

# **Incentives for Conservation Easements to Sequester Carbon in North America**

Prepared for

Natural Resources Canada – Canadian Forest Service

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September 3, 2004

## EXECUTIVE SUMMARY

The Canadian Forestry Service of Natural Resources Canada (NRCan) is conducting a feasibility assessment of afforestation for carbon sequestration under commitments of the Kyoto Protocol. As part of this assessment, ERIN Consulting was contracted to assess and evaluate afforestation/reforestation incentives on private lands in Canada and the United States. The goal of the project was to review existing afforestation efforts using conservation easements and similar agreements in the two countries and to evaluate their effectiveness. ERIN Consulting was also asked to explore opportunities and to develop a set of potential conservation related mechanisms that encourage private landowners to increase afforestation.

The study employed an extensive internet and literature search and, using a pre-designed questionnaire, contacted a number of the key government and non-government agencies in both countries that were known to be involved in conservation easements and afforestation programs. Basic information about afforestation efforts and particularly use of conservation easements and similar agreements to promote carbon sequestration were collected and used to create a comprehensive database. This information was summarized and analyzed for common characteristics that would be useful for developing mechanisms and possible scenarios useful in developing a national program.

The study determined that many conservation agencies use both donated and purchased easements and other agreements to meet their biodiversity protection objectives. Some had afforestation programs as well. Virtually no organizations in Canada and a mere handful in the USA used conservation easements as an incentive to encourage afforestation. The Nature Conservancy of Canada (NCC) was the agency most active in Canada using conservation easements and in securing conservation land. However, few of their easements related to afforestation and none for stated purposes of carbon sequestration. NCC and other ENGOs such as Ducks Unlimited Canada (DUC) and the Manitoba Habitat Heritage Corporation (MHHC) were actively using purchased conservation easements and have the logistical and administrative capabilities to support acquisition and management of conservation easements on a limited scale.

The study found the United States incentive programs for afforestation and use of afforestation for carbon sequestration are more advanced than in Canada. There are some obvious opportunities to build on some of these USA experiences. In both countries virtually all conservation easement programs target conservation of land objectives but in some states, where there is a budding interest in the emerging carbon credit markets, some forested areas are using carbon sequestration as a possible future benefit to holders of easements on forested lands.

The overall assessment of the Canadian and USA situations indicated that at present there is insufficient incentive for private landholders in Canada to voluntarily convert significant acreages of tree plantations devoted only to carbon sequestration. The greatest detriment at this time was insufficient financial incentive and the uncertainty of future financial incentives from carbon credit markets.

Assessment of potential opportunities for enhanced incentives revealed that the opportunity to sell carbon credits at a price that is competitive with other farm crops and commodities could be a strong incentive to afforestation on private land. Other powerful incentives are ecological benefits, taxation benefits, ease of administration of easements and other agreements, long term commitments and social acceptance in the community. Recognition of regional differences, flexibility of programs to accommodate individual landowner situations, a recognized Kyoto Forest certification program and the extensive use of partnerships were found to be important considerations for development of a large scale conservation easement program to support afforestation initiatives.

A suggested mechanism that is required to get a national program started and sustained is a central coordinating agency either within government or as a non-government business opportunity. This agency would provide leadership as a hub for information exchange, access to world markets, development of policy and certification programs and generally act as a catalyst for development of an afforestation program using various forms of private landowner incentives. This coordinating agency could also assist with aggregation of carbon credits for sale to large emitter purchasers or other markets.

Two “best bet” scenarios for possible implementation were developed based on the study information and interpretation. These consisted of:

- 1) a conservation easement program for afforestation piggy-backed on existing conservation land securement programs presently used by ENGOs
- 2) a large scale tree plantation program on privately controlled agricultural land in the Aspen Parklands of the Prairie Provinces using conservation easements negotiated for and purchased by large emitters of greenhouse gases.

The success of both of these scenarios revolves around attaining commitment of private landholders to provide the land through conservation easements or other mechanisms. Ways and means of obtaining this high level of participation are identified and described.

## ACKNOWLEDGEMENTS

ERIN Consulting wishes to acknowledge the assistance provided by our partners on this study: Wendy LeBreton, of Eco-industrial Solutions, Vancouver, and Jonathan Olson, of CJB Environment Inc., Sainte-Foy, Quebec. Ms. LeBreton contributed much of the information from the Pacific coastal and mountain regions of Canada and United States while Mr. Olson collected and analyzed extensive information from the province of Quebec, eastern Canada and the eastern provinces and states.

We are also appreciative of the helpful suggestions and comments provided by Jonathan Buttle and Rory Gilsean of NRCan both on the draft report and by communication throughout the course of the study.

The project was largely facilitated by the generous and insightful information provided by various representatives of government and non-government agencies. The results of discussions with these people form the basis of much of the information described in this report.

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## INTRODUCTION

The Canadian Forest Service of Natural Resources Canada (NRCan) is undertaking an extensive assessment of the potential for a large-scale private land afforestation effort in Canada to contribute to our commitments under the Kyoto Protocol. As part of this Feasibility Assessment of Afforestation for Carbon Sequestration (FAACS) initiative, ERIN Consulting has been contracted to conduct an assessment and evaluation of afforestation and reforestation incentives for conservation easements on private lands in Canada and the United States.

Research into climate change and methods to meet Canada's Kyoto Target of reducing CO<sub>2</sub> emissions to 6% below 1990 levels carbon sequestration has been actively occurring in Canada since the mid 1990s. In 1998, the National Climate Change Process Forest Sector Table and Sinks Table initiated an evaluation of forest carbon sequestration with the commission of a number of research papers looking at carbon sequestration rates, incentives and benefits across Canada due to afforestation (Williams & Griss 1999).

Afforestation has been identified as having significant potential to capture and store carbon on lands that are not currently forested, with particular interest in marginal agricultural lands (USDA 2004). Given Canada's large land base and extensive amounts of deforested land, afforestation/reforestation programs have been suggested as a cost-effective and reasonably attainable method of sequestering carbon in order to offset Canada's Carbon Dioxide (CO<sub>2</sub>) emissions (Williams & Griss, 1999).

In October, 2000 the Government of Canada announced the Action Plan 2000 on Climate Change program, designating 500 million dollars over five years to research methods of reducing greenhouse gas emissions and promote carbon sequestration in Canada.

This extensive program included a forestry component assigned to assess carbon sequestration mechanisms. The Canadian Forest Service of Natural Resources Canada initiated the "Feasibility Assessment of Afforestation for Carbon Sequestration" (FAACS) in response to this federal climate change drive with the goal to plan, implement and evaluate a large-scale nation-wide afforestation program. This afforestation assessment has consisted of research conducted and on-going in a number of areas, including:

- Past afforestation activities and future potential activities
- Policy issues such as design, mechanics and potential incentive structures
- A network of afforestation pilot projects to test landowner interest and participation rates
- Development of afforestation/carbon accounting tools

The purpose of this research was to review existing afforestation efforts using conservation easements, conservation agreements or similar mechanisms in Canada and the United States and evaluate the effectiveness of these existing programs. The use of conservation easements to advance afforestation of private lands would be one of an assortment of tools NRCan is preparing to use in order to advance the carbon sequestration potential of Canada's private lands. Woven throughout our review was the

issue of carbon sequestration as a motive for forest conservation and afforestation/reforestation.

Soon into our review process it became clear that very few organizations hold or are working towards conservation easements for afforestation or reforestation. Some conservation easement programs entailed habitat restoration components including improvements to riparian buffers of wetlands and trees, however forestation was not found to be a common practice. As such, in order to gather sufficient information to complete a justifiable evaluation, our research divided into two parallel routes: an assessment of conservation easements in general with attention to forest conservation or restoration involving tree planting; and afforestation/reforestation initiatives that did not necessarily involve a conservation easement.

### **REQUIREMENTS OF KYOTO PROTOCOL**

Under the Kyoto Protocol, Canada would be committed to reducing its greenhouse gas emissions by 6% of its 1990 levels by the year 2010. In an effort to meet this commitment, Canada was a lead advocate for the eligibility of biological sinks under the Kyoto Protocol's carbon sink credit trading system (Griss 2002).

Article 3.3 of the Kyoto Protocol and the subsequent Marrakech Accord of 2001 have established a carbon credit system for the establishment of forests on lands that, prior to 1990, were not forested, as well as the removal of existing forested lands. Under this article and subsequent accord, countries with targeted emission levels can gain sink credits for Carbon Dioxide (CO<sub>2</sub>) absorbed during the first commitment period (2008 to 2012) by forests that have been established by afforestation (creating forest on historically nonforested land) or reforestation (returning historically forested lands to forest) since 1990. Countries may also lose sink credits for land that has been subjected to deforestation since 1990. These credits, known as Removal Units, or RMUs, can be traded on the global emissions trading system, but they cannot be carried over to the next commitment period.

Most notable for the purposes of this review were the establishment of definitions for forest, afforestation, reforestation and deforestation that resulted from the Marrakech Accord in 2001. This accord clarified these terms as follows:

*Forest: An area of land, at least 0.05 to 1.0 hectares, with a crown cover of at least 10-30% with trees that will reach at least 2-5 m in height at maturity. Forest can include a mature canopy with young trees of varying heights below, or young natural stands and all plantations which have yet to reach a crown cover of 10-30% or their mature height. Lands normally considered part of the forested area, which are temporarily unstocked due to human intervention (harvesting) or natural causes but which are expected to revert to forest are also considered forest under this definition.*

*Deforestation: The human-induced conversion of forested land to non-forested land (i.e. clearing a forested area for development).*

*Reforestation: The direct human-induced conversion of non-forested land to forested land through planting, seeding and/or human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land prior to December 31, 1989.*

*Afforestation: The direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the human-induced promotion of natural seed sources*

In order to qualify as a forest sink, or a Kyoto Forest, for this first commitment period, the land must meet these four criteria:

- The land must be considered a forest, as per the definition above
- The establishment of the forest must be a result of direct human-induced activities (tree planting, seeding or management of forest with the intention of promoting natural seed sources)
- The forest must have been established after January 1, 1990
- The forest must have been established on land that was some other land use and did not contain forest on January 1, 1990.

