for North America and international markets. Domtar's Fine Papers division is the largest producer in Canada, the eight largest in North America and ranks 11<sup>th</sup> worldwide (1997 Annual Report). Domtar's goal is to create value for its customers, shareholders and other business partners. It achieves this by utilizing the know-how, creativity and professionalism of its employees to serve the needs of its customers and to develop new markets. A socially – and environmentally – responsible organization, it proves innovative and quality products and services in a cost-effective and timely manner (Forest Policy book, April 1998).

Domtar's forest management operations cover over approximately 43,400 square kilometers (km<sup>2</sup>) of public and private forest in Quebec and 22,675 km<sup>2</sup> in Ontario, which produce, respectively, 2.7 and 1.9 million cubic meters (m<sup>3</sup>) of wood annually for the Corporation's ten sawmills, four pulp and paper mills as well as its affiliates. Some 600 km<sup>2</sup> of private forestland in the Northeastern United States produce an additional 100,000 m<sup>3</sup> of wood. In total, Domtar has 413,200 hectares of freehold timberland and 6.2 million hectares of cutting rights on Crown lands (Forest Policy book, April 1998).

#### **4.2.2 Environmental Policies**

Domtar is a strong supporter of environmental protection in accordance with the concept of sustainable development, and is committed to continuous improvement in its environmental performance. Recent environmental initiatives attest to Domtar's conscientious stewardship in this vital area:

- A Domtar box plant in the Toronto area is the first such facility in North America to meet the demanding ISO 14000 environmental standards;
- The Windsor, Quebec facility remains the only paper mill in the world to participate in the internationally recognized Responsible Care™ program, which was developed in Canada by the Canadian Chemical Producers' Association;
- Successful implementation of the closed-loop process water system at the integrated pulp and containerboard mill in Trenton, Ontario was another industry first in North America.

Domtar has invested extensive sums in its effluent treatment facilities over the past few years to guarantee that all of its mills exceed relevant regulatory standards.

Domtar is continually looking for new, economically viable methods to ensure the optimal use of natural resources. In 1996 and 1997, the Cornwall, Ontario mill received an outstanding business award from the Recycling Council of Ontario for its commitment to environmental protection. The mill recycles more than 90% - or approximately 200,000 cubic metres - of the bark, biosolids and other by-products it generates annually

for use as a soil conditioner on agricultural and forestlands. Similar initiatives are currently being undertaken at other Domtar mills.

The Domtar Innovation Centre, founded in 1963 in Senneville, Quebec, is working with researchers at the University of Toronto and the Universite du Quebec a Trois-Rivieres to develop a wood fibre-reinforced, thermoplastic composite material made from waste and used in the manufacture of a variety of consumer products.

#### **4.2.2.1 Integrated Forest Management Policy**

The forest policy of Domtar underlies the company's goals and objectives for the conservation of biodiversity. The policy acts as the driver behind the company's objectives for biodiversity conservation. The policy is constructed of nine different elements that work together to achieve these objectives. The specific areas of the policy are the following:

- *Benefits Derived from Forests*
  - Domtar acknowledges the significance of applying an integrated forest management policy to the lands it manages with consideration of the diverse cultural, economic, social, ecological and environmental benefits derived from forest resources.
- *Management*
  - Domtar employs forest management practices developed to ensure the sustainability of forest resources and respect for the biological components of ecosystems.
- *Protection*
  - Domtar protects the forest by minimizing the impact of insects, disease and fire; by protecting water, wildlife, soil and landscape resources; and restoring disturbed sites.
- *General Public*
  - Domtar takes into consideration general public concerns in its forest management planning process.
- *Monitoring and Assessment*

- Domtar establishes procedures to monitor its forestry activities and assesses the results, with the goal of maintaining or enhancing its performance.
- *Research*
  - Domtar participates in research programs directed toward improving its sustainable forest management techniques.
- *Human Resources*
  - Domtar ensures that its sustainable forest management activities are planned and carried out by personnel with high levels of knowledge, skill and expertise.
- *Wood Suppliers*
  - Domtar works with its independent wood suppliers and contractors to guarantee that their forest management practices conform to the principles of sustainable forest management.
- *Certification*
  - Domtar aims to achieve sustainable forestry certification by implementing its forest management policy.

### **4.3 PINE FALLS PAPER COMPANY (Tembec)**

#### **4.3.1 Overview**

In Manitoba, PFPC contributes significantly to both local provincial revenue and employment flows. The following statistics show this impact (SFMP 1999):

Sales	\$145 million
Direct Employment	500 mill
	175 woodlands
Indirect Employment	2025
Payments to Government	\$21 million
Capital Expenditures	\$80 million (1994 – 97)



The Pine Falls Mill produces 170,000 metric tonnes of standard newsprint per year at a daily average rate of 485 tonnes (SFMP 1999).

Newsprint shipments to the United States make up 70 percent of production with markets concentrated in the Midwest. Canadian sales include pressrooms in Manitoba, Saskatchewan and Alberta.

The existing wood supply areas have been in use for most of the history of the Pine Falls Mill (SFMP 1999). A Forest management License was established in 1979 which included Integrated Wood Supply Areas (IWSA) both East and West of Lake Winnipeg. The Manitoba Provincial Government has managed the IWSA. PFPC will take over management of the IWSA's as part of their commitment of the FML Agreement. The larger FML area will not become operational until an Environmental Act License has been obtained for the SFMP (SFMP 1999).

Other wood supply areas include the Duck and Porcupine Mountain region in Western Manitoba, in addition to the southeast corner of the Province. In both of these areas, quotas and allocations provide the security of supply. Open market wood is also obtained from these two locations. This area will therefore not be included in the Environment Act license for the SFMP.

The Pine Falls Mill has operated almost continuously for 71 years. During this period, it has become a central feature of neighboring communities and the regional economy. In the early 1990's, faced with costly environmental upgrades the corporate mill owners entered into negotiations to sell the mill to the employees. This resulted in a transfer of ownership in 1994 (SFMP 1999).

Since the transfer occurred, the employee-owned mill has invested \$65 million in a new wastewater treatment plant and a new de-inking plant. The mill now meets or exceeds all federal environmental regulations and the de-inking plant utilizes waste newsprint and meets the market demand for recycled content. The strong competitive nature of the newsprint market results in increasing pressure on firms to enhance the quality of its product and efficiency of production. The challenge for PFPC is to continually improve newsprint quality and to reduce costs. Failure to meet these obstacles put the Company at risk of becoming a high cost producer subject to long-term financial

insecurity. The market price of newsprint is cyclical, and it is crucial to the position the mill to be able to withstand price decreases as and when they occur (SFMP 1999).

Meeting this objective involves significant capital improvements to the mill and increasing current operation. By expanding its operations and making capital investments, The Company can decrease production costs and enhance its long-term prospects (SFMP 1999).

During the investigation for financing arrangement to allow for the strategic plan to move ahead, it became obvious that the risk involved in the capital investments was too steep for a single mill company in the newsprint business. Tembec Inc., a Quebec-based forest products company also founded as an employee buyout mill, extended an offer to purchase PFPC in September 1997. The purchase was completed in the spring of 1998.

*Tembec's corporate mission is to be a "low cost, profitable integrated forest products company converting forest resources into competitive and innovative quality products for customers, while protecting the environment and creating positive long-term social, cultural, and economic benefit for the region and its peoples, employees, and shareholders."*

To achieve this goal, the environmental responsibilities of Tembec include establishing policies and guidelines in all phases of operations, which provide for responsible stewardship and sustained yield and development of resources. In addition, protecting the health and safety of employees, customers and the public is a top priority.

#### **4.3.2 Forest Policy**

In the late 1980s, Tembec developed an environmental policy which was revised in 1997 to meet ISO 14000 requirements. The policy governs all Tembec Group activities, including Pine Falls Paper Company.

Tembec shares with the community important responsibilities towards the environment. Responsible stewardship of resources is supported, such as the forest, fish and aquatic habitat, wildlife, air, land and water. Responsible stewardship, combined

with a continual improvement process, makes possible sustainable economic development and improved quality of life. With this as part of their mission, Tembec Inc. is committed to implementing and maintaining an effective environmental management program that will govern the attitude and action concerning environmental issues and will benefit the environment, communities, shareholders, employees and customers.

Tembec Inc. demonstrates environmental leadership in its commitment to the following (Tembec website):

- Set environmental objectives and targets to continually improve environmental performance and provide the management, the commitment and resources necessary to achieve stated objectives.
- Encourage and support research and development to improve the ability to protect the environment and maintain public health and safety, and strive for the virtual elimination of any persistent toxic emissions from company operations.
- Manage and protect forest resources to ensure a sustained yield in a method consistent with all applicable regulations.
- Where there are no regulatory requirements, or to go above existing requirements, Tembec will maintain biodiversity, protect wildlife and its habitat and ecosystems.
- Promote new technologies aimed at conserving, recycling and renewing the resources that are utilized.
- Promote environmental awareness and train employees in their environmental responsibilities.
- Work and consult with governments and the public in the development of regulations and policies based on sound, economically achievable technologies and the analysis of environmental and health impacts.
- Implement programs and procedures to minimize the consequences of emergency situations by ensuring prompt and effective response.
- Report regularly to the Board of Directors on the environmental status and perform audits to ensure compliance with policies and guidelines.

In 1998, Tembec launched two environmental management programs in its forestry and manufacturing sectors, under the trademark Forever Green® and Zero Impact™ / 2005. Once implemented, both programs are expected to receive environmental certification under ISO 14001 EMS for all of its sites.

The goal of Forever Green® program is the integration of sustainable forest management criteria as defined by the Canadian Council of Forest Ministers and CSA Standard Z808 / Z809, into the company's forestry practices. Tembec has developed Guiding Principles and a Code of Forestry Practice based on these criteria, and the Forever Green® program as whole is managed according to ISO 14000 requirements. For certain forestry operations, certification by Forest Stewardship Council (FSC) will also be considered. Recently, the Huntsville mill was awarded FSC certification for its forestry activities.

The Zero Impact™ / 2005 program, also based on ISO 14000 management system, is intended to minimize the environmental impact of fibre processing activities, both technologically and economically, by the year 2005.

#### **4.3.3 Responsible Forest Management**

Tembec strongly believes that our forest heritage is part of our past and our present, and is the foundation on which we build our future. The Company's raw materials will continue to be supplied from the forest in a method that protects and enhances the environment while providing economic, social and cultural benefits for its employees, local communities and the public.

During 1998, Tembec harvested or purchased over 5.9 million cubic meters of wood from public lands in Quebec, Ontario, New Brunswick and Manitoba to supply roundwood for its facilities (Tembec website). An area of some 65,000 hectares was harvested under the Company's integrated forest management program, using regeneration protection. Partial cutting and selective cutting techniques. To fill natural regeneration gaps observed in some harvested areas, the Tembec Group replanted 20.2 million trees, and conducted stand improvement on 2600 hectares and pre-commercial thinning on 3800 hectares. In June 1998, a significant milestone was reached: Spruce

Falls Inc. planted its 200 millionth tree, representing five decades of trees planted by Spruce Falls Inc, the Ministry of Natural Resources and third party operators.

To decrease the impact of waste, fibre landfill sites, numerous sawmills have undertaken restoration work. Restoration at Delebo, Bearn and Rollet is complete and the work at Kirkland Lake, Mattawa and Taschereau is well underway. The Kirkland Lake project is working with the Ontario Ministry of the Environment, and should serve as a demonstration project for the use of biosolids in closing waste disposal sites.

Presently, Laval University is looking at technologically and economically viable alternatives to closing bark disposal sites in Abitibi by studying methods to improve bark, primary sludges and secondary sludges generated by Tembec.

The La Sarre mill has received its certificate of authorization for its new jointing plant project, and in preparation, all process steps were assessed to ensure compliance with current and future regulations and with Zero Impact™ program guidelines. In a continual effort, the company is investing in the Temlam, Hearst and Delebo mills to reduce the impact of atmospheric emissions to negligible levels.

The Forest Products Group within the company has created a steering committee to manage all health, safety and environment related activities, and reports quarterly to the Board of Directors.

An environmental fund has been developed at each of Tembec's divisions. The company contributes five cents per cubic meter of wood harvested on public land. Independent regional administrative committees manage these funds. The accepted projects are used to create or improve the environment, and enhance the environment as well as its enjoyment and appreciation by the community.

Pine Falls Paper Company is strongly committed to protecting and enhancing the natural environment and the surrounding communities. In 1995, a state-of-the-art wastewater treatment facility was completed. The process effectively purifies all mill effluent before it returns to the receiving waters. Skilled environmental technicians constantly monitor the process and conduct analyses daily to ensure the plant's effectiveness at meeting the various water quality parameters (SFMP 1999).

Pine Falls Paper Company is also in the process of developing a Sustainable Forest Management Plan (SFMP, Plan) to guide its planning, harvesting, access development, and access maintenance and renewal activities for the ten-year period from 2000 to 2009. This long-term plan will provide the structure for developing more detailed Annual Operating and Renewal Plans that are submitted each year to Manitoba Natural Resources (SFMP 1999).

The sustainable forest management concept will drive the development of the Plan, to ensure that all values of the forest are considered (SFMP 1999). The Plan will strive to achieve an appropriate balance between ecological, economic and social/cultural dimensions building on the following key themes (SFMP 1999):

- To sustain the long-term health and diversity of the FML area's forest ecosystems
- To reflect public values and goals for the FML area.
- Ensure continuing viability of the PFPC's forest product operations including the company's future growth.

Other components of the Plan include the following (SFMP 1999):

- Forest stimulation modeling to ensure the Plan is sustainable. Modeling will test the long-term sustainability of the wood supply; examine implications for wildlife habitat of representative species and assess the impacts on the distribution of Forest Ecosystem Classification types.
- The Plan will use the CCFM C&I as a framework to achieve sustainable forest management. Forest management proposals will be developed around the six sustainability criteria. For each criteria, corresponding forest management goals, indicators, targets and strategies will be developed.
- The Plan will identify and assess the environmental impacts of the proposed targets and strategies. Strategies will be developed into operating guidelines in PFPC's Sustainable Forest Planning and Operating Procedures.