Forested lands that were harvested since 1990 and subsequently replanted to do not qualify as a forest sink, or Kyoto Forest and do not fall under the deforestation or reforestation categories.

The Marrakech Accord also set rules for the maximum volumes for sinks in relation to forestry. For Canada, the maximum Carbon sequestration limit for forestry is 44 Mt of CO<sub>2</sub>. Current projections for 2010 show that Canada will have 24 Mt of CO<sub>2</sub> sequestered through forestry, allowing for an additional 20 Mt of CO<sub>2</sub> that could be sequestered with additional reforestation and afforestation.

## **STUDY OBJECTIVES**

The objectives of this conservation easement review process for sequestering carbon through afforestation have been as follows:

- Identify and review the use of conservation easements and related mechanisms in North America to encourage afforestation as well as protect existing forests on private land.
- Understand the mechanisms' effectiveness in encouraging stakeholders to undertake afforestation activities and protect existing forests to generate environmental protection benefits (carbon sequestration, wildlife habitat, soil and water improvements etc).



- Discuss important considerations (i.e. barriers, landowner/partner involvement and responsibilities, administrative requirements, infrastructure requirements, regional implication, etc.) related to the use of these mechanisms.
- Explore opportunities and develop a set of potential conservation related mechanisms that encourage private landowners to increase afforestation to obtain a range of environmental values.
- Compile a complete list of references and organizations pertinent to this project.

## METHODS AND APPROACH

Conservation easements were expected to be used by a variety of agencies both government and non-government across North America. In addition it was anticipated that there would be many agencies that encouraged afforestation/reforestation in some fashion, if not for purposes of carbon sequestration, for other conservation purposes.

Rather than initiate a comprehensive library search, this study first turned to the internet to gain an understanding of agencies that were involved in some form of land securement and/or incentives for purposes of tree planting or woodlot management. This search resulted in a lengthy list of potential contacts that could contribute to the objectives of this project. Virtually all federal and state/provincial jurisdictions had passed legislation enabling conservation agreements of some sort and were found to be using easements, covenants or servitudes (all basically operate the same) to assist in their resource conservation programs. These government agencies were also found to work extensively with non-government agencies to expedite these various agreements.

Following up on the internet search, a questionnaire, (Appendix A), was developed for use in contacting various government and non-government agencies of interest to determine details of their programs. Contacts with knowledgeable individuals from each of the agencies of interest were made by telephone and in some cases by email. Often, much of the pertinent information about the programs could be gleaned from the web sites but the personal contacts were useful to ascertain more detailed information about efficacy of programs, strengths and weaknesses and in quantifying some of the very general information contained on the web sites. In many cases the individual phone contacts provided additional follow-up documentation and reports of their particular programs.

The information collected for each agency was entered in tabular form into a Microsoft EXCEL database (Appendix B). This database was used to identify gaps in the studies geographic coverage and other pertinent information. In addition, gaps were frequently identified to the study by questionnaire contacts who would identify and recommend additional information sources.

There are a large number of agencies involved in some way with land securement and/or private forest planting and management throughout Canada and the United States. The

study therefore focused on contacting agencies most involved in the federal governments, in all the Canadian provinces and territories, a representation of a number of states from the different geophysical zones in the USA and a large sample of the different non-government environment organizations operating in both countries.

The database has been used to determine areas of similarity and trends across large geopolitical areas as well as dissimilarities. This will assist in determining what kind of programs would have the highest likelihood of success on a national scale. The analysis also seeks to determine more subtle differences between regions that would be useful in delivery of a national program at the grassroots level. The analysis attempted to identify opportunities to piggyback on existing conservation easement type programs if these opportunities appeared to exist. Particular attention was paid to deterrents to success of carbon sequestration initiatives at the private landholder level.

Once the salient points were determined from the wealth of information, the study workers examined a number of strategies that might be used to guide a national conservation easement type program to encourage carbon sequestration using tree planting on private lands.

## **RESULTS AND DISCUSSION**

The following pages document the findings from the literature review, internet searches, questionnaires and interview phases of this study. The information will be presented beginning with an overview or background discussion on conservation easements and the various conservation easement programs operating in North America. Following that will be a discussion of the questionnaire findings, with examples or descriptions from the internet searches tied in where suitable.

### **CONSERVATION EASEMENTS**

Conservation easements, covenants, servitudes and agreements are voluntary agreements between a landowner and a non-government organization or government agency, to preserve natural or cultural features of the land either for a preset length of time, or in perpetuity. Although ownership of the land remains that of the landowner who can continue to live on the land and use the land, certain restrictions placed on the covenant prevent it from land use changes such as development, deforestation, or cultivation of native pastures.

In exchange for entering a conservation easement, the landowner can be entitled to tax incentives or credits, lump sum payments, or annual 'lease' type payments for the duration of the agreement. Conservation easements are registered on the title to the land and are passed on from owner to owner and have been a well known method of preserving natural land and conserving quickly diminishing wildlife habitat for more than 100 years.

### **Types of Conservation Agreements**

There are a variety of conservation easement options available to landowners in both Canada and the United States. Outright donations of conservation easements are the 'traditional' form of easement and consist of donation of land in perpetuity in exchange for tax benefits such as a charitable tax receipt for their income tax, estate tax reductions, state tax credits, or reductions in GST premiums on their land uses. This type of easement is becoming better known as an Ecological Gift; with the land being conserved required to have some ecological significance worth preserving. Environment Canada's Ecological Gift Program certifies donated conservation easements, enabling a more significant charitable tax deduction, based on the difference between the fair-market value of the land and the newly assessed value based on the environmental restrictions.

A second type of conservation easement that is becoming more popular with conservation organizations is a purchased easement which involves an easement being sold to a conservation organization, or government agency, also in perpetuity, in exchange for the development rights of that land. The landowner retains title to the property and receives a lump sum payment based on the size, ecological significance and market value of the land. These types of conservation easements have been found to result in a reduction in the value of the protected land, which may at first be interpreted as a disincentive. However, for landowners who do not 'work the land' or who are absentee landowners and want to keep the land in their family, a reduced property value would result in lower estate taxes for their heirs, as well as the likelihood for lower property taxes with the conservation easement in place. States involved in the US Department of Agriculture's Forest Legacy Program to protect existing non-industrial privately held forests are using this form of conservation easement. The Forest Legacy Program purchases the development rights to forested land in exchange for a perpetual conservation easement, held either by the state or a partnering land trust. In Canada, both Ducks Unlimited Canada and the Nature Conservancy Canada are finding more success with purchased conservation easements than with donated conservation easements.

A third method of conserving private land is through a conservation agreement. This option is more common in the United States than in Canada and consists of an agreement, or contract, between a landowner and, in most cases, a state agency for a set length of time, such as 10, 15 or even 30 years. The conservation agreement holder (the state or federal agency) is given the development rights to the land for the agreed upon duration, in exchange for an annual per acre payment to the landowner with the longer term agreements offering a higher per acre payment. In addition, programs, such as the USDA Conservation Reserve Program will cost-share with the landowner up to 75% of restoration or maintenance projects.

Table 1 outlines the three types of conservation agreements, noting the values to both the landowner and the agreement or easement recipient, based on literature reviews, survey respondents and personal interviews with landowners and woodlot associations.

Table 1: Cost-benefit summary of conservation agreement types and their suitability to a federal private land afforestation incentive program in Canada

<b>Type of Conservation Agreement</b>	<b>Implications to Landholder</b>	<b>Implications to Recipient</b>	<b>Relevance to a Canada Afforestation Incentive Program</b>
Donated Conservation Easement	<ul style="list-style-type: none"> <li>▪ Tax benefit (charitable donation)</li> <li>▪ Reduced land value (lower property and estate taxes)</li> <li>▪ Ecological conservation</li> <li>▪ Long term inflexibility</li> <li>▪ Uncertainty of long term values</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ecological protection</li> <li>▪ Inexpensive</li> <li>▪ Have to monitor</li> <li>▪ Long term security</li> </ul>	Not likely to entice sufficient landowners to participate. Cost-sharing of forest establishment costs may motivate some participation.
Paid Conservation Easement	<ul style="list-style-type: none"> <li>▪ Cash (usually 1 time amount)</li> <li>▪ Reduced land value</li> <li>▪ Ecological conservation</li> <li>▪ Reduction of control in perpetuity</li> <li>▪ Long term inflexibility</li> <li>▪ Uncertainty with long term values</li> <li>▪ Red Tape</li> <li>▪ Potential Carbon or other credits</li> <li>▪ Potential income from sustainable harvest of forest</li> </ul>	<ul style="list-style-type: none"> <li>▪ Straight forward administration</li> <li>▪ Less expensive than land acquisition</li> <li>▪ Have to monitor</li> <li>▪ Management in perpetuity</li> <li>▪ Could reap carbon credits/offsets</li> </ul>	Likely to entice some landowners to participate. May get better participation if coupled with significant cost-sharing program for forest establishment.
Leases and Rentals	<ul style="list-style-type: none"> <li>▪ Continued income from land</li> <li>▪ Defined time frame</li> <li>▪ Simple business terms</li> <li>▪ Supplementary management income</li> <li>▪ Potential to sell carbon credits</li> </ul>	<ul style="list-style-type: none"> <li>▪ Straight forward business</li> <li>▪ Annual administration with payments</li> <li>▪ Potential to reap carbon credits</li> <li>▪ Defined time frame</li> </ul>	Most likely to entice landowners to participate. Potential to increase participation even more with a cost-sharing program for forest establishment.

### **Working Conservation Organizations**

There are approximately 1375 non-governmental organizations in the United States and between 100 and 125 in Canada that work with landowners to place conservation easements on land (R. Aldrich, pers. comm. 2004; Watkins & Hilts 2001). The majority of these are small and very localized land trusts with a handful of specially targeted ecosystems preserved. The largest conservation easement holder in both Canada and the United States is The Nature Conservancy (TNC in the US and NCC in Canada) which has conserved more acreages than all remaining land trusts combined. Other significant holders of conservation easements include Ducks Unlimited in both Canada and the United States. In addition, many conservation easements are held by municipal, regional, state/provincial or even federal government agencies. Table 2 provides a breakdown, by acres, of the lands held by these various non-government organizations.

Table 2 – breakdown by acres of conservation easements and acreages protected by conservation organizations for both Canada and the United States

	<b>Nature Conservancy</b>	<b>Land Trusts</b>	<b>Ducks Unlimited</b>	<b>Total</b>
Canada	1,730,000	123,200	316,500	2,169,700
United States	15,274,000	6,225,225	225,000	21,724,225
<b>Total</b>	17,004,000	6,348,425	541,500	23,893,925

Our review of approximately 100 conservation organizations and easement holders, including government organizations indicated a wide range of conservation objectives. These were mainly:

- Wetlands
- Riparian buffers
- Forested lands
- Grasslands/Rangelands
- Agricultural lands
- Marine areas

Many conservation organizations focused on one or two ecosystem types of particular ecological significance to their regions. For instance, The Land Conservancy of BC focuses a significant portion of their efforts on conserving the vulnerable grasslands of BC, most notably the Garry Oak Meadow ecosystem of Eastern Vancouver Island and the Antelope Brush ecosystem of the South Okanagan.

### **Conservation Easement Programs**

In terms of conserving and protecting forested land from further development/deforestation, some of the key Canadian organizations involved are the Canadian Wildlife Service Ecological Gifts Program (Eco-Gifts), Nature Conservancy of Canada, and in certain cases, Ducks Unlimited Canada.

#### Ecological Gifts Program (Eco-Gifts), Canadian Wildlife Service

The Ecological Gifts Program started in 1995 in an effort to increase landowner participation in conservation of ecologically significant lands. Working with land trusts or conservation organizations, a conservation easement is established and submitted to the Eco-Gift program for certification. Conservation easements with particular significance qualify for an improved charitable tax deduction and reduced capital gain income on their income taxes. Types of conservation easements that would qualify as Eco-Gifts include lands that are

- Identified, designated or protected for environmental conservation, for example to protect habitat of species at risk;
- Deemed to be locally important natural areas;
- Located close to environmentally significant properties;
- Buffering environmentally sensitive areas such as water bodies, streams or wetlands;
- Supporting the conservation of biodiversity or Canada's environmental heritage.

Nature Conservancy of Canada (NCC); [www.natureconservancy.ca/](http://www.natureconservancy.ca/)

The Nature Conservancy of Canada uses a scientific approach to determine or identify suitable land for conservation. Through discussions with regional branches across Canada, it became apparent that the incentive to conserve forested lands or to promote afforestation on private land varies considerably from region to region, with Quebec and BC having little interest in forestation initiatives. The Toronto based NCC has in the past decade, become much more aggressive on the prairies at acquiring and protecting landscapes with significant ecological values. They have found conservation easements to be much more economical and socially acceptable than outright purchase because the land use in the local community changes little and is in fact insured to remain much as it is today. As part of its progress, NCC has been moving away from donated conservation easements to purchased conservation easements as a means of increasing easement participation. In an age where many people feel besieged by continual change and uncertainty, the in perpetuity conservation easements provided by NCC have become quite popular on the Canadian prairies. NCC has at this time little interest in afforestation and to this study's knowledge have no projects that include afforestation as part of a conservation easement.

Ducks Unlimited Canada (DUC); [www.ducks.ca](http://www.ducks.ca)

DUC is a conservation organization devoted to protecting wetlands and uplands and watersheds that are important to production of waterfowl nesting in Canada. Over the years their program has progressed from protecting wetlands to a landscape management approach. Much of their field activities focus on working with landowners to manage landscapes in an ecologically sensitive way. They use many different tools and techniques including conservation easements to secure their interests on all kinds of habitats including forested areas. They are not involved in afforestation at this time; however, they do work with other agencies with common interests and thus may become indirectly involved with projects that do involve tree planting. DUC is actively involved with and funds research studies on carbon sequestration potential in different kinds of aquatic and terrestrial ecosystems under different management regimes. At this time DUC has approximately 60 easements on the prairies involving 16,500 hectares of land and/or water. DUC has increased conservation easement participation by moving towards purchased easements. Approximately 90% of all conservation easements DUC has acquired are located in the Prairie Provinces.

Both DUC and NCC provide step-by-step assistance to landowners as they go through the easement process including assisting with land assessments, accounting, and access to whatever expertise is required to make the landowner comfortable with the program. Both agencies actively monitor the activities on the lands under easement visiting each parcel at least once a year. NCC and DUC are used extensively by government agencies to secure land management interests for conservation programs and both agencies often partner with other smaller ENGOS on joint conservation projects.

#### Land Trusts

Land trusts are private non-profit organizations committed to long term or permanent protection of natural or cultural heritage. Many land trusts provide education about

conservation and stewardship. They also purchase properties outright or work with landholders to create conservation covenants in order to protect land. Land trusts are usually registered charities, so donations of land or money are tax-deductible.

The largest land trusts and conservancies have very specific mandates for protecting plants, animals, natural communities and landscape features that represent “the diversity of life on earth” (The Land Conservancy of BC website). They tend to use highly scientific methods of identifying high priority lands (e.g. ecologically significant) for conservation. For example the Nature Conservancy is employing a scientifically based system called “ecoregional planning” to create a conservation blueprint for each of Canada’s natural geographic regions. Because these larger groups receive hundreds of requests to protect various pieces of land, they have to prioritize to conserve the maximum level of biodiversity for a given level of time and resources.

Compared to the smaller land trusts, whose land holdings are, for the most part, held in covenant/conservation easements, larger groups only have a very small percentage of their lands held in conservation easements. A major reason why they hold so few conservation easements is the intensive amount of monitoring and associated costs (e.g. legal expenses, costs of baseline reporting, etc) involved. The Nature Trust of BC, for example, only accepts donated conservation easements such that, in addition to land, the landowner donates money to help cover the administrative and monitoring costs associated with holding the easement. As a result, conservation easement arrangements are most often with corporate landholders.

On the other hand, smaller land trusts and conservancies often face landowners that are willing to commit the time, money and energy necessary to place a covenant on their land. In addition, as smaller organizations (only 1-3 seasonal, paid employees maximum), they often receive legal and scientific advice or services, as an in-kind contribution, from local community members. Despite in-kind contributions, one interviewee estimated that it costs up to \$10,000 to place a covenant on a piece of land (plus several volunteer hours).

### ***Regional Programs***

The use of easements in Canada, outside of Quebec, and the United States is similar due to the similarity in law. In Quebec, there are no easements and other legal tools are used to protect land over time, such as the servitude and the designation as a private natural reserve. However, it should be noted that in the Atlantic Provinces there is generally more land donated to ENGOs or acquired by them than there is land given in easement. The following section provides a regional review of conservation easement programs.

#### **British Columbia**

There are more than 45 land trusts, conservancies, and other similar groups registered as members of the Land Trust Alliance of BC (LTA-BC website). In 2001, BC land trusts and related organizations were protecting nearly 40,000 acres of land. This was more than half of the total land protected in the Prairie Provinces and more than triple the total

of the remaining two Canadian regions held by land trusts (E. Canada and Atlantic Canada) (Watkins & Hilts 2001).

### Prairie Provinces

Each of the three Prairie Provinces have legislation that enables the use of agreements, easements and other covenants to be used for protection of interests on land. In Manitoba, these arrangements are called agreements, in Alberta and Saskatchewan they are referred to as easements.

On the prairies it appears the Nature Conservancy of Canada, (NCC) and Ducks Unlimited Canada, (DUC) are the major users of conservation easements. They are particularly active in Saskatchewan where there are virtually no other competing conservation or land trust organizations that have resources to acquire significant acreage of land. In addition to NCC and DUC, in Manitoba, the Manitoba Habitat Heritage Corporation has gone almost entirely to conservation agreements rather than purchase. Here there are a large number of easements but the total acreage is relatively small. In Alberta there are organizations such as the Southern Alberta Land Trust Society (SALTS) that have used a small number of easements to secure large parcels of land.

*Manitoba Habitat Heritage Corporation, MHHC; [www.mhhc.mb.ca/](http://www.mhhc.mb.ca/)*

MHHC has 130 conservation easements on approximately 25,000 acres and owns another 10,000 acres. These lands are restricted to regions that are of particular interest to their funders so that many areas of Manitoba that could potentially be afforested cannot be touched by MHHC. In the Assiniboine Watershed and areas that are deemed important to endangered species, the MHHC provides well received support and expertise to farmers on how to produce and harvest value added wood products from their private woodlots either from existing forests or from plantations. Management to protect and enhance biodiversity and wildlife habitat is always of primary importance to MHHC management programs. The corporation closely monitors its conservation easements through annual visits to the landowners in the name of extension and support and also fly aerial surveys (MHHC 2003).