## **4.4 TOLKO MANITOBA INCORPORATED**

### **4.4.1 Overview**

Tolko Industries Inc. has nine manufacturing divisions and four marketing and sales divisions, employing a total of 2300 people. Tolko's forest products are shipped to 22 countries around the world, with sales reaching \$693 million in 1998. Led by the Company's sales and marketing teams and supported by corporate Business Reviews, Tolko maintains market access by concentrating on the environmental, social and economic values of the Company and its precuts (SR 1999).

Tolko's vision is to be a leading marketer and manufacturer of specialty forest products. The Company's mission is *"to be an environmentally responsible and innovative company that prospers and grows by serving the needs of diverse customers in world markets, with products derived from the forest"* (SR 1999).

The Company operates an unbleached kraft pulp and paper mill and a random length / stud sawmill at the manufacturing facilities site in The Pas, Manitoba (Tolko 1998). In 1997, the pulp and paper mill produced 154,575 tonnes of unbleached kraft paper. The sawmill production for the year was 88,737,000 board feet (FBM) of planed, kiln-dried, random-length lumber and studs.

The Kraft papers produced by Tolko – SPK® and SPX® – are both environmentally responsible (SR 1999). The papers are produced from unbleached Kraft pulp and are used primarily for multi-wall packaging. The technology used to produce these papers results in above average strength, which meets the challenge of reduced packaging. Both of the papers are recyclable, and Tolko has shown that, under the right circumstances, its papers can be composted.

Tolko's Kraft paper mill achieved ISO 9002 certification in 1992 and is taking steps towards certification to the ISO 14001 standard. The mill's manufacturing systems have definite strengths in the areas of waste management, decreased energy and water consumption and environmental effects monitoring (SR 1999).

To manage and decrease streams, Tolko has incorporated recycling in its pulp and paper manufacturing process. At several stages throughout the process, wood fibres are recovered from waste streams and fed back into the process, thereby maximizing fibre

utilization. The chemicals and water used to break apart the fibres are continually recycled and reused. Waste liquid is treated through a controlled and monitored system before being disposed of in compliance with government regulations (SR 1999).

The natural energy stored within a tree is used to reduce the mill's overall energy consumption. Lignin is removed from the wood during the manufacturing of Kraft pulp. The lignin is then burned in a recovery boiler, providing the energy required to generate steam and electricity to make pulp from wood. Additional energy savings are achieved by burning wood waste (referred to as hog fuel) in a power boiler to create enough steam for the process of making Kraft paper from Kraft pulp. This innovative process decreases the amount of energy required from outside sources (SR 1999).

As a cautionary measure, Tolko performs regular testing of its environmental impacts on soil, air and water. One example is the Environmental Effects Monitoring (EEM) Study to assess the impact of treated mill effluent on fish and habitat. Completed in 1995, this independently conducted EEM study reported that there was no evidence of significant-adverse impacts from Tolko's effluent on the fish or fish habitat of the Saskatchewan River (SR 1999).

Compared to other activities in Tolko's production chain, manufacturing operations create the greatest economic impact. This is measured through employment, capital investment, resource efficiency and community support (SR 1999).

More than 1750 people are directly employed in Tolko's manufacturing facilities, which also positively affects indirect employment. Through its long-term planning process, product innovation, cost management, consistent fibre supply and strong marketing, the Company has minimized the number of production slow-downs and aims to provide secure and continual work for its employees.

Tolko continues to invest heavily in capital upgrades to its manufacturing facilities, thereby contributing to the economic sustainability of communities in which it operates. The Company maintains a competitive advantage, meets environmental standards and increases long-term viability, by investing in newer technology and improves production efficiency. With a strong commitment to capital growth,



improvements in Tolko's resource efficiency have increased by ensuring that the maximum value is extracted from each log (SR 1999).

#### **4.4.1.1 Sustainability Report**

Tolko defines sustainability as the balancing of economic, environmental and social responsibility, or the "triple bottom line" (Tolko Sustainability Report 1999). The Sustainability Report for 1998 / 1999 is the first report on the progress toward sustainability and the performance against the triple bottom line has not been fully evaluated. However, substantial progress in measuring environmental achievements has been made, and the Company is beginning to measure economic and social performance in a more systematic method.

Tolko's commitment to sustainability will continue to grow and evolve. The Environmental Policy for the 21<sup>st</sup> Century clearly identifies Forest Management Principles. Tolko has also completed a certification Gap Analysis with the help of PricewaterhouseCoopers, and steps are being taken towards completing an Environmental Management System (SR 1999).

#### **4.4.1.2 Environmental Policy**

Tolko is committed to the interests of future generations through responsible environmental performance (SR 1999). The Company's ability to operate the business, satisfy customers and other stakeholders and build sustainable economic success is increasingly dependent on environmental performance (SR 1999). Tolko's commitment to its Environmental Policy applies to all sectors of its business.

Tolko's Management Team, with input of employees and stakeholders, provides strategic direction and resources to assist the Company honor its commitment to the Environmental Policy. This includes ensuring that employees receive the education and training required for them to perform their job in an environmentally responsible method. Employees actively participate in environmental management and provide input on operating principles that require improvement. Activities that support this policy are (SR 1999):

- Adhering to environmental laws and regulations and continually improving environmental performance;
- Integrating the requirements of environmental laws and regulation into business planning and decision making;
- Managing forest land in a professional and sustainable manner consistent with Tolko's Forest Management Principles;
- Managing operations to minimize pollution;
- Evaluating environmental performance through internal and external audits, reviews and benchmarking;
- Communicating environmental, social and economic performance with employees, the public and other stakeholders; and
- Encouraging and recognizing employees for their contribution towards improving the Company's environmental performance.

The performance of Tolko will be reviewed and reported upon once a year.

#### **4.4.1.3 Forest Management Principles**

Tolko is committed to professional sustainable forest management (SR 1999). The Company's capability to provide raw materials to the manufacturing facilities is dependent on managing forest resources and respecting all forest values.

Tolko's Management Team develops strategic direction and provides resources to the Woodlands departments, The Woodlands group, combining the input from employees, stakeholders and the general public, will develop professional resource plans that demonstrate an innovative and sensitive approach to forest land management. Tolko's operations will be ecologically suitable, economically feasible and socially acceptable. Activities that support these principles are (SR 1999):

- Maintaining or improving the health and productivity of forest ecosystems and biological diversity;
- Actively promoting stakeholder and public participation through open communication;
- Complying with forest management legislation;

- Evaluating forest management performance with internal and external audits, reviews and benchmarking; and
- Practicing adaptive management by increasing the knowledge base and expertise.

Although many regulations are different in British Columbia, Alberta, and Manitoba, Tolko's Forest Management Principles, direct all forestry operations. The significance of maintaining forest ecosystem health, ensuring public participation and following government regulations extends across regional and provincial boundaries.

## **4.5 CANADIAN FOREST PRODUCTS (CANFOR)**

### **4.5.1 Overview**

Canfor is an integrated forest products company with manufacturing facilities in British Columbia, Alberta and the United States. The forestry operations in British Columbia and Alberta are located almost entirely on public land.

For several decades, the forests of British Columbia and Alberta have been managed under a policy of sustained yield of timber. Sustained yield of timber is a forest management system that involves more or less continuous harvesting, balanced by growth, over managed forest units (Canfor's Forest Principles, CFP 1999). Forest tenures were developed to yield a continual harvest of timber in perpetuity through the practice of sustained yield forestry. This approach enabled the development of a globally important integrated forest products industry.

The approach to forest management has evolved with the change of society's attitude towards the value of forests. In response, a change has occurred in policy from managing for a sustained yield of timber to managing for a sustained yield of timber with an increasing number of constraints. These constraints were introduced to conserve or protect a variety of non-timber values through a prescriptive set of regulations designed to decrease the impact of timber management. Many of these constraints have been utilized in response to specific environmental concerns and are justified. However, some constraints have been designed by economic or political agendas and have no scientific basis (CFP 1999). Some of these types of constraints will not achieve the ecological

objectives and the forest many not are able to provide the range of values that are expected. There is a strong need for results-based management instead of constraints. Canfor stresses the need for a new ecologically based forest management paradigm,

Even though forest management policies have changed over time, there has been no concurrent or significant change in the tenure or stumpage systems in British Columbia and Alberta (CFP 1999). In British Columbia, the evolution of public policy has created unacceptably high operating costs for the forest industry and forest practices that often do not meet stakeholder expectations. Foresters, customers and shareholders question where this approach is desirable or sustainable, both ecologically and economically. Changes are necessary to both the tenure system and the stumpage system to provide the incentive for long-term forest management that is both environmentally sound and economically viable (CFP 1999).

Canfor is committed to continually improving their understanding of the ecological processes that have created the forests and will implement this knowledge into their daily operations. Social, economic and environmental values will be considered within a framework of ecological processes and science to provide positive future forest conditions. Measurable ecological targets will be used to assist in evaluating the Company's performance, in addition to independent audits to verify progress.

#### **4.5.1.1 Forestry Goals**

The forestry goals of Canfor are the following (CFP 1999):

- Canfor will be a global leader in the profitable production of forest products from sustainably managed forests.
- Canfor is committed to the conservation of soil, water and biodiversity and the maintenance of ecosystem productivity in the forested areas where the Company operates.
- Canfor will use forest ecosystem management that covers the entire forest landscapes and that forecasts the future condition of forests for 100 years or more.

#### **4.5.1.2 Future Forest Condition**

An important part of forest ecosystem management is the need to forecast or predict future forest conditions (CFP 1999). Forecasts should be made for a minimum of one hundred years. By integrated the current understanding of ecosystems and natural disturbance patterns with human uses and values, a variety of future forest conditions can be modeled and projected. The results can be tested against an ecological baseline of what could occur naturally to ensure that the impact on the ecosystem will mimic natural patterns. This must be a continual process that will constantly input new data and will adapt or adjust to variability in the ecosystem and to changing human values and uses. If successful, the results will be a future forest condition that will best meet the needs and wants of interested or involved communities, while still maintaining a balanced ecosystem (CFP 1999).

Forecasting future forest conditions includes (CFP 1999):

- An understanding of the ecological processes and the natural historic and current disturbance patterns for each ecosystem.
- The development of an ecological baseline and a variety of natural variation that might occur without human intervention.
- Recognition and incorporation of human values and uses.
- Identification of communities of interest, and providing these communities with information and a chance for involvement.
- Projection of possible outcomes or future forest conditions within the natural range of variability.
- Continual measurement and monitoring of key environmental, social and economic indicators.
- Ongoing research to confirm assumption and to test new theories.
- Ongoing checking to ensure that the process is being followed, and if not, making changes to management strategies or practices as required.

#### **4.5.1.3 Environmental Policy**

Canfor Corporation is committed to responsible stewardship of the environment, and to sustainable development. The Company is committed to (Environmental Policy 1997):

- Designing, building and operating all facilities to comply with or go beyond applicable environmental laws and regulations and to following sound environmental practices.
- Improving environmental performance continually by setting measurable objectives and targets to prevent pollution.
- Conducting regular environmental audits of all of the facilities.
- Communicating environmental performance and environmental management system to the Board of Directors, shareholders, customers, employees and the public.
- Promoting environmental awareness throughout Company operations and in the surrounding communities.

Canfor's mission is to be a "*highly successful competitor in the global forest products industry, managing with integrity the resources entrusted to our care*" (Canfor's Mission 1998).

The Company will be characterized by the following (Canfor's Mission 1998):

- Employing and developing highly motivated, empowered and committed people who enjoy their work.
- Consistently satisfying customer needs with top quality services and products.
- Enhancing the forest resource, ensuring responsible stewardship of the environment, and protecting human health and safety.
- Promoting, recognizing and rewarding excellence in all aspects of the Company, with an emphasis on innovation and results.
- Increasing value for shareholders.

The core values that guide the Company are *integrity, trust, openness and respect for people*.

#### **4.5.1.4 Forest Practices Code**

The British Columbia Forest Practices Code was introduced in June 1995. This document provides some of the strictest regulation in the world protecting the full range of forest values including water, fisheries, wildlife, biodiversity, cultural heritage, soils, timber and community watersheds (WFP website).

British Columbia was also one of the first jurisdictions in the world to follow-through on the recommendations of the United Nations Commission Earth Summit to increase the amount of land protected world-wide. Through its Protected Areas Strategy (PAS), the province has committed to protecting 12 per cent of B.C.'s land base as representations of major ecosystems (WFP website).

To achieve this goal, British Columbia has developed over 100 new parks and protected areas. The province has also protected approximately one million hectares of coastal temperate rainforest – including the world's largest temperate rainforest watershed, the 317,000-hectare Kitlope Valley in the central and north coast (WFP website).

## **4.6 WESTERN FOREST PRODUCTS LIMITED**

### **4.6.1 Overview**

Western Forest Products is a subsidiary company of Doman Industries Limited. A sawmill located at New Westminster, B.C., which was owned by WFP in 1981, was closed in 1994. Two former WFP sawmills located at Vancouver, BC. Were added when Doman achieved majority interest in WFP in 1989.

In 1980, Doman participated with two other British Columbia forest products companies in forming WFP. In 1989, the Company increased its ownership of the outstanding shares of WFP to 56.1% and in 1992 purchased the remaining minority shareholdings (WFP website).

Western Forest Products has had timber licenses on the coast of British Columbia for many decades. The long history of tenure stewardship has been made successful by the active management of all resources on these lands. Specifically, the creation of comprehensive plans is an integral aspect of the management process.

The forest management plans are based on input from a variety of stakeholders and incorporate all Forest Practices Code requirements. Before one tree can be harvested, a detailed process of assessment and planning is carried out, involving many years of surveys and planning activities.