*Southern Alberta Land Trust Society, SALTS; <http://www.salts-landtrust.org/>*

SALTS is a new organization in Alberta that is using conservation easements to permanently preserve large areas of land for ranching and wildlife uses. They are not involved in afforestation at the moment but have experience at negotiating large parcels of land for protecting particular interests. They have also received considerable publicity through their promotion of public awareness using all manner of public media. Their program to control real estate development and speculation may be designed after programs in the USA with similar goals.

### Ontario

Much of northern and western Ontario is publicly owned and largely forested with natural boreal forest. These areas offer little opportunity for afforestation on private land. In southwestern Ontario, in the northern hardwoods and Carolinian Forest ecoregions, there are substantial areas of privately owned land that were once forested but which are



now farmed. Overall, just 12% of Ontario's forested land is owned by non-industrial private landowners (Twolan-Strutt, 1995). Ecologically speaking, a certain amount of this land could potentially be afforested with fast growing tree species.

The province used to provide tree stock at little or no cost to landowners from provincial nurseries. This planting stock is no longer available and availability of trees to plant has become a major constraint. Private nurseries are reluctant to commit to large plantings of seedling or rooted stock several years ahead if there is uncertainty about market demand.

MNR also runs the Ontario Stewardship program that encourages landowners to become more involved in stewardship activities on their property. It helps people find information, expertise, and funding to promote good management practices on private land. Stewardship Councils are volunteer groups of landowners and land interest agencies who work with a MNR staff person. The Stewardship Councils focus on land use issues, often related to conservation and forestry concerns, particular to their local situation.

Key non-government organizations that work with forestland issues on private lands are:

- 1) Conservation Ontario (<http://www.conservation-ontario.on.ca/>)
  - a network of 36 conservation Authorities in Ontario. They are community based, environmental organizations dedicated to conserving, restoring, developing and managing natural resources on a watershed basis. Traditionally they have done tree planting and other private land forestry programs with landowners.
- 2) Ontario Forestry Association (OFA) (<http://www.oforest.on.ca/>)
  - dedicated to raising awareness and understanding of all aspects of Ontario's forests, and to develop commitment to stewardship of forest ecosystems. It provides client service and education about and for the MFTIP.
- 3) Ontario Woodlot Association (OWA) (<http://www.ont-woodlot-assoc.org/>)
  - a non-profit organization with a network of regional chapters located across the province. OWA brings woodlot owners together for information exchange and also provides client services to the MFTIP and have developed a forest service directory of landowners, (<http://ontariowoodlot.com/>)
- 4) Eastern Ontario Model Forest (<http://www.eonf.on.ca/>) (EOMF)
  - represents the five major forest eco-regions of Canada. They have, in partnership with the Forest Stewardship Council carried out a pilot project aimed at elevating private land forestry to internationally recognized standards.
- 5) Ontario Nature (<http://ontarionature.org/index.php3>)
  - protects and restores natural habitats through research and education.

#### Servitudes and Land Conservation in Quebec

In several areas there are groups establishing working conservation easements in which forested land is kept in production but which limits the types of forestry practices involved. Groups active in sustainable forestry usually promote these. Some of these organizations are also involved in setting up easements on farmland that require the land be kept productive for agriculture. These easements are all done on a voluntary basis with the only incentive being the tax credit coming from the donation of the easement. Because the private natural reserve program in Quebec is tailored to the

protection of ecologically significant land and servitudes rely on rights owed to another property, we know of no equivalent of a working conservation easement in Quebec.

The ENGOs using servitudes and other legal tools to protect land in the Quebec are focussed on the preservation of intact natural habitats. The provincial government, through the Department of the Environment, has taken an active role in this regard in order to create legal tools to aid in voluntary protection of land by landowners. There is currently no direct equivalent to conservation easements in Quebec's Civil Code. One tool available is the servitude, which requires a dominant property to which the servitude is owed. In practice this is regularly a watercourse since these are the property of the province, which limits the general applicability of servitudes to conserve private land. Because of this, the province has put together a program, and an accompanying law, for the creation of Natural Reserves on Private Land in which the landowner enters into a contractual agreement (which lasts from 25 years to perpetuity) with the government. The main financial incentive is a substantial, potentially complete, reduction of school and property taxes for the protected land. These contracts are very similar in principle to easements but they may not be applicable outside of a preservation role for the land. It is not clear that the equivalent of a working easement exists in Quebec law.

In Quebec, certain regulations regarding agricultural land are leading to disincentives in relation to keeping land as forest. In both Quebec and the other jurisdictions in the Northeast, development is a major concern, with the increasing use of forestlands for summer homes and cottages. These pressures are often those that motivate landowners to assigning protection measures to their land in an effort to protect them in perpetuity. They normally do this on a voluntary basis from personal conviction. The tools used by such people are variable, but donation to conservation organizations is probably the most common with easements following.

#### New Brunswick

For forest preservation, New Brunswick has one group, the New Brunswick Community Land Trust, which deals with working easements for people who want to ensure their forested lands remain productive but are managed in a sustainable manner. The largest ENGOs however, the Nature Conservancy Canada and the New Brunswick Nature Trust, are interested in preservation and are not practicing forestry on their lands. As much as 31% of New Brunswick's forested land is privately held (Twolan-Strutt, 1995).

#### Nova Scotia

The conservation situation seems similar to New Brunswick but with the added goal of returning land to climax Acadian forest. There is a small pilot project in which a small plot was afforested with this goal. One group, the North Mountain Old Forest Society, is trying to encourage sustainable management practices on managed woodlots and would consider using working conservation easements towards this goal but none are yet in place.

### Prince Edward Island

The major group protecting land in PEI is the Island Nature Trust. They have about 2,600 acres protected, most of which is acquired land. They are more active in afforestation/reforestation than the similar groups contacted in other regions. The goal of their afforestation/reforestation program is to re-establish the climax Acadian forest, especially in riparian sites. Because of this they opt for slow-growing long-lived trees rather than the fast growing trees that maximize carbon sequestration, such as those of the Forest 2020 program.

### Newfoundland and Labrador

The province of Newfoundland and Labrador is somewhat different from the other eastern provinces in that nearly all the land in the province is crown land. Less than 0.5% of Newfoundland and Labrador's forested land is privately held and therefore there are no programs for private woodlot owners (Twolan-Strutt, 1995 #22). Consequently, there is not much room, if any, for afforestation on private land in the province. The Nature Conservancy does protect land here, much of which is large plots donated by the large forest companies. It holds no easements in the province.

### ***Conservation Programs Operating in the US Government***

In the United States, the federal Department of Agriculture (USDA) Natural Resources Conservation Service has a number of forest conservation programs in place.

#### Forest Legacy Program

The Forest Legacy Program is a federal-state cooperative that works to obtain conservation easements on forested lands. The development rights to these lands are purchased through the easement, preventing the landowner from harvesting or clearing the land for development. The federal government provides 75% of a project's funding to the individual states to administer the program. To date, thirty-six states and US territories have entered the Forest Legacy Program with six others in the process of entering. A total of 606,655 acres have been conserved since the program's inception in 1990 (USDA Forest Service 2003).

#### Forestry Incentive Program

Prior to 2002, the USDA offered the Forestry Incentive Program to landowners. This program provided up to 65 % of the costs for tree planting, timber stand improvements, and related practices on non-industrial private forest lands. The intention of this program was to provide natural resource benefits such as reduced wind and soil erosion and enhanced water quality and wildlife habitat while working to ensure a supply of timber for future generations. This program was also acknowledged as encouraging the sequestration of greenhouse gases. Landowners could have no more than 1,000 acres of eligible forest land to participate and were capped at \$10,000 per project provided through the program (NRCS 2002). This program was discontinued with the passing of the 2002 Farm Bill and replaced instead with the Forestland Enhancement Program.

### Forestland Enhancement Program (FLEP)

The FLEP offers technical, educational and cost-share assistance to landowners to promote sustainable forest management (USDA 2004b). Unfortunately, this program has been subjected to budget cuts in the 2004 fiscal year and is not longer able to assist landowners as intended. No conservation agreement was required for either the Forestry Incentives Program, or the Forestland Enhancement Program.

### EPA Programs

The US Environmental Protection Agency (EPA) has recently issued a booklet outlining funding options and programs for forest management projects and practices that reduce water pollution. Forests are identified as ecologically significant by their ability to provide wildlife habitat, sequester carbon and filter CO<sub>2</sub> from the atmosphere, prevent soil erosion and improve water quality. The EPA booklet, released in July 2004 describes how programs such as the Non-Point Source Pollution Program and the Clean Water State Revolving Fund (CWSRF), both created by the 1987 amendments to the Clean Water Act can be applied creatively to projects for tree planting or forest enhancement. These programs offer loans or grants to landowners, conservation organizations or watershed councils to complete forestry-related projects that will benefit water quality or help to limit non-point source pollution (NPS) (Stein 2004).

Not solely targeted at forest conservation, there are a number of government-funded programs in the United States aimed at restoring and protecting private lands through conservation agreements. These programs are described in the following paragraphs.

### The Conservation Reserve Program (CRP)

This program assists landowners in conserving the soil, water and wildlife habitat on their land. Landowners can apply to enroll highly erodible land and other environmentally sensitive areas in the CRP for durations of 10 to 15 years (South Carolina DNR#97). By enrolling land, a landowner can receive annual rental payments of up to \$80 to \$120/acre (more for the 15 year term) and cost-share benefits of 50 to 75% to implement conservation practices such as tree planting and grass establishment on marginal agricultural lands or other areas with soil erosion concerns (Iowa DNR a). Permanent vegetation including trees, grasses or wildlife foods must be maintained for the contract period. Marginal cropland or pastures, or a waterbody currently lacking riparian buffer vegetation would qualify, as would field windbreaks or shelterbelts on cropland (Iowa DNR b).

Recent initiatives under the CRP are the Bottomland Hardwood Initiative and Bottomland Timber Establishment on Wetlands Initiative which assist landowners in planting hardwood trees and shrubs on bottomland agricultural lands prone to flooding and severe soil erosion. Conservation agreements for these initiatives are generally 15 years with the annual rental payment and cost-sharing for tree planting and management. In addition, these programs are being introduced as long term investments due to the harvest potential of the forested land in the future (i.e. 40 to 50 years down the road). In addition, while no reference was found linking this program with the potential carbon credit or offset market, numerous references were found stating the benefits of

bottomland hardwoods for carbon sequestration (Iowa DNR c). These initiatives are mainly targeted towards areas in the Mississippi, Missouri and Ohio River valleys and the southern coastal plain (Quick & Johnson 2003)

#### The Conservation Reserve Enhancement Program (CREP)

An offshoot of the CRP program, this USDA initiative is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive habitat on their lands. This program is a partnership between federal and state authorities, tribal governments, and in some cases, industry and private groups and offers a financial incentive program similar to the CRP program with annual per acre payments for a 10 to 15 year agreement (Gregg Boggs, Whatcom Conservation District, Pers comm.). Participating states determine the conservation issues to be targeted by this program, which can include impacts to water supply, loss of critical habitat for species at risk, soil erosion, and reduced habitat for fish populations (i.e. salmon). Afforestation or permanent cover is a common treatment for many of these conservation issues (i.e. riparian buffers, wetland habitat, soil stability and wildlife habitat). Cost sharing is provided to the landowner for up to 50% for restoration work (USDA 2003).

#### Wetlands Reserve Program (WRP)

This voluntary program is designed to help eligible landowners restore, enhance and protect wetlands on their property. Under this program, landowners enter into permanent conservation easements, 30-year easements, or 10-year wetlands restoration agreements in exchange for a portion of restoration costs. In exchange, the landowner receives easement payment and cost-sharing assistance for the restoration or enhancement work. For permanent easements, the WRP will cover 100% of restoration costs with an easement payment determined by an assessment of fair market value, established payment cap, or landowner asking price. The 30-year easement will cost share up to 75% with easement payments at 75% of that offered for the permanent easement. The 10-year agreement offers cost-sharing of up to 75% and no easement payment. No easement is placed on the land title for the ten-year agreement. The landowner maintains full control over access and use of the WRP easement lands. Acceptable uses of WRP land may include activities such as hunting, fishing or other compatible uses. The primary objective is to restore altered wetlands as closely as possible to the natural hydrology, native vegetation, and natural topography, protecting the functions and values of wetlands in the agricultural landscape. As of 2003, there were more than one million acres of land enrolled in this program with as much as 250,000 acres enrolled annually (South Carolina DNR, NRCS 2003).

#### Wildlife Habitat Incentives Program (WHIP)

This program was established by the 1996 Farm Bill for the purpose of making technical and financial assistance available to landowners to develop, enhance and restore upland wildlife, wetland wildlife, threatened and endangered species, fish, and other types of wildlife habitat. WHIP provides cost-share reimbursement up to 75 % and technical assistance for wildlife habitat practices and is administered in partnership with individual states. Each state has the right to identify habitat priority areas for use of WHIP funds (South Carolina DNR). WHIP agreements are arranged between the landowner and the

US Natural Resources Conservation Service (USDA) and are generally for a duration of 5 to 10 years. In 2001, approximately 90% of all acres enrolled in this program encompassed upland habitat of which forests made up a significant portion. Tree planting and forest management are eligible practices for WHIP in establishing wildlife habitat (NRCS 2002).

#### Environmental Quality Incentives Program (EQIP)

This program is designed to identify conservation concerns and set conservation priorities to address soil erosion, water quality, wildlife habitat, and other resource issues through a community-based process (South Carolina DNR). This is a voluntary program directed at farmers and ranchers, promoting agricultural production and environmental quality as compatible national goals. Cost sharing and technical assistance are provided to landowners who install or implement structural and management practices on eligible agricultural land. Cost-sharing of up to 75 % for conservation projects and in special cases, up to 90 % are available with contracts generally running between one year and ten years (NRCS 2004).

### **DISCUSSION OF SURVEY RESULTS**

Approximately 100 organizations were contacted through email or over the phone for this study, with 63 responding to our survey. Several of the survey respondents were referred by other contacts, including some who did not relate to our study topic and suggested alternative contacts. Table 3 shows a breakdown of the organization type of the survey respondents, with organizations and survey questions included in Appendices A and B.

Table 3: Breakdown of survey respondents by organization type

<b>Organization Type</b>	<b>Number of Respondents</b>
State/Provincial government department/agency	21
National ENGO	10
Regional ENGO	10
Federal government department/agency	9
Local ENGO	6
Industry/Private Company	4
International ENGO	2
Municipal Government	1

Survey respondents included land trust organizations and larger conservation organizations, woodlot associations, as well as government departments of forestry, agriculture, environment and natural resources, on federal and provincial/state levels. In addition, the industries and private companies surveyed included utility companies, a forestry company and a private firm specializing in community restoration type projects. 43 of 63 respondents target their programs to individual landowners; 12 only or also target conservation groups; and 16 only or also target large corporate businesses.

Many of the programs described by the respondents have been designed following a previously established model. Most of the land trust organizations have followed a

somewhat standardized land trust model (4 respondents). In B.C., the Land Conservancy of BC (TLC) has been used as a framework for 3 respondents. The Nature Conservancy is another organization that has been used as a model for others (1 respondent), while previous federal government programs have formed the basis for current programs with adjustments that have moved the financial burden from the government to industry (pers.comm. Mark Megalos, North Carolina Forest Service). Another interesting model referred to was Washington State's San Juan County which has a real estate transaction tax with proceeds going into a 'land bank' that funds land acquisitions and paid easements for the county (pers.comm. Gregg Boggs, Whatcom Conservation District). Seven respondents described themselves as pioneers in their field.

None of the conservation organizations identified through this review are involved in both carbon sequestration and conservation easements. As this survey was designed prior to finding any existing afforestation conservation easement programs, the majority of our survey findings relate to conservation easements in general, with the intention of understanding the mechanisms for establishing conservation easements in order to develop a carbon sequestration conservation easement mechanism.

### **Present Use of Conservation Easements for Carbon Sequestration**

While all survey participants were involved in some way in conservation easements, afforestation or carbon sequestration efforts, none of the organizations we contacted were involved in all of these areas. No conservation organizations reviewed have a program that uses conservation easements for the sole purpose of afforesting land for carbon sequestration. The Nature Conservancy in the United States was the only conservation organization we talked to that was working on carbon sequestration projects through afforestation. However, they were using acquired land rather than land held by conservation easements or agreements for this work (pers comm. Zoie Cant, NCC Midwestern Forest Restoration Project).

Conservation easements and conservation agreements are acquired and maintained for the purpose of conserving sensitive habitat for wildlife or for the preservation of natural spaces. While many conservation organizations strive to protect the less disturbed and more pristine areas first, other organizations and a number of US Department of Agriculture programs work to protect marginal lands with habitat potential, involving a restoration component to return the land's natural productive capacity. Afforestation is often a component of land restoration around wetlands, stream buffers and areas with erosion problems. An example of how these programs work and apply afforestation to conservation is described using the Whatcom Conservation District.

The Whatcom Conservation District, in Washington State is participating in the Conservation Reserve Enhancement Program [CREP] with the US Department of Agriculture. This organization encourages voluntary landowner participation, in the CREP program to remove livestock and agricultural activities from the riparian area of salmon-bearing streams. The sites are planted with native trees and shrubs for a contract period of 10-15 years. Improved salmon habitat, cooler, cleaner water and financial

enhancements to the landowners (200% annual rental payments) for removing the area from production are the results of this program. This is a voluntary program that is the result of a contractual agreement between the State of Washington and United States Department of Agriculture established in 1998 (Gregg Boggs, Whatcom Conservation District).

Private industry has been doing more work towards carbon sequestration and afforestation in Canada and the United States than conservation organizations. The two utility companies and one forestry company that responded to our survey (Saskatchewan Power Corporation, DTE Energy of Michigan and Alberta Pacific Industries) are each involved in afforestation and carbon sequestration efforts. Saskatchewan Power Corporation (SaskPower) has been working on restocking trees within Saskatchewan's Provincial Forest in exchange for the carbon units sequestered. DTE Energy is working with a group of private energy companies calling themselves the Power Tree Carbon Company to afforest marginal agricultural lands in the Lower Mississippi Valley. Lands are either purchased and donated to ENGOs or government for wildlife refuges, or 100-year easements are formed with landowners for use of the land. In exchange the Power Tree Carbon Company retains the rights to the carbon credits sequestered (pers.comm. Mike Rodenberg, DTE Energy).