Western Forest Products uses a sophisticated computerized mapping and inventory systems that increases the ability to plan in an integrated manner (WFP website). The planning regime is rigorous and detailed, and as advanced as that required in any forest products jurisdiction in the world including Scandinavia and the United States.

Responsible forest stewardship is critical to the success and long-term survival of the Company. WFP is committed to sustainable development on both the public and private lands under their care.

The Company's mission is to supply quality, certified forest products to global markets while providing customers with guarantees that the environment is protected and resources are developed with responsible management. The main goal of WFP is to ensure that all forest management activities are conducted according to the principles and guidelines of sustainable forestry and integrated resource management that meet or go beyond government standards. WFP is committed to the following (WFP website):

- Involving the public and stakeholders in purposeful consultation of all aspects of forest management.
- Maintaining, enhancing and protecting forest ecosystems while providing economic, environmental, social and cultural positive benefits.
- Cooperating and consulting with community resource boards and stakeholder groups with mandates for resource management planning and implementation.



- Managing operations to protect the health and safety of employees, contractors and the public.
- Planning for the future in an integrated manner to include a broad range of forest values such as soil, water, fish and wildlife, archaeological, scenic resources and biodiversity.
- Developing and implementing allowable annual cuts that represent the forest ecosystems' capacity and sustainability, including social and economic considerations.
- Providing for First Nations' participation in setting and achieving sustainable forest management objectives and goals.
- Identifying and assessing measurable indicators of sustainable forestry.
- Quickly reforesting all areas after harvest with ecologically appropriate species to maintain and enhance forest growth.
- Conducting regular, internal and external monitoring for compliance to sustainable forest management principles and forest practices legislation and communicating results to stakeholders and the public.
- Investigating, researching and improving habitat requirements of important fish and wildlife species and populations.

WFP will maintain and further their competitive position in the global forest products marketplace based on the long-standing commitment to innovation, research, leadership and sustainable forest management.

#### **4.6.1.1 Environmental Policy**

Western Forest Products is committed to the protection of the environment and the sustainable development of the resource under its stewardship. WFP will cooperate with government and other stakeholders to identify and address issues of environmental concern in all aspects of its forestry operations. WFP will strive to minimize environmental impact through sound forestry and environmental management practices

that meet or go above government standards. As part of its responsibilities, WFP is committed to the following (Environment Matters 1999):

- Assessing and evaluating environmental risk on a continual basis in order to set environmental objectives and targets in addition to proper operational control.
- Allocating sufficient resources to ensure continuing compliance with environmental responsibilities.
- Meeting or surpassing all applicable environmental regulations.
- Establishing internal and external auditing and reporting procedures required to monitor environmental performance, continually improve environmental practices, and prevention of pollution.
- Encouraging environmental awareness among its employees and contractors and communicating its environmental performance both internally and to the public.

#### **4.7 WEYERHAEUSER CANADA LTD.**

##### **4.7.1 Overview**

Weyerhaeuser Canada, Ltd. is a wholly owned subsidiary of Weyerhaeuser Company, one of the largest forest products companies in North America. Weyerhaeuser Canada started operations in 1965, and became one of the largest forest products companies in Western Canada based on sales and assets (Fact Sheet 1998).

Weyerhaeuser Canada holds renewable, long-term licenses on over 5.7 million hectares of productive forestland in British Columbia, Alberta and Saskatchewan.

Operations in British Columbia, Alberta and Saskatchewan employ 4,700 skilled people who produce a range of pulp, paper, lumber and engineered panel products for Canadian and international markets.

Canadian operations account for a major share of Weyerhaeuser's North American activities. Canadian manufacturing represents approximately 17 percent of all Weyerhaeuser pulp and paper production, 34 percent of all softwood limber output and 58 percent of oriented strand board (OSB) capacity (Fact Sheet 1998).

The following are Weyerhaeuser Canada operations:

- **Canadian Lumber**
  - The Company operates six sawmills in British Columbia's southern interior, three sawmills in Alberta, and one in Saskatchewan. Combined annual capacity of all sawmills is over one billion board feet (Fact Sheet 1998). Together these operations employ 1,400 people.
- **Engineered panel products**
  - Sturdi-Wood®, an engineered orientated strand board product using aspen fiber, is manufactured at three processing facilities in Alberta: Drayton Valley, Edson and Slave Lake. Sturdi-Wood® is marketed in Canada, the United States and overseas. The business is based in Edmonton and employs approximately 550 staff.
- **Building Materials Distribution**
  - This division consists of seven Canadian customer service centers and with sales offices and reload centers to provide sales, marketing and logistic services to lumber dealers and home improvement warehouses. About 20 percent of the Company's solid wood production is sold in the Canadian market, with the balance exported to the United States and overseas.
- **Kamloops Pulp**
  - Kamloops Pulp started operations in 1965. This operation produces three grades of bleached and semi-bleached softwood kraft pulp. The fibre supply for the pulp mill comes from sawmill residues such as wood chips, sawdust, planer shavings and hog fuel. The mill employs about 600 people.
- **Grande Prairie Pulp**
  - The Grande Prairie pulp mill began operating in 1973 and was bought by Weyerhaeuser in 1992. It produces softwood bleached kraft pulp. The pulp from the mill is marketed mainly in the United States for products ranging from quality writing paper to paper towels.
- **Prince Albert Pulp and Paper**

- The pulp mill began operating in 1968, processing softwood pulp and adding hardwood fibre in the 1980's. It was purchased by Weyerhaeuser Canada in 1986. A fine paper mill completed in 1988 includes both cut-size and folio paper-sheeting machines. The majority of the paper products are used for business forms, photocopier paper and commercial printing stock, with major markets in the U.S. Midwest and Canada.

#### **4.7.1.1 Environmental Policy**

It is Weyerhaeuser's core policy that all employees at each level within the company work to ensure compliance with applicable laws and regulations and to continuously improve environmental performance wherever the Company does business.

Employees are responsible for ensuring compliance with applicable laws, and for managing and operating to conform to the Company's goals of (Weyerhaeuser website):

- Practicing sustainable forestry.
- Reducing pollution.
- Conserving natural resources through recycling and waste reduction.

In countries where applicable environmental laws are not as strict as those in the United States and Canada, the Company will operate in a manner comparable to North American standards.

In conducting business, the Company is committed to the following (Weyerhaeuser website):

- Understanding and responding to public health and environmental impacts of the Company's operations and products.
- Ensuring that all employees are trained and are empowered to participate in the Company's environmental management process.
- Actively supporting environmental research and technological development and, where appropriate, adopting innovative practices and technology.

- Promoting the development and adoption of environmental laws, policies and regulations that are balanced, are technologically sound and use incentive-based approaches for enhancing environmental performance.
- Managing forestlands for the sustainable production of raw materials while protecting water quality; fish and wildlife habitat; soil productivity; and cultural, historical and aesthetic values.
- Constantly improving the processes for decreasing wastes and emissions to the environment.
- Conserving energy and natural resources by maximizing recycling and by-product reuse.
- Adopting internal standards for situations not sufficiently covered by law or regulation or where the Company believes more stringent measures are required to protect the environment.

## **4.8 WELDWOOD OF CANADA LIMITED**

### **4.8.1 Overview**

Weldwood of Canada Ltd. (Weldwood, the Company) is a major manufacturer of forest products with logging and manufacturing operation in British Columbia and Alberta with company headquarters in Vancouver, B.C.

The Company owns and operates two sawmills and two plywood plants in the interior of British Columbia, and is part owner and manager of the Houston Forest Products Company sawmill. It manages and, with the Burns Lake Native Development Corporation, is part owner of the Babine Forest Products Company and Decker Lake Forest Products Limited sawmills. It is also part owner of the Cariboo Pulp & Paper Company mill located in Quesnel. In the province of Alberta, Weldwood operates and owns a pulp mill and sawmill in Hinton. Also, Weldwood jointly owned Canfor-Weldwood Distribution Ltd., a Canada-wide building materials distribution business (Weldwood 1998).

In their efforts to be the best forest products company in Canada, Weldwood's actions are directed by the following guiding principles (Five Year Environmental Performance Review 1996):

1. Practicing ethical stewardship of the environment.
2. Empowering employees.
3. Partnering with the stakeholders.
4. Satisfying customers' expectations.

#### **4.8.1.1 Environmental Policy**

Weldwood is committed to being a leader in the responsible stewardship of the environment. The Company's goal is to minimize the environmental impacts of operations in a method responsive to the need of the employees, customer, and the communities in which the Company operates and to the public. The Company is also dedicated to sustainable forestry and continuously enhancing environmental performance (Five Year Report 1996).

The principles behind the Environmental Stewardship Policy guide the Company to (Five Year Report 1996):

- Ensure that the harvested areas are reforested in a timely manner to site-specific standards and activities create a healthy new forest that supports a wide range of biodiversity.
- Manage forest ecosystems entrusted to the Company for multiple use and values that include:
  - Timber
  - Biodiversity
  - Watershed protection
  - Wildlife and aquatic habitat
  - Recreation
  - Esthetics
- Manage the forest and manufacturing operations to protect the quality of air, water and soil resources that form the environment.

- Encourage, and be open and responsive to, community views and questions about the Company and its activities.
- Ensure that planning, forestry and manufacturing activities provide sustainable economic activity and employment.

Weldwood takes action to meet these principles by regularly auditing and reporting the environmental performance of the operations to the Board of Directors and the public.

Other actions include (Five Year 1996):

- Employing a company-wide environmental management system.
- Training employees with proven and progressive technology and working together toward continued performance improvement.
- Encouraging and initiating public participation.
- Supporting research and employing technology that maximizes the use and increases the value of the resources.

In 1998, Weldwood focused on strengthening its Environmental Policies and its Environmental Management System (EMS). The EMS is series of steps that form a cycle of “plan-do-check” to support continuous improvement in environmental performance. There are five separate components to this cycle: policy, planning, implementation, checking and corrective action, and management review (Annual Review 1998). The following are examples of activities Weldwood undertook in 1998 in support of the continuous improvement cycle (Annual Review 1998):

#### **1. Policy**

Policy drives the EMS, setting the overriding commitments, and corporate and divisional objectives. The corporate Environmental Stewardship Policy was reviewed and reinforces as the lead component of the company’s corporate EMS.

#### **2. Planning**

Weldwood firmly believes that certification/registration to systems, such as CSA and ISO, are critical tools in successful environmental stewardship. Over the past few years, all divisions went through pre-assessment audits to determine how to

align their EMS with ISO 14001 standards. The pre-assessment audits recognize areas where improvement is required to ensure that high standards associated with certification systems are met upon the final assessment.

### **3. Implementation**

In 1998, Cariboo Pulp & Paper achieved certification in accordance with the ISO 14001 standard. 100 Mile House developed the required elements to meet both the ISO 14001 and the CSA-SFM Z809 standards, in preparation for audits in 1999. Williams Lake plywood also achieved ISO 14001 certification on September 24, 1999.

### **4. Checking and corrective action**

Independent audits are a vital tool in evaluating and providing a benchmark by which to monitor the Company's performance. During 1998, independent forest management audits of the woodlands operations were completed at Williams Lake plywood and Babine Forest Products. Independent mill audits were completed at Babine Forest Products, Houston Forest Products and Decker Lake Forest Products to assess regulatory compliance and EMS readiness.

### **5. Management Reviews**

As part of the Company's commitment to continuous improvement in environmental performance, a Corporate Environment Management Committee (EMC), comprised of key senior people, was created to oversee the environmental affairs of the Company. The EMC, which meets once a month, coordinates the implementation and administration of the EMS, and reviews environmental reports for all operation, as well as EMS audit reports and quarterly audit action plan updates. To support the practical administration of the EMS, new positions of Chief Forester and Senior Environmental Officer were created.



## **4.9 THE INTERVIEWS**

### **4.9.1 The Stora Enso Port Hawkesbury Interview**

Stora Enso Port Hawkesbury Ltd. located in Prot Hawkesbury, Nova Scotia was the first destination on the trip to interview eastern forestry companies. The interview was conducted on November 15, 1999.

### **4.9.2 Conservation of Biodiversity**

The concept of biodiversity from the viewpoint of Stora Enso Port Hawkesbury is that it involves the variety of all living things at the genetic, ecosystem and species levels. This concept is practiced at the landscape level, day-to-day level and the genetic level.

### **4.9.3 Environmental Policy**

The Environmental Policy of Stora Enso Port Hawkesbury is embedded in the company's Environmental Management System (EMS). It is the policy and practice of the company to conduct its operations in ways that do not endanger the environment. Stora Enso Port Hawkesbury Limited completely supports the Stora Enso Group Environmental Policy, Stora Enso Forestry Goals and Principles, and the Environmental Statement of the Canadian Pulp and Paper Association.

The company's forest resources will be managed for long-term sustainability and natural biodiversity while providing an increasing harvest volume and conserving social and cultural values of the community.

In maintaining an Environmental Managed System, the company, through its employees shall (Fact Sheet 1998):

1. Commit to continual improvement in forestry methods developed through experience and forest research and development.
2. Establish appropriate environmental objectives and goals, develop applicable action plans, review progress, and conduct periodical reviews and annual updates.

3. Sustain long-term production of valuable wood by effectively using natural resource and ensuring forest renewal.
4. Commit to prevention of pollution, soil conservation, waste reduction, and promotion of applicable recycling in managing environmental impacts.
5. Utilize long-term landscape ecosystem planning, appropriate silviculture systems, and operating practices that conserve biodiversity in managing forest areas.
6. Provide effective training to company employees and contracts in the relevant environmental aspects of their work on company-controlled lands.
7. Encourage private wood suppliers to comply with forest stewardship and environmental standards acceptable to Stora Enso Port Hawkesbury Ltd.
8. Develop, maintain and use Emergency Response Plans for environmental emergencies within the Woodlands Division.
9. Meet or exceed the requirements of all-applicable regulations and legal obligations.
10. Regularly report on environmental performance and status to the public.