Alberta-Pacific Industries (AlPac) has undertaken a hybrid poplar plantation program on private land to assist with long-term supply shortfalls. The program consists of the company and the private landowner signing a twenty-year lease that allows the company to plant the land to fast growing hybrid poplars. The trees belong to the company but the land is still owned by the landowner who collects rent from the company. By 2008, AlPac plans to be in a position to be able to sell carbon credits. After the 20-year lease elapses, the landowner can renew the lease for another tree plantation or take the land back (pers comm. Al Bertshi, AlPac).

### **Program Management and Marketing of Conservation Easements**

When asked what makes their program successful, 23 of the 63 respondents suggested landowner relations as their key to success. This was further described by some respondents as having a strong local presence in the community, providing technical assistance to landowners, offering education and awareness initiatives and having interpersonal skills on staff. A complete list of suggested key marketing and management processes is included below:

- Landowner relations (23)
  - Strong presence in the community
  - Providing technical assistance to landowners
  - Offering education and awareness initiatives
  - Having interpersonal skills on staff
- Working in partnership with other organizations and agencies (6)
- Maintaining public image (6)
- Appropriate funding (6)
- Strong volunteer force (4)
- Transparency of organization and administration (2)



- Flexibility of an organizations (2)
- Financial incentives offered (2)
- Experience of the organization (2)
- High standards for land approvals (1)
- Federal criteria (1)
- Legislative mandate to back up programs (1)
- Paid staff positions (1)
- Desire to protect the ecosystems (1)
- Simple contracts and administration (1)
- Warranty on trees and restoration work (1)
- Government involvement (1)
- Selection of conservation tools developed for use (1)
- Results of the organization (1)

Marketing of a program was determined by many respondents to be critical to their program's success. The most common form of program marketing was through word of mouth. Table 4 shows the various marketing approaches used by the conservation organizations surveyed. Just over half of the respondents felt their programs were accepted by the community (37 respondents) while 12 felt there were some groups or sectors of the community that had reservations. Only 5 felt the community did not accept their program. The remaining respondents were uncertain or did not respond to this question.

Table 4: Marketing approaches used by conservation organizations (survey respondents)

<b>Method of Marketing</b>	<b>Number of Respondents</b>
Word of Mouth	34
Electronic Media (websites, email, etc)	22
Promotional Materials (brochures, pamphlets, etc	22
Mail outs	17
Conferences, tradeshow, workshops, fairs, etc	13
Media or Press Releases	12
Fundraising Campaigns	3
One on One Landowner Contact	3
School or Professional meetings	2
Field Trips	1
Public Consultation	1
Facility Tours	1
Signage on Project Areas	1

### **The Importance of Partnerships**

Partnerships were very common among the responding organizations. Thirty-four respondents work or have worked in partnership with environmental NGO's or conservation organizations while thirty-one respondents have partnerships formed with federal, provincial/state or municipal government departments or agencies. Other partnerships included working with professional or occupational associations (i.e.

woodlot associations, foresters associations, 8 respondents), industry (2), schools (2), and landowners (2). Only five respondents did not have working partnerships with other organizations.

Nearly every example of land protected in Western Canada (either in conservation easement or another type of co-purchasing / co-managing arrangement) reflects how critical partnerships can be. Successful conservation efforts were only found where partnerships have been formed between a land trust, other local land trusts, national and local conservation groups, and other (local, provincial or federal) governmental agencies. For example, in order to protect a 30-acre site of Garry Oak savannah (the rarest, most endangered ecosystem in Canada), the Elkinton/Garry Oak Committee and the Cowichan Community Land Trust Society raised \$150,000 and received additional contribution from the Government of Canada, the BC Government's Habitat Conservation Trust Fund, and Shell Canada. The Nature Conservancy continues to raise funds for continued restoration and conservation of the site.

Partnerships among land trusts and other community or government groups can result in

- Land being purchased outright by a group;
- Co-purchasing arrangements by two or more groups;
- Landholder arranges for a conservation easement on his/her land, administered by one land trust;
- Landholder arranges for a conservation easement on his/her land, administered by two land trusts/conservation groups ("co-covenant")
- Agreements between landholder and trust to protect the land for its specific ecological values and/or strategically advise on development / management to minimize environmental impacts

### **Incentives to Conservation Easements**

The most commonly mentioned landowner incentive for the respondents was financial assistance or cost sharing (16 of the 63 respondents). Financial assistance included grants from federal agencies, through state departments; cost sharing of restoration or reforestation; and low-cost or free seedlings. Tax breaks was listed as an incentive by 14 respondents and included charitable donation tax receipts, reductions or exemptions in property and school board taxes, estate tax reductions and state tax credits. Another commonly mentioned incentive was the landowners' desire to protect the land (12 respondents) with personal attachment and preference for privacy also listed in this category. Technical assistance provided to landowners was listed by 6 respondents with respect to forest management planning and the opportunity for the landowner to learn sustainable land management. Nine respondents each listed payment for conservation easements or use of the land and planting/maintenance costs provided as incentives. Purchased 'development rights' and property rental or lease payments were examples used to describe the land payment incentive. Other incentives mentioned included legislative requirements (2) and image or recognition (2).

Conservation organizations work to conserve and protect threatened or significant ecosystems. The Land Trust Alliance, a US-based organization of more than 1300 land

trusts across the country, noted in their 2000 survey that the primary motivator behind landowners wanting to establish conservation easements or fee-simple acquisitions was the conservation of the land and its components (e.g. wetland, riparian area, native pasture, etc). A 2000 survey of Canadian land trusts came back with similar results (Watkins & Hilts 2001). Most landowners that are donating their lands into conservation easements are less concerned with the financial benefits than they are with limiting development and being able to preserve their land for future generations.

The most widespread incentive available for conservation easements is the various tax breaks received, most notably a sizeable charitable tax donation worth the estimated value of the land being conserved. In Canada, this deduction can be used to offset up to 75% of the donor's taxable income with a portion of the capital gain from disposition of the land included as income (Hillyer & Atkins, date unknown). Conservation easements that register and are certified by the federal Ecological Gifts program, administered through the Canadian Wildlife Service, receive a reduced capital gain tax for their land, from 50% to 25% of the capital gain value, while also being able to use the charitable donation receipt against 100 % of their taxable income (CWS 2004).

Many landowners may see a benefit to placing a conservation easement on their land in the reduced estate tax their heirs would be required to pay due to the lower property value that results from the easement. As well, with the conservation restrictions placed on the land under easement that generally results in a reduced property value may lower the property taxes of the land, lowering the capital gain and estate taxes associated with the land/conservation easement, creating another minor incentive to landowners.

A complication arises with respect to the capital gains tax, which applies to the disposition of lands. Ecological Gifts, conservation covenants, or even straight out donations of land, under the tax legislation, are considered dispositions and the landowner may be required to pay capital gain tax on the land (Hillyer & Atkins, date unknown). In most cases, this capital gain tax would be more than offset by the charitable tax credit/deduction eligible for donating the land, however in cases where the value of the land has increased since the landowner purchased the property, the difference between purchase price and current fair market value can result in significant capital gain taxes (Hillyer & Atkins, date unknown). Conservation easement organizations and taxation lawyers working with these organizations may recommend a reduction in the estimated value of the land, in order to reduce the capital gain tax due and receive a better return on their taxes. This, however, also results in a lesser charitable tax receipt. The formulas for calculating income tax benefits can be extremely confusing for the average landowner to understand.

In general, the current system of incentives and establishment of donated conservation easements are suitable for a small portion of landowners, particularly those with sufficient wealth to offset the costs of establishing the easement, as well as benefit from the tax incentives offered. In addition, most conservation organizations do not have sufficient funding to place a conservation easement and conduct the necessary monitoring and maintenance on the land. Therefore, many conservation easements are turned away

unless a financial donation is included to cover the administrative and monitoring costs of the easement. Fundraising can be used to offset these costs if the donor cannot provide it, and if the land is of particularly significant ecological value.

The use of purchased conservation easements may provide an opportunity to conserve areas held by the larger population of landholders. Lump sum payments and restoration or maintenance costs are provided by the conservation organizations in exchange for the perpetual conservation easement. No charitable tax receipt is issued for purchased easements and a capital gain will be realized from the disposition of land. The benefit to the landowner in this case may be the reduced land value that results from the conservation easement being placed on the property leading to lower property taxes and lower estate taxes their heirs might face. It is a common concern when passing property to ones heirs that the heirs may be forced to sell the land in order to pay for the estate taxes due with the inheritance.

In the United States, conservation easements can be deducted as charitable tax donations, provide benefits to estate taxes and may even be available for state tax credits. The US Department of Agriculture has a number of conservation programs underway that offer annual lease payments or cost-sharing of up to 75% to the landowner in exchange for a 10 or 15-year conservation agreement, or a traditional conservation easement. In addition, some states offer a state tax credit for conservation easements which can be deducted, dollar for dollar against income taxes owed. This can be an attractive incentive for many landowners however it is also somewhat vulnerable to abuse by some people who place easements for the tax credit and proceed to develop portions of the land for profit (M.Mulhall, pers comm. 2004).

A 2003 series of articles in the Washington Post looked at conservation easements and uncovered some less than honest practices occurring in the US's largest conservation organization, the Nature Conservancy (TNC), as well as other abuses of conservation easements. TNC was habitually purchasing conservation lands through fee-simple acquisitions and then selling the land, at a loss, to supporters and even national board members, with conditions that allowed the new landowners to use the land for to build large vacation homes (Stephens & Ottaway, 2003b). The newspaper series also investigated a sports celebrity website that described how purchasing or building a golf course and placing conservation easements along the fairways could save millions of dollars in taxes owed (Stephens & Ottaway 2003c). As a result of this series and the public outcry that responded, the US Internal Revenue Service has recently issued a statement that they will be looking into charitable tax donations of conservation easements (IRS 2004). In addition, the Nature Conservancy and other large-scale conservation organizations such as the Land Trust Alliance immediately underwent policy reviews and have made efforts to correct their dealings and improve their standards/ethics (Ottaway & Stephens 2003c).

### **Deterrents to Conservation Easements**

The most common deterrent to conservation easement program participation was lack of financial resources, stated by 9 respondents. Insufficient tax incentives, high costs and

time requirements, lack of resources, and insufficient cost-sharing were examples of the financial barriers many landowners see to conservation easements. Land value and ownership concerns, such as a perceived loss of land value, a significant drop in land value, increases in property taxes and loss of rights to the land, were listed as key deterrents by 4 respondents. The amount of bureaucracy or red tape was stated by four respondents as a deterrent to conservation easements, which included, complicating and costly legal or administrative requirements, confusing regulations, zoning issues, and too many restrictions with respect to the Ecological Gift certification.

Development pressures driving up the land value was listed by three respondents as a deterrent to conservation easements. Urban sprawl and the perception that there are better uses for land than forestry were cited as examples of development pressures. The high risk and low return on investment were listed by three respondents as deterrents to conservation easements, with respect to afforestation. A lack of market for low quality timber trees and a perceived higher profit for agricultural crops were examples of this deterrent. A lack of interest in forestry or more forested land was mentioned by one organization as a deterrent to conserving or establishing forests, while another respondent mentioned that some landowners disliked the timber-dominated focus of forest conservation and afforestation.

A surprising deterrent mentioned was the effect of cost-sharing and paid conservation easements driving up the cost of conserving land. The growing practice of paying landowners in exchange for conservation easements is forcing some programs to move towards land acquisitions entirely. The Nature Conservancy Midwestern Forest Restoration Project is working to afforest large areas of land for carbon sequestration. However, they have found that rather than purchasing development rights or conservation easements, there was less risk and similar costs to go land acquisition route. Land is acquired, forested and transferred to a public entity to incorporate into a national wildlife refuge, or reserve, mainly in the lower Mississippi Valley area (pers.comm. Zoie Cant, TNC).

Throughout our research and discussions with conservation organizations, we found that charitable tax donations and other tax breaks are not sufficient to entice a large percentage of landowners to donate their land. Many landowners do not have a significant income that would see a charitable tax deduction offset the costs of owning the land. Other landowners, particularly farmers on the prairies and into southern Ontario, write off such a significant portion of their income due to expenses occurred, that they often owe little to no income tax each year. This nullifies any tax break a charitable donation would provide, creating little incentive for placing conservation easements on their land, especially with the capital gain tax that may apply due to a donation of land. As well, the complex tax system can seem daunting to some landowners, preventing them from proceeding with a conservation easement.

Some additional deterrents with respect to landowner participation in conservation easement programs include land zoning issues, such as the requirements in Quebec for agriculturally zoned land to be used for that purpose. The uncertain carbon market prices

for carbon credits is another deterrent that came up in many discussions with organizations, as did suspicions about uncertainty of long term commitments, and a perceived lack of support from conservation and environmental interests. Another common barrier to increasing greater participation in conservation easement programs was the fear of change or of being the first to take on this ‘new idea’ of conservation. Table 5 below summarizes the incentives and deterrents related to each option available for conserving private lands for ecological significance, or for afforestation purposes.

Table 5. Summary of incentives and deterrents to each type of conservation easement/agreement (literature review and survey)

Type of Conservation Agreement	Incentives	Deterrents
Donated Conservation Easement (without Ecological Gift designation)	<ul style="list-style-type: none"> <li>▪ Charitable tax receipt eligible to offset 75% of taxable income</li> <li>▪ Reduced land value lowers property and estate taxes</li> <li>▪ Ecological conservation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Landowner must realize 50% capital gain from land donated as income for tax purposes</li> <li>▪ Landowner generally required to include monetary donation with CE to cover admin costs</li> <li>▪ Long term inflexibility</li> <li>▪ Uncertainty of long term values</li> <li>▪ Not perceived as cost effective or feasible for middle to lower income landowners</li> <li>▪ Red Tape. Lawyer and accountant necessary to arrange agreement</li> </ul>
Ecological Gift (donated conservation easement with special designation)	<ul style="list-style-type: none"> <li>▪ Charitable tax receipt eligible to offset 100% of taxable income</li> <li>▪ Reduced land value lowers property and estate taxes</li> <li>▪ Ecological conservation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Landowner realizes 25% capital gain from land donated as income for tax purposes</li> <li>▪ Forest establishment/afforestation is not currently an acceptable criteria for Eco-Gift certification</li> <li>▪ Landowner generally required to include monetary donation with CE to cover admin costs</li> <li>▪ Long term inflexibility</li> <li>▪ Uncertainty of long term values</li> <li>▪ Not perceived as cost effective or feasible for middle to lower income landowners</li> <li>▪ Red Tape. Lawyer and accountant necessary to arrange agreement</li> </ul>
Paid Conservation Easement	<ul style="list-style-type: none"> <li>▪ Landowner receives one time payment for land, based on fair market value, and ecological value of the land (but not total amount of fair market value)</li> <li>▪ Reduced land value reduced estate tax and property tax levels</li> <li>▪ Ecological conservation</li> <li>▪ Potential Carbon or other credits</li> </ul>	<ul style="list-style-type: none"> <li>▪ Will be required to pay capital gain taxes from land disposition</li> <li>▪ Long term inflexibility</li> <li>▪ Uncertainty with long term values</li> <li>▪ Red Tape. Lawyer and accountant necessary to arrange agreement</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Potential income from sustainable harvest of forest</li> </ul>	
Leases and Rentals for conservation or afforestation	<ul style="list-style-type: none"> <li>▪ Continued income from land from annual payment on per acre basis</li> <li>▪ Assistance through cost-sharing or direct funding for restoration or forest establishment.</li> <li>▪ Defined time frame (10 to 30 year agreements)</li> <li>▪ Simple business terms through contract</li> <li>▪ Supplementary management income (landowner is paid to maintain the land/tree crop)</li> <li>▪ Potential to sell carbon credits</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of income from agricultural uses</li> <li>▪ May be required to pay capital gain taxes</li> <li>▪ Unsure if will reduce property values</li> <li>▪ Landowner may be liable for carbon/forest productivity</li> </ul>

### Improving Conservation Easement Programs

When asked where their programs could be strengthened, the most common response, with 15 respondents, was to acquire more funding both for increasing their core or administrative funding, as well as enabling them to offer more services to landowners. Better incentives was the second most common suggestion, by 9 respondents with specific suggestions including better tax incentives for forested land, and for landowners interested in conserving large tracts of land. Improved public awareness and education was suggested by 6 respondents, while 6 respondents suggested stronger or more harmonized legislation, including better provincial and federal regulatory cooperation/coordination, better bylaws to protect forests and less red tape. A complete list of suggested improvements is as follows:

- More funding (15)
- Better incentives for landowners (9)
- Improved public awareness and education (6)
- Stronger, more harmonized legislation and reduced red tape (6)
- Increased community presence and landowner communication (4)
- Improved program management (staffing, better integration with existing management, 4)
- Improved program guidelines and financial management (3)
- Hiring paid staff (3)
- Improved fundraising effectiveness (2)
- Stronger partnerships (2)
- Increased support (public and political) for forestry and forest conservation (1)
- Increased youth involvement (1)
- A carbon market to realize values of carbon credits earlier (1)

Conservation easement or agreement programs are monitored annually by 12 responding organizations, with 'spot checks' or samples of sites conducted regularly by 7 respondents, assessments conducted every five years by another respondent, and three respondents having no form of monitoring or enforcement. Eight respondents have a

form of designated monitoring system such as baseline inventories and forest health surveys while one respondent has a voluntary landowner reporting program. Two respondents reported various enforcement methods, including a system of fines and an enforcement fund to repair or manage any breaches to the easement agreements. The majority of respondents indicated that their programs' successes are evaluated by the amount of land protected over time (40 of 63 respondents), with number of participants (landowners or companies) was the second most common measurement of success (19 respondents). Other measures included public interest and compliance (10), costs per acre or per tree over time (7), landowner satisfaction (1), success rate of new stands (2), improved forests (1) the number of trees distributed (1), and cost per tonne of sequestered carbon (1).

### **Conservation by Afforestation**

Given the large number of land trusts and conservation organizations operating in both Canada and the United States, surprising few are promoting afforestation or reforestation of privately held lands through conservation easements. And even more surprising was the minimal effort or interest these organizations have for carbon sequestration to offset greenhouse gas emissions. Many organizations have identified forest conservation as a way to reduce deforestation, and others will incorporate tree planting as part of their restorative projects surrounding wetlands or in riparian areas.

Across Canada, there are a number of programs and initiatives that promote tree planting on private or community-held lands, although very few of these programs place long-term restrictions on the land being forested. Some of the purposes or goals to tree planting initiatives include:

- Establish shelterbelts around farmyards and crops to reduce energy consumption and improve crop productivity (Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration's Shelterbelt Program – provide trees to farmers or landowners to establish shelterbelts)
- Increase awareness and encourage Canadians to plant trees for carbon sequestration in urban centres, yards and private lands (Tree Canada Foundation – provide trees for group planting projects)
- Promote sustainable land use to and to expand the national land base covered by perennial forage and trees (Greencover Canada, a 5-year program that provides technical and financial assistance to convert sensitive areas to trees, shrubs and grasses in exchange for a ten-year land use agreement)
- Establish a series of demonstration plantations of fast-growing tree species in private land to show the carbon sequestration potential of these plantations (Forest 2020, a two year program that provides contact, site preparation, planting and one year of maintenance and administration for plantations. Landowners retain the rights to potential carbon offsets/credits).