The Environmental Policy and the Environmental Management System will be accessible, documented, implemented, maintained, audited, reviewed, and communicated to all employees according to the requirements of the ISO 14001 standards.

#### **4.9.4 Employee Understanding**

Employees and contractor's with Stora Enso Port Hawkesbury may not all have the same level of understanding of conservation of biodiversity, but each individual is fully trained of their job descriptions at the same level. Within every position, each employee will know their responsibilities concerning the company's biodiversity targets and practices. Each person with the company will have the required training and knowledge to do their job properly.

To achieve a consistent job performance, a Worker Instruction Manual was developed. This is a document, which provides step-by-step instruction and every detail

regarding each position. This ensures that each employee has the same level of understanding of biodiversity conservation according to his or her job level. It is important to note that the Worker Instruction Manual is not rigid, but is a living, flexible document.

#### **4.9.5 Company Commitment**

Within the company, there is an action plan for each target or objective relating to the conservation of biodiversity. These action plans are directly related to the Canadian Council of Forest Ministers (CCFM) Criteria and Indicators.

Each level within the company must follow the Performance Indicators and Action Plans Manual. This document states each goal, activity, responsibilities and date of completion.

#### **4.9.6 Company Strategies**

The Forestry Green Balance Sheet for 1998, states that the Woodlands Division of Stora Enso Port Hawkesbury Ltd. has attained registration of their environmental managed system to the ISO 14001 – 96 standard. This is the first registration to ISO 14001 of a forestry company in Canada and the second in North America.

Stora Enso Port Hawkesbury produces an annual report called the Green Balance Sheet. This document acts solely as an internal educational tool within the company. As well as reporting on environmental conservation performance, the report also identifies areas requiring training, and acts as a benchmark to measure continuous improvement. (GBS 1997). This report covers areas such as riparian zones, tree clumps for wildlife, boundary zones and corridors.

Strategies used by the Stora Enso Port Hawkesbury to achieve biodiversity conservation objectives follow the CCFM and Canadian Standards Association (CSA) approach. The CSA is a systems approach, which uses CCFM as its framework. The Forest Stewardship Council (FSC) was considered but there were problems with the regional standards that were developed. There was also an issue with the lack of representation of all the stakeholders at the regional level. It should be noted that the

doors have not been totally closed on FSC, but these types of problems must be addressed.

#### **4.9.6.1 Integrated Resource Management**

Another important strategy that Stora Enso uses to achieve biodiversity conservation objectives is Integrated Resource Management (IRM). This process began in September of 1996 for resource management on Crown lands for the seven eastern counties. These counties are Pictou, Antigonish, Guysborough, Richmond, Inverness, Victoria, and Cape Breton.

IRM is a land use planning process that recognizes and takes into consideration the various environmental, commercial, social, and recreational values of Crown lands. Effective IRM will assist in achieving long-term sustainable resource benefits while decreasing conflicts between competing resource users. IRM planning will be based on natural landscapes, which are distinct and definable land units determined by climate, geology, landform, hydrology and vegetation. The eastern counties are separated into 46 natural landscapes.

Stora Port Hawkesbury Limited has a forest management license on most of the Crown lands in the seven counties. Under this agreement, Stora manages forest resources with Department of Natural Resources (DNR) approval. Although the concept of IRM is fairly new, Stora has recognized and used the principles of IRM for quite some time. Stora is simultaneously developing a long-term forest management plans for its licensed Crown lands. Both the DNR IRM plan and the Stora long-term plan will incorporate the results of the public input processes.

In the eastern counties, IRM planning began with the formation of a planning team chaired by the Chief of Regional IRM. The other members of the team included regional biologists, foresters, geologists, and representatives from the Parks and Forestry branches of the Renewable Resources Division. The team prepared the overview documents and is now compiling the resource inventories. This information helps define the issues that must be included within the IRM plan. The team also receives

input from other government departments, an essential step in developing a complete inventory.

The collection of baseline resource information for Crown lands in the Region is one of the most important steps to IRM planning. The overview documents prepared by the Department of Natural Resources and Stora Port Hawkesbury are discussion documents for staff and public information.

The second step in the IRM planning process, the public consultation phase, is the most important and challenging. Public input will be collected through a variety of methods including workshops, open houses, presentations and handouts. Presentations are given to various groups including students and teachers, contractors, prospectors, fish and wildlife clubs and municipal councils. The majority of the presentations and workshops took place in the spring and fall of 1998.

A series of IRM public-participation sessions were held in 29 communities widely distributed across the eastern portion of Nova Scotia. The overall goals of the Integrated Resource Management Long-term Plan, public participation process were to:

- Determine locally important indicators for sustainable forest management.
- Identify the strengths and weaknesses of present forest operating techniques.
- Identify public objectives and priorities for forest management.

The result was the collection of over 2000 public comments from approximately 600 interested publics, as well as the completion of 542 forest practice surveys. In addition to the public sessions, numerous school visits were made and 422 resource management surveys completed.

Although the principles of IRM planning are not entirely new to Stora Enso, this new process changes the way the company's approaches decisions on land use. The 'bigger picture' must be considered, both regionally and provincially. IRM allows for a more thorough formalized approach to land use planning that will result in better management decisions.

#### **4.9.7 Response to Canadian Council of Forest Ministers**

Stora Enso Port Hawkesbury Ltd. uses the Canadian Council of Forest Ministers Criteria and Indicators as a framework for its biodiversity conservation objectives included within their Environmental Management System (EMS).

#### **4.9.8 Monitoring Process**

To monitor the progress towards the conservation of biodiversity objectives, Stora Enso regularly holds meetings to review documents and issues. This consists of a team of four people to conduct an audit on the company. The team consists of two people from DNR (biologists, foresters) and two people from Stora Enso. The team members change every two years, but only one person leaves at a time so that experience is not lost. This allows for fresh perspective and new ideas within the group. The only constant member of the team is Bevan Locke, Superintendent of Forest Resources with the company. Each audit takes ten days to complete.

#### **4.9.9 Success of Objectives**

The company's objectives to conserve biodiversity and achieve good forest management have been successful. Stora Enso being the first forestry company in Canada, and the second in North America shows commitment and success, to become certified by ISO 14001.

The Sustainable Forest Management plan of the company is heavily integrated into the long-term goals of the company. The SFM plan is also strongly tied to the Canadian Council of Forest Ministers Criteria and Indicators. Improvements in the company's forestry operations are shown in the Green Balance Sheets.

#### **4.9.10 Goals for Certification**

The Woodlands Divisions of Stora Enso Port Hawkesbury Ltd. has successfully achieved certification under ISO 14001.

The guidelines that are being followed are those that were developed for the Environmental Management System (EMS). In the EMS is a commitment to develop and

implement a philosophy of continual improvement. The present EMS is based on the structure outlined under the ISO 1400 standard. This is a positive and significant initiative requiring detailed work to develop and document policy and procedures, train staff and forest contractors, and implement new environmental control routines in wood lands.

*“We have now a very solid foundation upon which to further develop our activities in the forest management area. The system established for our certification provides a very useful tool to help us achieve continual improvements in sustainable forest development. Further ahead, this can lead to our becoming certified in accordance with either the Canadian Standards Association (CSA) or the Forest Stewardship Council (FSC) requirements.”* – Russ Waycott, Vice President, Woodlands.

#### **4.9.11 Confirmation of Guidelines**

One of the tools that the company uses to ensure that guidelines are being followed is an audit of their Environmental Management System. Auditing company Terra Choice performs this audit. The audit is an independent verification, which consists of a series of questions related to how the company operates. The end result is an environmental profile data sheet, which is attached to the company’s products.

The second method that the company uses to verify that their guidelines are being followed on a day-to-day basis is a voluntary audit. At the time of the interview in November of 1999, the company had just gone through this audit procedure and received a 98% score.

The Department of Natural Resources also does checks on the Forest Management License and the Forest Management Plan of the company.

#### **4.9.12 Areas for Improvement**

One of the areas that require improvement concerning the conservation of biodiversity is the need for effective local indicators. Stora Enso defines the need for SMART indicators, which stands for: Smart; Measurable; Achievable; Realistic; and

Trackable. The indicators that are developed for ground level operations must be linked to these five characteristics.

The most significant challenge for biodiversity conservation, according to Stora Enso, is that the entire concept must be embraced and defined. There must be a consensus regarding the issue in order for improvements to be seen across the entire industry. The daily operations of the company must be interwoven with the definition of biodiversity as defined by the Canadian Council of Forest Ministers.

#### **4.10 THE DOMTAR INTERVIEW**

The interview with Domtar took place on November 17, 1999 in Cornwall, Ontario.

##### **4.10.1 Conservation of Biodiversity**

Conservation of biodiversity to Domtar is defined to cover the genetic, species and ecosystem level. As Principle Two of their forestry policy, Domtar respects the biodiversity of plant and animal species to ensure their sustainability. This requires incorporating into forest management plans:

- Consideration for the diversity of plant species by:
  - Using appropriate harvesting practices that encourage natural regeneration;
  - Planting species that are genetically suitable for the ecosystem;
  - Utilizing ecological land classification systems and the natural evolution of forestry stands;
  - Participating in tree genetic-heritage programs.
  
- Consideration for the diversity of animal species by:
  - Guaranteeing that harvest prescriptions incorporate harvest size and configurations that protect or enhance wildlife habitats;
  - Maintaining riparian zones beside streams, rivers and lakes;



- Co-operating with government agencies, whose goal is to manage animal species.

#### **4.10.2 Environmental Policy**

Domtar has established biodiversity conservation objectives and targets. Domtar is a member of the Ontario Forests Industries Association (OFIA), which has a solid commitment to sustainable forest management. Members of the OFIA envision a *“future in which recognition of the inherent value of a healthy forest environment is foremost and in that context, a variety of human needs are met.”*

The Code of Forest Practices was developed in 1992, by a task force comprised of individuals with a range of experience, including industrial, aboriginal, academic, environmental and labour backgrounds. The Code was commissioned to demonstrate the commitment of member companies to sustainable development and progressive forest management (OFIA 1998). The Code’s release had a significant impact on the operating philosophy and practices of the member companies, and the outside companies with which they do business.

The Code of Forest Practices has had strong influence towards progressive forest management, and widely recognized as a leading edge document (OFIA 1998). It recognizes a broad base of forest values, which are seen in Domtar’s Integrated Forest Policy, such as public participation, human resources, research and development, and First Nations. The Code continues to have high influence over the framework in which sustainable forest management is conducted in Ontario. Domtar respects and is fully committed to upholding the principles of the Code.

Standard Operating Guidelines (SOG) also assists Domtar in establishing conservation of biodiversity objectives. The SOG addresses areas of concern, such as the use of culverts, and provide the details for each employees job responsibilities. The process of Peer Reviews began three years ago to ensure that the guidelines are being implemented effectively and followed to meet conservation objectives.

### **4.10.3 Employee Understanding**

To ensure that the concept of biodiversity is understood at all levels within the company, according to their job responsibilities; in-depth peer reviews are completed on the compliance and success of the Standard Operating Guidelines. As mentioned in relation to Question Two, this process began three years ago and is based on the ISO 14000 principles. Each review takes one week per location and is conducted by people within the company. The final report is circulated through the corporation, and an Action Plan is developed by each location to carry out the recommendations.

The Action Plan may contain quick fixes that would take one month to complete. There are also long-term recommendations that could take up to two years before results are recorded. The Action Plan and peer review process is a continual learning process, but is also a difficult method of learning due to the intensity of the audit. However, corporate challenges within the company create positive spin-offs, such as everyone learning from one another. The report is circulated throughout the corporation, which will allow the various locations to learn from each other's mistakes and successes. This type of process also helps each employee within the company to know the specific details of their job, and the peer reviews act as a check while at the same time recommending plans for improvement as a team and individual.

### **4.10.4 Company Commitment**

The Forest Management Plan (FMP) is a massive document, which details all of the required activities of the company. There are thirty-five guidelines in the document containing objectives and targets for the conservation of biodiversity. The FMP is reviewed every five years, with each review taking twenty-six months to complete. The review process could take longer if there is pressure from stakeholders, or a delay with the environmental assessments.

Domtar's Sustainable Forest Management License (SFML) is reviewed every five years by the Department of Natural Resources. The appropriate level within the company corrects any areas of dispute or concern. The audit is then forwarded to the Minister of Natural Resources. The document is funneled through the government and then to the

House of Commons for approval. The document then becomes public. This process acts as incentive for the company to ensure that they meet conservation objectives and practice sustainable forest management. With the document being available to the public, Domtar becomes more accountable to their stakeholders, the OFIA and the general public.

#### **4.10.5 Company Strategies**

To achieve biodiversity conservation objectives, Domtar is working towards ISO 14001 certification. The Canadian Council of Forest Ministers Criteria and Indicators will be used as the underlying framework. In May 1999, a strategy document was released with the CEO stating that Domtar would be certified within three years by ISO 14001. By the end of 2000, the White River location will be certified, and Espanola will be certified with the Canadian Standards Association and ISO 14001.

At Domtar's New York operations in the Adirondack Park, the company is working with Sustainable Forest Indicators (SFI) in cooperation with the American Forest & Paper Association. The SFI are comparable to the OFIA Guiding Principles and Code of Forest Practices.

#### **4.10.6 Response to the Canadian Council of Forest Ministers**

Domtar views the CCFM C&I only as framework for achieving certification. The main concern Domtar has with the CCFM C & I is that there are too many indicators that are already being documented by other organizations, such as the monitoring of air pollution.

#### **4.10.7 Monitoring Process**

Domtar utilizes its Standard Operating Guidelines and the internal peer reviews to monitor the progress towards the conservation of biodiversity objectives.

#### **4.10.8 Success of Objectives**

These objectives have been successful according to Wooding and deVries (Personal Communication 1999).

#### **4.10.9 Goals for Certification**

Domtar is working towards certification with ISO 14001, using CCFM as a framework.

#### **4.10.10 Confirmation of Guidelines**

Confirmation that these guidelines are being followed is found with the structure of ISO 14001, which contains regulations on audits and reviews. However, certification should not drive the process of conservation of biodiversity. The company should be involved because it is good forest management, which should exist prior to official certification.

#### **4.10.11 Areas for Improvement**

An area that Domtar sees as needing improvement in trying to successfully achieve conservation of biodiversity is the relationship between the provincial and federal government. According to Domtar, there is no coordinated effort between these two levels of government in Ontario when it comes to forestry and conservation issues. In order to effectively manage forests sustainably, all levels must agree and cooperate. The biggest area of concern for Domtar is that they often have to work to satisfy all levels of government, especially at the district level. The focus should instead be placed on practicing good forest management.

Another area of concern for Domtar is the need for the industry to collectively get comfortable with the definition of biodiversity, at the genetic, ecosystem and species levels. The concepts regarding biodiversity should also be more unified, such as effective conservation methods.

#### **4.11 THE PINE FALLS PAPER COMPANY INTERVIEW**

The interview with Pine Falls Paper Company (PFPC) was conducted on November 21, 1999.

##### **4.11.1 Conservation of Biodiversity**

Pine Falls Paper Company (PFPC) defines biodiversity in accordance with the CCFM definition. This definition incorporates all three levels of biodiversity, species, genetic and ecosystem. This was also the definition recognized throughout the previous interviews.

##### **4.11.2 Environmental Policy**

Yes, PFPC has established biodiversity objectives and targets. The Sustainable Forest Management Plan (SFMP, Plan), which was discussed in the previous section briefly, introduced the objectives concerning conservation of biodiversity of PFPC.

The SFMP that is being prepared by PFPC is to guide its planning, harvesting, access development, and access maintenance and renewal activities from the year 2000 to 2009. The Plan is based on the CCFM C&I approach to sustainable forest management, which consists of six criteria covering a wide range of environmental, social, economic values and goals. These criteria are:

- Conservation of biodiversity
- Maintenance and enhancement of forest ecosystem condition and productivity
- Conservation of soil and water resources
- Contribution to global and ecological cycles
- Multiple benefits of forest to society
- Accepting society's responsibility for sustainable development

To allow for time to complete the development and regulatory review of the new Plan, PFPC has applied to Manitoba Environment for a new Environment Act License for a one year interim plan called a the Annual Operations and Renewal Plan. Manitoba

Environment ranted a one-year extension of the current Environment Act License on December 21, 1998.

The Plan is understood to be the start of a long-term process of continual learning and refinement through experience, research, consultation, feedback and corrective action. Mechanisms for implementing this adaptive management strategy will be incorporated into the Plan (SFMP 1999).

Pine Falls Paper Company (PFPC) has also applied to Manitoba Department of Natural Resources (DNR) for a new Forest Management License (FML) Agreement, which would identify the area that would provide the future wood supply. The new FML would include the current FML are, the Integrated Wood Supply Area (IWSA) east and west and the two extended areas on the east side of Lake Winnipeg. This is the area that would be considered in creating the SFMP.

The Plan is being developed as part of the requirement for the Forest Management License Agreement with the Manitoba Government. The current long-term plan expired at the end of 1998 and must be replaced for several reasons (SFMP 1999):

- The current Plan does not sufficiently reflect the change towards sustainable forest management that has been increasing over recent years. The company's forest management objectives require updating to incorporate the CCFM C&I methods of measuring forest sustainability.
- New sustainable harvest estimates are essential which take into consideration improved forest modeling techniques, changes in government and public expectations about what is acceptable with respect to forest management, and the Company's goal to implement sustainable forest management principles.
- A new thermal mechanical pulp mill (TMP) is to be constructed that processed softwood into pulp. The TMP mill will replace the existing ground wood and sulphite pulp mill. This change into the pulping process will not increase the volume of wood that is used, but will allow PFPC to use a different mixture of tree species, which conforms closely to the mix of species that occurs naturally in the FML area.

- A new sawmill is also going to be designed and built along with the new TMP mill. This will diversify operations and guarantee long-term viability for PFPC. The operation of a sawmill requires different wood species and quality that has been used in the past. This will increase the amount of harvesting in the areas that are currently being utilized, including the Integrated Wood Supply Areas on the east and west side of Lake Winnipeg. The Province of Manitoba currently manages these areas. Expansion into new areas along the east side is also necessary. The new SFMP will include sustainable harvest levels and appropriate forest management strategies for all of those areas in one planning exercise and one, publicly available, plans.
- There is a plan to further extend the current all weather roads up the east side of Lake Winnipeg. Currently, this area is only accessible for a short period of time, by a winter road. An all weather road is essential to guarantee viable operation in the current and proposed expanded areas. The development of road access may also facilitate future access planning for First Nations communities in the area.

#### **4.11.3 Employee Understanding**

The concept of biodiversity is understood at all levels within the company with the help of specific Work Instructions for each employee. There are various levels of understanding of biodiversity, but each person is aware of their job description and responsibilities within the overall structure of the company. Those employees with greater responsibility concerning conservation objectives will have a higher level of understanding and commitment.

Training was completed with employees and contractors this year in October and November. To ensure that guidelines and work Instructions are being followed and implemented effectively, internal audits are conducted two times per year. There are two audits done fore each contractor.

#### **4.11.4 Company Commitment**

To ensure that each level within the company is achieving its objectives related to the conservation of biodiversity, audits are completed two times per year.

Extensive training is provided throughout the various levels in the Company. A training program is defined according to the responsibilities of the position. Classroom training is completed, and is then followed through out into the field.

#### **4.11.5 Company Strategies**

Pine Falls Paper Company is planning on becoming ISO 14001 certified by the end of the year 2000. An ISO audit will be completed give a gap analysis on how close the Company is to also becoming CSA certified.

The Company is also considering Forest Stewardship Council Principles and Guidelines, but they have concerns with the lack of a boreal forest standard. There is also apprehension over the FSC guidelines for chain-of-custody. At PFPC, not all of the wood comes from the Forest Management License area. Some of it is produced from private landowners. Which makes it very difficult to determine an accurate chain-of-custody.

With the FSC, there is a very high degree of public participation. PFPC strongly supports being involved with the numerous stakeholders and actively promoting public participation. PFPC recognizes that other users of the FML area and the general public have perspectives and knowledge that are significant to forest management planning and intend to provide First Nations, local communities, Pine Falls Paper's Sustainable Forest Management Advisory Committee (SFMAC), other interested stakeholders and the public with the chance to offer input and comments during the Plan Development process (SFMP 1999). Input and feedback will be obtained from other interested parties and the general public about the contents of the Plan through several methods. These methods for public participation are the following (SFMP 1999):

- Joint planning discussion with First Nations and other local communities.
- Discussion paper and newsletters.
- Workshops every month to six weeks and open houses.



- Site tours of PFPC operations.

The feedback that is received will be considered as the Plan develops and when implementing the sustainable forest management program (SFMP 1999).

#### **4.11.6 Response to Canadian Council of Forest Ministers (CCFM)**

Resulting from numerous national and international processes, and through the direction of the C & I provide a framework of common understanding and definition of SFM by recognizing the key values that Canadians wish to sustain and enhance.

Pine Falls Paper Company has had a very positive response to the Canadian Council of Forest Minister Criteria and Indicators. The Plan that is being developed by PFPC is using the CCFM C&I approach to sustainable forest management (SFMP 1999). The Plan will be developed to ensure that all elements of the CCFM C&I are covered, and in a method that maintains all stakeholders and Company's values. These will be the driving strategies, which will become the solid foundation of the plan.

Using the C&I framework, PFPC intends to work, in a variety of forums, to develop the values, goals, indicators, indicator targets, and forest management objectives and target for the FML area (SFMP 1999). The forums will be used to obtain input from a broad range of stakeholders.

The development of the C&I will be done using a well-developed process. The process starts with establishing values of those having an interest in the FML area (SFMP 1999). The development of those values will be accomplished through a program of consultation with a wide spectrum of individuals, groups and organizations. The values will be grouped into the six criteria of the C&I. If a value does not fit into one of the existing criteria's, a new one will be established (SFMP 1999).

When the values have been established and organized within each criterion, goals will be developed for each of the values (SFMP 1999). Indicators will then be developed for each of the goals; measurable indicator targets will be established for each of the indicators. Finally, forest management strategies and operating procedures are established to achieve the desired objectives.

During the entire process, PFPC will be holding consultations with local communities, resource users and user organizations, interested citizens, scientists, government, other organizations and groups with an interest in the FML area. Co-operation and joint planning with First Nations and other communities will be fundamental to this process and subsequent implementation of the Plan (SFMP 1999).

#### **4.11.7 Monitoring Process**

Pine Falls Paper Company is using the CCFM C&I framework to develop their SFMP, which will be used to monitor the progress towards conservation of biodiversity objectives. The process is still evolving at this point. Presently, the Company is using internal audits, conducted two times per year, to ensure that guidelines and regulations are being followed and implemented successfully.

#### **4.11.8 Success of Objectives**

It will take some time, approximately two years, to determine if the new SFMP will be successful.

To date, the audits that have been completed with the company have been positive. The contractors have shown significant improvement, but some still have room for increased progress. The goal for PFPC is to show improvement every day throughout their operations.

The 1997 Woodlands Annual Report included all of the contractors operating in Eastern Manitoba as well as the large producers in the IWSA East and Western Manitoba for the Environmental Audit Program (Keenan 1998). The Audit Program consisted of one scheduled audit followed by a second surprise audit on each operator. The program was well received by the operators and provided them with feedback on areas where improvement was needed.

The results of the audits showed several areas in need of attention. Lists of recommendations in the report are the following (Keenan 1998):

- Close monitoring of limbing and topping at roadside;

- Promotion of proper recycling and disposal methods for used petroleum-based products to all contractors;
- Promotion of certification for the Transportation of Dangerous Goods;
- Education and promotion of use of Spill Response Kits;
- Re-examination of methods to assess camps / service areas decommissioning;
- Encouragement of safe operating practices, especially in the case of personal safety equipment;
- Promotion of first aid training for contractors and operators;
- Promotion of two-way communication on-site for all contractors; and
- Continued education process for environmental awareness.

#### **4.11.9 Goals for Certification**

Pine Falls Paper Company is working to achieving ISO 14001 certification in the near future. To work towards this goal, the Company is developing a SFMP based on the CCFM C&I framework.

#### **4.11.10 Confirmation of Guidelines**

To ensure that the guidelines are being followed, audits are preformed on Company operations two times per year. Once the SFMP is implemented, this will also ensure that guidelines and conservation objectives are being met.

A consultant who is working for PFPC, who is also a certified ISO auditor, stated that they company was very close to CSA certification.

#### **4.11.11 Areas for Improvement**

A difficulty that PFPC recognizes is that it is very hard to force one certification system onto the entire industry. Some companies feel as though they do not even have to be certified, while others are trying to achieve certification with numerous systems.

Another areas of concern are that the government is starting to fall behind the forest industry. It is very difficult to keep up-to-date with the advancements that are

being developed with concern to sustainable forest management. This problem trickles down the system and can cause conflict, such as Natural Resource Officers not understanding company operations and conservation efforts.

#### **4.12 THE TOLKO MANITOBA INTERVIEW**

The interview with Tolko Manitoba Inc., Kraft Papers Division (Tolko, the Company) took place on November 21, 1999 in Winnipeg, Manitoba.

##### **4.12.1 Conservation of Biodiversity**

The conservation of biodiversity to Tolko is based on three areas of species, genetic, and ecosystem.

##### **4.12.2 Environmental Policy**

Tolko has not yet made specific biodiversity objectives or targets. However, the company has made broad statements about biodiversity objectives and is working towards a more detailed strategy.

##### **4.12.3 Employee Understanding**

The concept of biodiversity is not understood equally at all levels with the company.

##### **4.12.4 Company Commitment**

Work Instructions are used throughout the Company to ensure that guidelines are being followed successfully. A Gap Analysis was conducted on the Company, which resulted in an updating of environmental policies and guidelines to be followed.

#### **4.12.5 Company Strategies**

Currently, Tolko is evaluating all of the major certification strategies. The Company is committed to its own Environmental Management System.

#### **4.12.6 Response to the Canadian Council of Forest Ministers (CCFM)**

The CCFM C&I is a very good framework for conservation of biodiversity. A positive aspect of the CCFM C&I is that it is a flexible system.

#### **4.12.7 Monitoring Process**

Tolko utilizes its Operating Guidelines document to monitor its performance and progress.

#### **4.12.8 Success of Objectives**

Yes, the Operating Guidelines have been successful. A team of five to six people completes an audit each time a contractor goes through the area to ensure that the Operating Guidelines are being followed and effectively implemented.

#### **4.12.9 Goals for Certification**

Tolko is currently evaluating all of the certification systems. The Company does appear to be leaning towards certification with the ISO 14001 standard.

#### **4.12.10 Confirmation of Guidelines**

There are presently no guidelines in place that follow a specific certification system.

#### **4.12.11 Areas for Improvement**

An area that requires improvement is that there needs to be a better understanding of biodiversity issues and regulations. There seems to be lack of understanding where the provincial and federal governments are concerned. The provincial government has not been provided with sufficient information to make effective guidelines for industry. The

government does not seem to understand that they are not the regulators, and do not have to be intimately involved with the operations of the Company.

#### **4.13 The Canfor Interview**

The interview with Canfor took place on November 30, 1999 in Vancouver, British Columbia.

##### **4.13.1 Conservation of Biodiversity**

The Canfor Corporation recognizes the definition of biodiversity from the Canadian Council of Forest Ministers, with special emphasis on the landscape and forest levels.

##### **4.13.2 Environmental Policy**

Canfor is working on establishing biodiversity objectives in accordance with the Canadian Standards Association.

##### **4.13.3 Employee Understanding**

No, the concept of biodiversity is not equally understood at all levels within the company. Each employee understands the concept based on his or her job description and responsibilities. Within the British Columbia Forest Practice Code document, the Biodiversity Workbook assists in the overall understanding of biodiversity conservation objectives and strategies.

##### **4.13.4 Company Commitment**

Each level within the Company adheres to the Forest Practice Code to achieve its objectives relating to the conservation of biodiversity. The process starts at the upper management levels and is worked downwards to the employees in the field.

#### **4.13.5 Company Strategies**

Canfor has a long-term commitment to protecting the environment. The Company is continually improving its environmental management, using the environmental management system (EMS) standard, ISO 14001 as a framework. The Company is also helping to support the Forest Stewardship Council.

As a part of the restructuring in 1998, the corporate environmental and forestry functions were combined into one unit with a single EMS is being developed for forestry and manufacturing. This type of interrogated approach will give increased efficiency and improved results (CFP 1999).

#### **4.13.6 Response to Canadian Council of Forest Ministers (CCFM)**

Canfor believes that the CCFM have a very good definition of Sustainable Forest Management (SFM). The CCFM also has a positive tie to other international definitions of SFM. The difficulties with the CCFM C&I is getting the various levels of government to implement the C&I and work together. Another issue with the C&I is the problem of how to monitor the system once it is in place.

#### **4.13.7 Monitoring Process**

Canfor is still in the process of trying to determine the most effective measures to monitor the progress towards conservation of biodiversity.

#### **4.13.8 Success of Objectives**

In accordance with the ISO 14001 as a framework, the objectives have been successful. The Forestry Practice Code Audits reported success, and out of the audits came the Environmental Management System for Canfor.

#### **4.13.9 Goals for Certification**

Yes, the Company is working towards certification with the ISO 14001 standard. They are also looking at the FSC and the CSA standards.

#### **4.13.10 Confirmation of Guidelines**

An internal audit program within the company is the method used to determine if guidelines and policies are being implemented and followed. Currently, there may be up to seven audits conducted annually. A program is being designed to decrease the frequency of audits to only one overall audit per year.

#### **4.13.11 Areas for Improvement**

A problem that Canfor recognizes is the conflicting rules and regulations throughout the various certification systems and other guidelines for sustainable forest management. For example, the British Columbia Forest Practice Code contains sixty guidebooks to follow and implement. There must be increased coordination throughout the entire industry on the methods for SFM and conservation of biodiversity.

#### **4.14 The Western Forest Products Interview**

The interview with Western Forest Products Limited (WFP) was held on December 1, 1999 in Vancouver, British Columbia.

##### **4.14.1 Conservation of Biodiversity**

Maintenance of biodiversity is a very important goal of Western Forest Products. Corporate commitment to conservation of biodiversity is defined in WFP's Sustainable Forest Management and Environmental Policy as discussed in the Overview Section of this chapter. Conservation of biodiversity exists at the landscape and the stand level. This covers ecosystem, species and genetic diversity. Biodiversity varies in time and space and at many scales. The Company considers the influence of management over time and how biodiversity is affected.

##### **4.14.2 Environmental Policy**

Yes, WFP has established biodiversity objectives and targets. Both the management plans and landscape plans contain strategies for maintaining biodiversity.



Some of the main elements of the strategy are part of the ecosystem based management approach. These strategies include:

- Wildlife and habitat protection
- Ecosystem classification / representation
- Future forest conditions (seral stage distribution over time, old-growth managed areas)
- Riparian protection
- Integrate wildlife objectives in forest management planning by implementing the Biodiversity guidebook (from the BC Forest Practices Code) and other proposals for maintaining biodiversity.
- Complete a biodiversity plan for incorporation into long term Tree Farm License development plans.

#### **4.14.3 Employee Understanding**

The concept of biodiversity conservation is understood at all levels within the company in its simplest form. For example, the protection and maintenance of fish and wildlife, soil conservation and old-growth management. However, detailed strategies pertaining to more complicated issues, such as seral stage distribution over time is only fully understood by staff responsible for this aspect within the Company.

#### **4.14.4 Company Commitment**

All of WFP's staff is familiar with the Company's environmental policy and are trained to meet the Company's Standard Operating Procedures. WFP's Environmental Management System is designed to identify aspects of the company's activities that could impact the environment. It also specifies programs to minimize these impacts. Strategic and Operational plans are utilized to identify and provide management strategies to address biodiversity issues. These plans form the foundation of all forestry activities.

#### **4.14.5 Company Strategies**

Biodiversity Indicators are currently being developed under the Forest Stewardship Council (FSC) and the Canadian Standards Association (CSA) certification systems. Overall ecosystem viability and function is being maintained using a coarse and fine filter approach by maintaining a variety of landscape patterns over time and space. As well as targeting rare wildlife and plant communities are requiring special management.

#### **4.14.6 Response to the Canadian Council of Forest ministers (CCFM)**

In response to the CCFM C&I, the Company has drafted a set of indicators based on Criteria 1 – Conservation of Biological Diversity. They are as follows (draft):

- *Ecosystem Diversity*
  - Seral stage distribution – age and structure
  - Protected areas – distribution, area and percentage
  - Patch size distribution
  - Ecological resource inventories
  - Ecosystem representation
- *Species Diversity*
  - Habitat provision – amount and suitability for wildlife
- *Genetic Diversity*
  - Seed sources for planted seedlings
  - Natural regeneration vs. artificial

#### **4.14.7 Monitoring Process**

The Company is in the process of developing a list of indicators to monitor its progress toward maintaining biodiversity over time. WFP has been active in building a comprehensive resource inventory knowledge base that will be used to provide baseline information in which to measure future information. With the modeling of future forest condition approach used by WFP, the Company can compare actual management at the

end of five years when a new management plan is created to the predicted condition, to assess whether objectives have been reached.

#### **4.14.8 Success of Objectives**

As the Company is still in the development of monitoring systems, it is difficult to determine how successful strategies have been.

#### **4.14.9 Goals for Certification**

On April 12, 2000, WFP announced that the company has been granted ISO 14001 Registration throughout all of their coastal operations following a comprehensive environmental review of their environmental management system (EMS). The scope of the audit included field verification of forestry and harvesting systems. WFP's registration covers over 885,000 hectares of coastal forests (Jepsen 2000).

This ISO 14001 registered EMS covers all aspects of forestry activities and confirms that WFP's employees are working in an environmentally sensitive manner. The ISO 14001 Registration team gave special commendation to the WFP-developed EMS system that covers 41 operations sites and an annual harvest of 4.2 million cubic metres, making it one of the largest registration audits in North America to date (Jepsen 2000).

In an on-going commitment to the international certification process, WFP is working on ISO 14001, FSC and CSA certification. By certifying forest management practices and environmental management systems, WFP will be able to prove, through independent assessment, that their operations are managed according to the principles of sustainable management that conform to internationally accepted standards (Lavigne 1999).

While all three systems could lead to certification, each scheme has different purposes. The FSC and CSA approaches provide certification of a company's sustainable forest management while ISO 14001 is specifically a certification of a company's environmental management system. All three systems have some complimentary elements. For example, ISO 14001 gives a framework to which a

company's sustainable forest management program could be integrated. Although there is variation with the three systems, the overall goal of all three is to develop measurable indicators to allow a more objective assessment of WFP's sustainability efforts that will easily be interpreted by customers and the public (Lavigne 1999).

#### **4.14.10 Confirmation of Guidelines**

With successful registration to ISO 14001, confirms that the guidelines are being followed.

WFP has not yet had their main assessments completed to determine adherence to the international standards of FSC and CSA.

#### **4.14.11 Areas for Improvement**

WFP sees the most need for improvement in the areas of baseline information and indicators for monitoring and assessment.

### **4.15 The Weyerhaeuser Interview**

The interview with Weyerhaeuser Canada took place on December 1, 1999 in Vancouver, British Columbia.

#### **4.15.1 Conservation of Biodiversity**

The conservation of biodiversity, to Weyerhaeuser Canada, is a Social License, which is a contract with the consumers, and the public that the Company's products come from sustainably managed forests.

#### **4.15.2 Environmental Policy**

Yes, the Company has established biodiversity objectives. The Weyerhaeuser Forestry Resource Strategies provide specific targets and measurements for each of the operating regions in the United States. These strategies are Weyerhaeuser's approach to implementing the American Forest & Paper Association's Sustainable Forestry Initiative™. Because Canadian forestlands are public land, Weyerhaeuser's objectives

for Canada are similar but include some additional goals, for example, actively seeking public input for approval of harvesting plans and other operational activities (Weyerhaeuser website). Weyerhaeuser's Forestry Resource Strategies that relate to conservation for biodiversity include:

- Strategy: *Sustainable production of wood and other forest products*. Goals to achieve this strategy are (Weyerhaeuser website):
  - Reforest quickly after harvesting.
  - Practice intense forestry to produce wood and wood products that meet the customer's needs.
  - Maintain healthy forests and minimize loss due to fire, insects and disease.
  - Harvest at sustainable rates over the long-term.
  - Minimize waste in harvesting.
  - Encourage the use of various other products from the forest.
- Strategy: *To protect water quality and fish habitat*. Goals to achieve this objective are:
  - Develop and implement processes to assess the impact of forest practices on resources and adapt Company policies accordingly.
  - Practice sound road construction and maintenance.
  - Continuously improve management practices in streamside areas.
- Strategy: *Provide habitat for wildlife*. Goals to achieve this strategy are:
  - Identify and protect unique sites.
  - Implement landscape planning for wildlife, using wildlife-habitat data gathered on Company lands.
  - Protect threatened and endangered species on Company lands.
  - Cooperate with government agencies to determine how Weyerhaeuser forestlands can contribute to the conservation of threatened and endangered species.
- Strategy: *Protect soil stability and ensure long-term soil productivity*. Goals to meet this strategy are:

- Use equipment and practices appropriate for the soil, topography and weather to minimize soil erosion and negative impact on soil.
- Utilize forestry practices and technology to retain organic matter and soil nutrients.

#### **4.15.3 Employee Understanding**

No, the concept of biodiversity is not equally understood at all levels within the Company. Each employee within the Company understands the concept based on their job descriptions and responsibilities.

#### **4.15.4 Company Commitment**

Within the Company, at the management level, the employees work towards fulfillment of Corporate Policies and Objectives. Field personnel work to specific performance measurements on the ground, for example, meeting retention targets; meeting biodiversity emphasis measures under the Forest Practices Code; inventory of species present; and protection measures for red and blue listed species.

#### **4.15.5 Company Strategies**

Weyerhaeuser Canada is working towards the strategies within the Canadian Standards Association (CSA) to achieve conservation of biodiversity objectives. The Company also meets the CCFM C&I, which is the framework for CSA Sustainable Forest Management.

#### **4.15.6 Response to the Canadian Council of Forest Ministers (CCFM)**

Weyerhaeuser Canada has had a very positive response to the CCFM C&I. It is the basis on which they developed their SFM.

#### **4.15.7 Monitoring Process**

The Company uses a **Panel Review Process** to annually monitor their progress towards biodiversity conservation. They also use an internal audit system and monitoring program

#### **4.15.8 Success of Objectives**

It is too soon to tell if the objectives have been successful. However, their peers, customers and communities have judged the Company's efforts successful.

#### **4.15.9 Goals for Certification**

Weyerhaeuser Canada is working towards ISO 14001 and CSA certification. There is currently one division CSA registered, and ISO 14001 certified. The Company also has an FSC pre-assessment for one division, and is considering obtaining FSC certification in advance of the establishment of FSC Regional Standards.

#### **4.15.10 Confirmation of Guidelines**

Internal and external audits and reviews are the methods used to confirm that the guidelines are being implemented and followed at all levels within the company.

#### **4.15.11 Areas for Improvement**

A significant area that requires improvement is to work on the performance aspect of the industry instead of such a heavy focus on the rules. Trust is another issue. Trust must be strengthened with the public and government in order to build a bridge towards performance measures and away from rules. With a focus on performance, stakeholders, government and the general public will see commitment to conserving biodiversity and sustainable forest management.

Another issue is the very high monetary expense necessary to pursue good forest management. A solution Weyerhaeuser Canada sees to this problem is for all industries to be working together to achieve common goals, such as certification. Partnerships would be a key component in this process.

#### **4.16 The Weldwood Interview**

The interview with Weldwood took place in Williams Lake, B.C. on December 3, 1999.

##### **4.16.1 Conservation of Biodiversity**

Weldwood is committed to maintaining biodiversity of the forests. The Company defines biodiversity at all three levels, species, genetic and ecosystem.

##### **4.16.2 Environmental Policy**

The Land Use Plan is the driving force behind biodiversity targets and objectives. The Land Use Plan gives assurance that the Company is managing the forests for long-term sustainability.

##### **4.16.3 Employee Understanding**

As with the other companies in the study, the level of understanding concerning biodiversity depends on the employee's position and their responsibilities.

##### **4.16.4 Company Commitment**

The Forest Development Plan is a document, which provides guidelines for each level in the company to follow, and it ensures that all issues concerning conservation and sustainable forest management are covered. The Forest Development Plan is prepared prior to field operations to determine, for example, the percentage of tree patches, which should remain.

##### **4.16.5 Company Strategies**

Williams Lake Plywood was the first plywood mill in North America to successfully certify its environmental management system to ISO 14001 on September 24, 1999 (Dialogue 1999). The next step that Williams Lake is pursuing is to become CSA certified in the near future.



#### **4.16.6 Response to the Canadian Council of Forest Ministers (CCFM)**

Weldwood of Canada has had a very positive response to the Canadian Council of Forest Ministers Criteria & Indicators (CCFM C&I). Williams Lake plywood has used the CCFM C&I as framework for their EMS.

#### **4.16.7 Monitoring Process**

Currently, the Company is following the Land Use Plan to measure the progress towards the conservation of biodiversity. Formal and informal audits are completed at the stand level to determine how things change. For example, supervisors constantly drive by old cut blocks to check on things such as fish streams, culverts and road condition.

Once the CSA system is implemented, it will provide the system for yearly monitoring.

#### **4.16.8 Success of Objectives**

To date, the Land Use Plan is working very well, and everyone within the Company is working together to achieve common goals and objectives. It is important to remember that each stand is not in isolation of another and should be managed accordingly.

#### **4.16.9 Goals for Certification**

Williams Lake Plywood achieved ISO 14001 certification on September 24, 1999, and is now working towards the CSA standard.

During the week of August 30, 1999, Hinton Pulp successfully passed its ForestCare certification audit. Hinton Pulp and Hinton Forest Resources, showed significant improvement since undergoing its first *FORESTCARE* audit in 1996 (Dialogue 1999). All three Hinton operations are currently *FORESTCARE* certified until 2002.

100 Mile House is also certified with ISO 14001 and is now working towards achieving certification to Canada's National Standard for Sustainable Forest Management (CAN/CSA-Z809-96). As part of its SFM initiative, 100 Mile House has developed a local group to ensure public values and objectives are representing the Defined Forest Area to which certification is applicable. The group consists of a variety of stakeholders such as trappers, guides, environmentalists and the general public.

In addition to seeking public feedback and input, 100 Mile House has continued to undergo certification training and a process of internal audits to support a cycle of continual improvement and prepare for the SFM audit.

#### **4.16.10 Confirmation of Guidelines**

To confirm that the guidelines are being followed, internal audits are completed every two to three years.

#### **4.16.11 Areas for Improvement**

A problem that the Company sees is that there is too much regulation in the province of British Columbia. In some cases, this takes away from the creativity of the Company when trying to develop innovative ideas for the enhancement of the environment. However, heavy regulations are good for those companies considered to be poor performers. A solution to the problem of heavy regulation by the government would be to design an incentive program for good performers in the industry.

Another area of concern is that presently in the province, forest management licenses are based on volume tenure instead of area tenure. A change to area tenure would result in any company being more concerned about their property. For example, owning a home would result in better care and maintenance compared to if the person was only renting for the short-term. An area-based tenure system would give the company more certainty in managing their forestlands, and they would be more willing to spend money on research, development and planning.

## **Chapter Five**

### ***COMPARATIVE ANALYSIS***

#### **5.0 COMPARATIVE ANALYSIS OF THE RESEARCH**

The following section provides tables indicating significant components of the interviews conducted with the eight forestry companies in the study.

##### **5.0.1 Definition of Biodiversity**

Table 1 describes each of the company's definition and understanding of the concept of biodiversity.

Each of the eight companies in the study referred to the Canadian Council of Forest Ministers to define biodiversity. This definition covers the variety of all living things at the genetic, species and ecosystem level. (CCFM1995). Weyerhaeuser was more specific by stating that in addition to the CCFM definition, they also consider the conservation of biodiversity as a Social License to guarantee that the Company's products come from sustainably managed forests.

The common threads that run throughout the definitions of biodiversity show that the Canadian forest industry is paying attention to this significant issue. This builds a solid foundation for the industry to grow in their commitment to biodiversity conservation objectives and targets.

**Table 1**  
**Definitions of Biodiversity Conservation**

<b>Stora Enso</b>	<b>Domtar</b>	<b>Tembec</b>	<b>Tolko</b>
The variety of all living things at the genetic, species and ecosystem level (CCFM definition).	Covers the genetic, species and ecosystem levels.	Incorporates all three levels of biodiversity.	Based on the CCFM definition which incorporates the species, genetic and ecosystem levels.
<b>Canfor</b>	<b>Western Forest Products</b>	<b>Weyerhaeuser</b>	<b>Weldwood</b>
Supports the CCFM definition, with special emphasis on the landscape and stand levels.	Definition covers ecosystem, species and genetic levels.	A Social License to guarantee that the Company's products come from sustainably managed forests.	Defines biodiversity at the genetic, species and ecosystem levels.

### **5.0.2 Biodiversity Targets and Measures**

Table 2 details the biodiversity targets the company has implemented within their management plans. It also describes what methods each of the companies utilizes to follow through with their targets and objectives.

Pine Falls Paper Company and Canfor were still in the development stages concerning specific biodiversity targets. It is important to not that even though a company does not have detailed targets in writing, does not mean that they are not practicing good forest management. To support this, the two above mentioned companies do have action plans in place for when their targets are finalized.

Each of the companies in the study is very committed to the conservation of biodiversity and sustainable forest management. In all of the interviews, each company described an action plan that is in place in response to the high demands of sustainable forest management. The plans vary according to the company and their location. For example, Canfor follows the British Columbia's Forest Practices Code, as must other forestry companies in that province.

Domtar in Ontario has a very detailed system in place, which they call their Forest Management Plan. This plan contains over 35 objectives for the conservation of biodiversity. Tembec (Pine Falls Paper Company) and Tolko Manitoba have implemented detailed work instructions and extensive training at each level within the company. To show their strong commitment to biodiversity conservation, Western Forest Products follows Standard Operating Procedures and their Environmental Management System (EMS). Weyerhaeuser follows Corporate Policies and Objectives and specific performance guidelines for field operations. Weldwood adheres to their Forest Development Plan as part of their efforts to conserve biodiversity and work on enhancing sustainable forest management throughout their operations. All of the plans that have been developed by each company reflect their solid commitment to the conservation of forest biodiversity.

One of the key components of a successful forest management plan is to be able to monitor the progress throughout the operations. Each company in the study had a

different method of monitoring the implementation and effectiveness of their objectives and targets. A common element throughout the companies was to employ annual internal audits or peer reviews. Canfor and Western Forest Products, at the time of the study, were in the process of developing lists of indicators to measure progress in their operations.

The monitoring system that each company has in place, or is working on, reflects their individual company commitments. It is also dependent on the certification system that is implemented within the company, or that is being considered. How to effectively monitor operations is often a difficult issue faced by forestry companies.

**Table 2**  
**Biodiversity Targets and Measures**

	<b>Stora Enso</b>	<b>Domtar</b>	<b>Tembec</b>	<b>Tolko</b>
<b>Targets</b>	Yes	Yes	Yes	In Development
<b>Measures</b>	Action Plan for each target or objective. Directly related to CCFM C & I. Performance Indicators and Action Plan Manual. Meetings and Audits.	Forest Management Plan (FMP). Reviewed every 5 years. SFMP is also Reviewed every 5 years. Standard Operating Guidelines.	SFMP	Standard Operating Guidelines and Work Instructions.
	<b>Canfor</b>	<b>Western Forest Products</b>	<b>Weyerhaeuser</b>	<b>Weldwood</b>
<b>Targets</b>	In Development	Yes	Yes	Yes
<b>Measures</b>	Forest Practice Code	Company Standard Operating Procedures.	Panel Review Process and audits. corporate Policies and Objectives.	Forest Development Plan.

### **5.0.3 Company Response to Canadian Council of Forest Ministers**

The wide acceptance of the Canadian Council of Forest Ministers (CCFM) definition is shown in Table 1. The response to the CCFM C&I document was very favorable from forestry companies. All of the companies in the study, except for Canfor and Domtar, have used the CCFM C&I for the framework for the conservation of biodiversity objectives.

Domtar views the CCFM C&I only as a tool for achieving further certification. Canfor does see the CCFM as providing a good definition of sustainable forest management, but does have some problems with the document. Two of the biggest concerns that Canfor has with the CCFM C&I, is that it is difficult to get the various levels of government involved to implement the C&I and work together effectively. Another issue with the C&I is the difficulty of trying to monitor the system once it has been implemented.



**Table 3**  
**Response to the Canadian Council of Forest Ministers**  
**Criteria & Indicators**

<b>Stora Enso</b>	<b>Domtar</b>	<b>Tembec</b>	<b>Tolko</b>
Uses the CCFM as a framework for biodiversity conservation objectives included within the Environmental Management System (EMS).	Framework for achieving certification. Concerned that there are too many indicators.	The Plan that is being developed by PPFC uses the C & I approach to sustainable forest management. The Plan will cover all elements of the C & I.	The CCFM C&I is a very good framework for conservation of biodiversity. A positive aspect of The CCFM C&I is that it is a flexible system.
<b>Canfor</b>	<b>Western Forest Products</b>	<b>Weyerhaeuser</b>	<b>Weldwood</b>
Approves of the definition of Sustainable Forest Management (SFMP). Difficulties with the CCFM C&I is government cooperation in implementing the system.	WFP has drafted their own set of indicators based on Criteria 1- Conservation of Biological Diversity.	Very positive response to the CCFM C&I. It is the basis for which they have developed their SFMP.	Very positive response to the CCFM. Williams Lake Plywood has used the CCFM C&I as a framework for their EMS.

#### **5.0.4 Certification Status**

Table 4 illustrates each of the company's level of commitment towards the conservation of biodiversity and certification efforts. Domtar, Tolko, Pine Falls Paper Company and Canfor were not officially certificated at the time of the interviews, but had very clear focus and were working towards this goal. Stora Enso, Western Forest Products, Weyerhaeuser and Weldwood were all certified by ISO 14001 at the time of the interviews.

Four of the eight companies (Stora Enso, Weldwood, Weyerhaeuser and Western Forest Products) have achieved certification with ISO 14001. The other four companies (Pine Falls Paper Company, Domtar, Canfor and Tolko) are all currently evaluating and are working towards the ISO 14001 standard. Tembec, Stora Enso, Weyerhaeuser, Canfor and Western Forest Products are also looking at the Canadian Standards Association (CSA) and Forest Stewardship Council (FSC).

Due to a limited budget and time frame, forestry companies in Alberta were not interviewed which explains the lack of certification shown from the *FORESTCARE* standard. All of the companies that were interviewed were aware of *FORESTCARE* and its many positive aspects. However, the companies in the study were more concerned with certification systems that are nationally and internationally recognized.

The popularity of ISO 14001 in the forest industry is evident across the country. Even those companies that were not certified were very strongly leaning towards ISO 14001. The ISO 14001 standard is internationally recognized which increases its acceptance throughout the industry. Due to its framework of guidelines and measures, ISO 14001 can be described as a bus that is well equipped to carry other passengers. These other passengers being the other certification systems (Personal Communication, Rotherham 1999). In this study, all of the companies that are currently certified with ISO 14001 are also reviewing the Forest Stewardship Council and the Canadian Standards Association standards. With a structured system such as ISO 14001 in place, a company may find the process of implementing another certification standard with greater ease.

**Table 4**  
**Certification Status**

	<b>Stora Enso</b>	<b>Domtar</b>	<b>Tembec</b>	<b>Tolko</b>
Is the company working towards certification?	Yes	Yes	Yes	Yes
What guidelines are being followed?	The Woodlands Division of Stora Enso Port Hawkesbury Ltd. achieved certification under ISO 14001. Looking ahead to CSA and FSC.	Domtar is working towards certification with ISO 14001, using the CCFM as a framework.	Working to achieve ISO 14001. Pine Falls Paper Company is developing a SFMP based on the CCFM C&I framework to help achieve this goal.	Currently evaluating all certification systems.
	<b>Canfor</b>	<b>Western Forest Products</b>	<b>Weyerhaeuser</b>	<b>Weldwood</b>
Is the company working towards certification?	Yes	Yes	Yes	Yes
What guidelines are being followed?	Working towards certification with the ISO 14001 standard. Also looking at the FSC and CSA standards.	Achieved ISO 14001 certification in April 2000. Also working on FSC and CSA certification.	Working towards ISO 14001 and CSA certification. Also considering FSC certification.	Achieved ISO 14001 certification on September 1999. Currently working towards the CSA standard.

### **5.0.5 The Need for Improvement**

Table 5 depicts each of the company's desires for areas of improvement concerning the conservation of biodiversity and certification efforts. Each of the companies in the study were concerned with the lack of effective local indicators and industry/government relationships.

The need for effective local indicators was strongly expressed by Stora Enso. It is impossible to paint Canada with one colour; therefore it is critical that each local region be properly represented (Personal Communication, MacLeod and Lock 1999). This is critical to meeting conservation objectives at both a coarse and fine-filter approach to conservation of biodiversity (Kernohan and Haufler 1998).

Each company within the study also expressed concern over the need for a stronger and more balanced relationship between all levels of government and industry. A relationship that would allow both sides to work together and move forward. It was noted by Pine Falls Paper Company that government and industry are not always on the same level. They are concerned that government is starting to fall behind the forest industry, and having difficulty keeping current with new developments being made in regards to sustainable forest management (Personal Communication: Keenan 1999). Tolko Manitoba was also in agreement, stating that there is a definite lack of understanding of conservation issues by the provincial and federal governments.

The companies that were studied in British Columbia (Canfor, Western Forest Products, Weyerhaeuser and Weldwood) also see the need for improvement in the area of government and industry relations. Weyerhaeuser stressed the importance of decreasing the amount of rules on the industry, and to instead focus on the performance end of the industry. Trust between the sectors must be increased in order for the advancement of conservation methods. Weldwood noted that too much regulation often decreases the amount of creativity that the company can express when developing innovative ideas for conservation of biodiversity.

As there is often conflict with government and industry, there is also conflict found within industry and certification. Canfor was aware of the conflicting rules and regulations throughout the four-certification systems and other guidelines for sustainable forest management. Tolko and Domtar both stated there must be consensus among the forest industry across Canada on biodiversity issues and regulations. Western Forest Products sees the need for an increase in the quantity and quality of baseline information and indicators for monitoring and assessment.

**Table 5**  
**Need For Improvement**

<b>Stora Enso</b>	<b>Domtar</b>	<b>Tembec</b>	<b>Tolko</b>
<p>Need for effective local indicators. SMART indicators: Smart Measurable Achievable Realistic Trackable</p>	<p>Stronger relationship between the provincial and federal government.</p> <p>Another area is for the industry to collectively get comfortable with the definition of biodiversity, at the genetic and species level.</p>	<p>Government and industry are not always on the same page. Concerned that the government is starting to fall behind the forest industry. Difficult to keep up with the new technologies being developed in regards to sustainable forest management.</p>	<p>Increased understanding on biodiversity issues and regulations. This concerns industry and all levels of government. Lack of understanding where the provincial and federal governments are concerned.</p>
<b>Canfor</b>	<b>Western Forest Products</b>	<b>Weyerhaeuser</b>	<b>Weldwood</b>
<p>There are too many conflicting rules and regulations throughout the various certification systems and other guidelines for sustainable forest management. There must be more coordination within the entire forest industry on the Methods for SFMP and conservation of biodiversity.</p>	<p>WFP sees the need for improvement in the areas of baseline information and indicators for monitoring and assessment.</p>	<p>To decrease the focus on rules and increase the work on the performance aspect of the industry. Trust be strengthened with the public and the government in order to build bridge between the two sectors.</p>	<p>Too much regulation in the province of British Columbia. In some instances this can take away from the creativity of the industry when trying to develop new ideas for the enhancement of the environment.</p> <p>Another concern is in B.C., forest management is based on volume tenure instead of area tenure.</p>

## **5.1 CHAPTER SUMMARY**

The eight companies in the study had similar background and familiarity with the concept of conservation of biodiversity. This is a good basis for further work in this area to progress. The analysis of the data shows that the companies are also all working on their strategies for biodiversity conservation. This shows a high level of commitment towards this common goal.

The companies in the study all have a solid framework behind them concerning the concept and importance of conservation of biodiversity. This gives credit to the Canadian Council of Forest Ministers Criteria & Indicators (CCFM C&I), which is held in high regard by the companies in the study. Only one company had difficulties with the monitoring aspect of the CCFM C&I, and implementation of the C&I by all levels of government. A negative aspect of the CCFM C&I is often lack of cooperation and understanding by the various levels of government and other stakeholders.

Each of the companies in the study has a high commitment to certification. A study by the Canadian Sustainable Forestry Certification Coalition revealed that all member companies of the Canadian Pulp & Paper Association are currently involved in forest management certification (Bulletin 2000). Four of the eight companies had achieved certification status at the time of the interviews, while the other four companies were in the process of becoming certified by the International Organization for Standardization (ISO 14001) in the near future. ISO 14001 is certainly the predominant system in Canada for forest certification. The popularity of this system is propelled by the fact that it is internationally recognized, and it can act as platform for other certification systems if a company chooses to pursue other certification standards (Personal Communication, Rotherham 1999). It is clear that companies are using two or more standards or stewardship as well as competitive reasons (Bulletin 2000).

There were several areas in need of improvement as seen by the forestry companies. One significant area of concern was the lack of effective local indicators. Indicators must be developed for specific and local areas within the company's operations. This is critical to successful conservation efforts and achievement of certification standards. Lock and MacLeod (Personal Communication 1999) of Stora

Enso Port Hawkesbury stated that all of Canada could not be painted across with one brush of the same colour.

Another issue of concern was the need for an improved and stronger relationship between all levels of government and industry. When both government and industry effectively cooperate, smooth implementation of conservation of biodiversity methods, and advances in technologies will be seen throughout the forest industry.

The actions that the companies have taken towards achieving certification and sustainable forest management are encouraging. The overall assessment of these actions is a tool for the policy maker to use in determining whether the companies are doing what they are supposed to do (Freeman 1970). If this is not the case, chances for success will deteriorate. Inadequate supervision and limitation of resources is often the problem when a gap occurs between policy specifications and actual conduct (Freeman 1970). As Freeman (1970) indicates, the development of policy is a dynamic process where the policy maker constantly changes, expands, and shifts the activities under his direction.

The pursuit of certification and sustainable forest management practices is evident with all of the companies in this research project. The forward moving actions, taken by the companies, show a strong commitment to these issues. Success will be achieved throughout the industry when the discrepancies between what policy makers say should be done and what is actually done are minimized (Freeman 1970). As indicated by several of the forestry companies in the study, this can be achieved with effective partnerships between government, industry, and stakeholders. Clear communication and cooperation among these parties, are key elements to dissolving discrepancies between policy and action.



## **Chapter Six**

### ***CONSERVING CANADA'S FOREST BIODIVERSITY***

#### **6.0 CONCLUSIONS**

The overall purpose of this study was the analysis of biodiversity conservation efforts of Canada's major forest corporations. A significant amount of the research was to study the forestry company's policies and to examine their commitment to conservation objectives. The study also focused on four major forest certification system. The research was based upon personal interviews conducted with management officials from eight major forestry companies in Canada during November 1999 and December 1999.

The first objective of this study was to document biodiversity conservation criteria and indicators from literature and various other sources. The primary source of this information came from the Canadian Council of Forest Ministers Criteria & Indicators (CCFM C&I). This is a significant document, which has, and continues to influence the eight companies in the study and the entire forest industry across Canada. The companies involved in the study had a positive response to the CCFM C&I and have utilized the document to provide the framework for their forest management plans. Literature was also collected from journals, workshops and various government agencies, such as the Canadian Pulp & Paper Association, Manitoba Department of Conservation, and Natural Resources Canada.

The second objective was to collect data relating to biodiversity conservation from the forest companies. This was completed with a review of company annual review documents and management plans. Information was also collected from each company's website and other forestry related websites, such as the Model Forest and Canadian Pulp and Paper Association.

The third objective of the study was to analyze company operations in relation to biodiversity conservation criteria and indicators. After the interviews were completed,

the data was organized into matrix tables. The tables were used to compare the following:

1. Definitions of biodiversity.
2. Biodiversity targets and measures.
3. Responses to the Canadian Council of Forest Ministers Criteria & Indicators.
4. Status of certification.
5. Need for improvement concerning biodiversity conservation and certification in Canada.

The final objective of the study was to draw significant conclusions based on the evaluations and to make effective management recommendations.

## **6.1 RECOMMENDATIONS**

The findings of this study have positive benefits and implications for the forest industry in Canada, specifically concerning conservation of biodiversity and certification. The following recommendations are to assist forestry companies in Canada in their efforts to achieve sustainable forest management and to conserve forest biodiversity.

1. Increase and promote public knowledge on conservation of biodiversity and forest certification systems. It is crucial that the general public is aware of certification systems in order for them to make intelligent decisions as consumers. The public must be provided with information on all certification systems, including logos and what companies are certified under each system. It is also critical that researchers and resource managers address the environmental concerns of the public concerning research and specific management practices (Lautenschlager 1999). Effective decision-making concerning the conservation of biodiversity must integrate public desires as well as biological and economic needs (Lautenschlager 1999).
2. An increase in public participation is recommended to increase the awareness of the conservation of biodiversity and certification. Public participation is a key element in the four-certification systems covered in this study. It is crucial that

companies hold public seminars, conferences and provide educational materials for the public. Public feedback is an important step towards successful sustainable forest management. It is necessary for the company to know what values and knowledge the general public and other stakeholders deems as important.

3. To benefit the forest industry and increase sustainable forest management across Canada, a more unified approach to certification would be beneficial. Presently, there seems to be conflict among companies regarding which system is the most effective. There are many positive aspects from each of the systems. According to some companies, there are drawbacks that make implementation difficult.
4. One of the main concerns was lack of appropriate and useful local indicators. A system that implements indicators from a top-down approach will not be successful. Specific indicators must be developed that take each region into consideration. Further research must be completed to determine which are the best indicators to use for the conservation of biodiversity. The issue of certification is very complex and more research is needed in this specific area. With more in-depth knowledge of the various certification systems, specific details can be extracted to create an increased understanding throughout industry, government and other stakeholders.

A system for selecting appropriate indicators was expressed by Stora Enso as S.M.A.R.T indicators. This system represents indicators, which are (Personal Communication, MacLeod and Lock 1999):

- Smart
- Measurable
- Achievable
- Realistic
- Trackable

5. More cooperation is required between federal and provincial governments and industry to increase the progress towards conservation of biodiversity. These groups must be on the same page in order for effective decisions and management plans to be implemented successfully. This study skimmed the surface of such an important and often contentious issue among provincial and federal government and the forest industry.
  
6. Effective monitoring of a company's progress is a key element in the success of forest management plans. There is a strong need for the implementation of a monitoring system to address the needs of forestry companies. Audits are one method used frequently to monitor progress. Companies typically have one internal and one external audit per year. An issue that came up often in the interviews was the increasing number of audits, as the companies begin to implement more than one certification system. It is recommended that a more unified approach to certification across Canada, with the appropriate local indicators, would also create a more systematic approach to monitoring. This would decrease the time and cost of certification to the forestry companies, and enable them to concentrate on further enhancing conservation of biodiversity objectives and targets.
  
7. Further research is needed into determining the most appropriate means by which to show that biological diversity is being conserved by the forest industry. In order for this to occur, a set of biodiversity conservation guidelines should be developed and tested using an adaptive resources management framework. In this way, improvement to the guidelines could be incorporated as companies test their ability to implement and adapt to evolving demands.

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## **APPENDIX 1**

### **INTERVIEW GUIDE**

#### **For Canadian Forestry Companies Concerning the Conservation of Biological Diversity**

1. What does the conservation of biodiversity mean to your company?
2. Has your company established biodiversity objectives / targets?
3. Is the concept of conserving biodiversity equally understood at all levels within the company?
4. How is each level within your company achieving its objectives relating to the conservation of biodiversity? (From managers to field technicians)
5. What strategies does your company utilize to achieve biodiversity conservation objectives? (For example, Forest Stewardship Council Principles and Criteria or CCFM C&I)
6. What is your company's response to the Canadian Council of Forest Ministers Criteria and Indicators?
7. What measures does your company employ to monitor the progress towards the conservation of biodiversity objectives?
8. Overall, have the objectives been successful and how?
9. Is your company working towards certification / registration? If yes, what guidelines are being followed? (For example, ISO 14001, FSC, or Forest Care)
10. What type of confirmation do you have that these guidelines are being followed?
11. Where does your company see the need for the most improvement concerning conservation of biodiversity? (For example, federal/provincial regulation and enforcement)

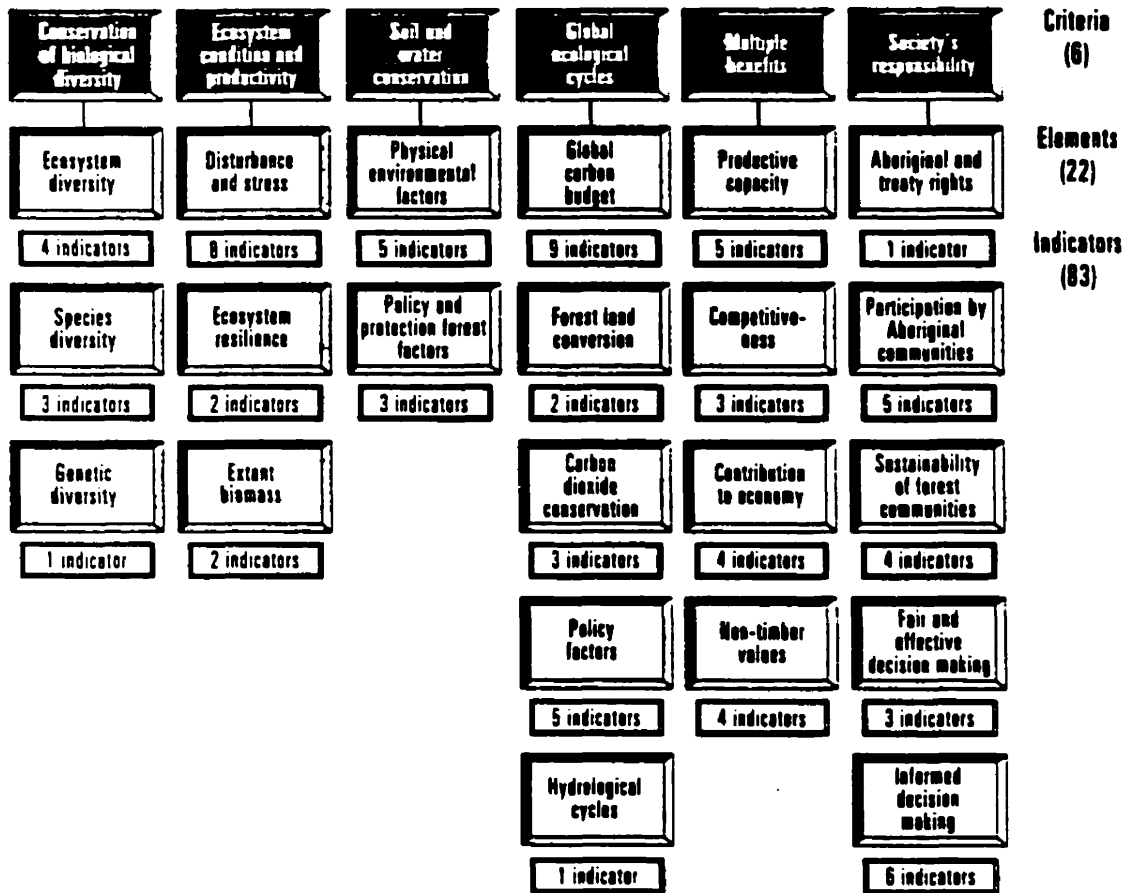
## **APPENDIX 2**

### **List of Companies and Interview Dates**

Stora Enso	Port Hawkesbury, NS	November 15, 1999
Domtar	Cornwall, ONT	November 17, 1999
Tembec (Pine Falls Paper Company)	Pine Falls, MB	November 21, 1999
Tolko (Tolko Manitoba)	The Pas, MB	November 21, 1999
Canfor	Vancouver, BC	November 30, 1999
Western Forest Products	Vancouver, BC	December 1, 1999
Weyerhaeuser	Vancouver, BC	December 2, 1999
Weldwood	Williams Lake, BC	December 3, 1999

## APPENDIX 3

### Canadian Council of Forest Ministers Criteria & Indicators



Source: Canadian Council of Forest Ministers

Criteria and Indicators of Sustainable Forest Management in Canada. Technical Report 1997. CCFM Ottawa, Ontario.