With respect to large scale afforestation efforts, larger land trusts were very hesitant to indicate support because of their overarching goals of maintaining / enhancing biological diversity. For example, a representative of the Nature Conservancy in BC indicated that the majority of lands that they own/covenant are in dry, grassland ecosystems, which are



the most threatened areas of the Province. These areas are largely "over forested" due to the inhibition of aboriginal prescribed burning, and wildfire suppression. Eliminating trees from private lands would be a more ecologically valuable enterprise in these areas, with regards to conserving biological diversity/species at risk and enhancing wildlife habitat. In addition they were generally wary of planting row upon row of fast growing tree species for the purpose of carbon sequestration. This approach would likely reduce biological diversity in the planted areas and run counter to these organizations' mandates.

Smaller land trusts did not seem very receptive to the afforestation concept either. Individual landholders' desires to place covenants on their land, (which would see the land protected in its unaltered state in perpetuity), leads one to believe that altering this land for the purpose of afforestation would not be deemed an "acceptable use of the land" under covenants' restrictions.

From a landowner perspective, converting agricultural or other marginal historically deforested land to forests could result in significant hikes in property taxes. For example, in BC, forested land is currently taxed at nearly double that of agricultural taxes (DeMarsh 1999). Although some creative management on behalf of the conservation organizations, or afforestation programs might be able to work around this, it serves as a strong deterrent to those landowners familiar with the land use tax system in that province.

Lands within the southern agricultural portions of the Prairie Provinces tend to be privately owned or leased. These private lands have historically been converted from native prairie or parkland (a mixture of grasslands and groves of trees). Before being put to the plough, tree cover was limited on the prairies to some wooded uplands such as Spruce Woods, Moose Mountains, and Cypress Hills and along waterways or other riparian areas where water availability was superior to that of the surrounding countryside. During the droughts of the 1930's, it was realized that some of the land was extremely prone to wind erosion. Tree and shrub windbreaks helped reduce the blowing dust if they could be strategically placed and established satisfactorily. At the same time, treed shelterbelts were established around many of the farmsteads that survived the depression years. Thus the Prairie Provinces have a long history of afforestation

At the interface of the prairies and the boreal forest, the aspen parkland originally grew more trees and shrubs. This area, referred to as the fertile belt in early settlement times, was cleared of trees and broken for production of agricultural crops. Trees, especially poplar species and some conifers, grow relatively easily here although, in times of prolonged droughts, whole groves of trees may die out prematurely. In addition to generally flat prairie areas, largely devoted to annual cropping or rangeland, and the aspen parkland, also heavily converted to agricultural production, there are a number of sandhill complexes. These areas often have a high water table and become vegetated with varying amounts of tree cover. These lands are usually crown owned but may have private land holdings around their periphery. The riparian zones of the shallow lakes, sloughs and watercourses are usually characterized by a variety of trees and shrubs.

The planting programs have been heavily subsidized by the federal agriculture department and the Prairie Farm Rehabilitation Administration with the PFRA Shelterbelt Center at Indian Head, established in 1901. These services have continued to the present and the shelterbelt program is well known and respected by most prairie landowners. The variety of tree species used in the shelterbelt program has been restricted to a few very hardy and drought tolerant species because of climate limitations (pers.comm. Howard Fox, PFRA Shelterbelt Centre).

The Provincial Woodlot Associations have been active in promoting conservation and management of private woodlots for purposes of landscape and ecosystem protection and production of value added wood products. They often partner with other conservation organizations and industry to further their objectives. An example is the new Partnership for Sustainable Woodlot Management in Alberta. They have worked to replace a number of government-sponsored programs that addressed conservation and sustainability of private forests and the development of agroforestry. Partners include a number of the major forest companies in Alberta, PFRA, Alberta Conservation Association and Ducks Unlimited Canada. Their goals deal with reforestation, extension and woodlot management and planning. A strong point of this partnership may be the potential coordinating and funding role it could play in future afforestation programs in Alberta and possibly the rest of Canada.

The Manitoba Habitat Heritage Corporation (MHHC) is Crown Corporation mandated to conserve, restore and enhance fish and wildlife habitat. It has an active woodlot management component to assist landowners and small-scale operators with training, woodlot management and agro-forestry planning services to sustain or enhance woodland wildlife habitat and diversify farm income. The corporation owns or holds cooperative agreements with landowners for 147,754 acres of habitat or 2,534 parcels of land. (MHHC Annual Report 2002/2003). MHHC's Manitoba Agro Woodlot Program (MAWP) that provides training and woodlot management services has organized planting of over one million trees and shrubs on 816 landowner projects and 66,600 trees on 139 community projects since 1992. They attribute their success and popularity by the variety of services they bring to landowners and communities enabling them to get better value from lands that would otherwise be considered marginal for agriculture. The MAWP has a high conservation goal with increased economic values from the land acting as a strong incentive.

An economic study in Ontario indicated that various kinds of "set asides" on marginal agricultural lands to yield ecological benefits could be financially attractive to farmers with small levels of incentives. In fact it is estimated that over one billion trees have been planted on private lands in Ontario over the past century. In the period from 1943 to 1993, provincial programs were responsible for planting approximately 15 million trees annually with a peak of 30 million in 1972. Since 1997, the provincial funding has dried up and programs have shrunk drastically. Some conservation authorities and ENGOS continue to plant trees on a limited scale, (Carolinian Canada, 1984-2004) but annual tree planting has been reduced to approximately 4 million annually.

There does not seem to be much going on in Quebec in terms of afforestation. In fact, there has been a loss of forested land in the agricultural sectors of the province in recent years. This is in part attributed by many people to a policy limiting the quantity of pigs to available land to spread manure. Overall, Quebec seems to be the area where the conflict between forest and agriculture is the most present. This can in part be connected with Quebec's laws protecting agricultural land that limit or prevent government funded tree planting on agriculturally zoned land unless it is first deemed non productive by an agronomist. It is also impossible to stop a farmer from clearing land in an agricultural zone if it is deemed productive by an agronomist. The main source of tree planting in the agricultural landscape is through a program funding the planting of windbreaks and odour breaks and through the efforts of certain groups to create buffer zones along waterways.

Quebec has a silviculture program run by the regional private forest agencies which include representatives from the provincial and municipal governments, the wood producers and the forest product industry. Through this program, various activities including tree planting are funded by the provincial government. Overall, the private woodlot system seems fairly well organised in Quebec.

Most of the northeast of North America is already heavily forested which limits the overall interest in afforestation. There are some opportunities in old abandoned farmland or in farmland that is no longer considered appropriate for farming because of environmental considerations such as high slopes or proximity to waterways. Some jurisdictions, such as New Brunswick, are already promoting afforestation in such circumstances. However, the abandonment of farmland is a preoccupation to others and there are programs to keep farmland productive. In the case of Quebec, with its particularly strong laws protecting agricultural land, a conflict can exist between afforestation and agricultural production.

As in Canada, shelterbelt or wind break programs in the United States are wide spread and actively encouraging landowners in the agricultural regions to establish protective rows of trees and shrubs around their farmyards and crops to block wind, snow and heat. In Iowa, the Department of Natural Resources provides cost-sharing of up to 75 % of the cost of the shelterbelt establishment to a maximum of \$1,600 according to DNR standards. Landowners sign a ten-year contract with the state department to establish and maintain the shelterbelt according to state standards (Iowa DNR 2003).

### **Carbon Sequestration and the Carbon Market**

It became clear during the process of this study that there was more activity in the United States than in Canada with regards to sequestering carbon for offsets or carbon credits. There have been various developments in the States. Several states, such as Maine, North Carolina, Georgia, Oregon and Washington, are working on greenhouse gas policies or legislation that include afforestation. Georgia, Oregon and Washington have already passed GHG legislation placing caps or requiring offset activities by utility companies. Note that in the case of Maine, afforestation is less an issue as there is a high percentage of land forested.

The idea of carbon credits is starting to form, including a formal market for credits (Chicago Climate Exchange) and in October, 2003 the Climate Stewardship Act, a bipartisan bill was introduced to the US legislature that would place caps on emissions and initiate a trading system. This bill was not passed in the October 2003 sitting but was expected to be reintroduced this summer. Republican Senator McCain of Arizona, who introduced the bill with Democrat Senator Joseph Lieberman, has promised to continue presenting the bill until it is passed. Until federal regulations requiring emissions reductions or carbon sequestration are in place, or until sufficient states have implemented their own systems, the momentum for a carbon market remains small.

However, that isn't stopping many large energy and utility corporations from acting towards afforestation in anticipation of future legislation or to improve their public perception. Energy and utility companies such as DTE Energy ([www.dteenergy.com](http://www.dteenergy.com)) have programs in place that has planted more than 20 million trees in an effort to sequester CO<sub>2</sub>. Likewise, America Electric Power ([www.aep.com](http://www.aep.com)) supports afforestation around the world and is a member of the Chicago Climate Exchange (CCX). The Chicago Climate Exchange is an international market in which greenhouse gas emissions can be traded. Carbon credits, measured in metric tonnes of CO<sub>2</sub> can be purchased or sold to buyers/sellers around the world. However, as there is currently no legislation creating emissions caps in the United States, or in Canada, the value of bio-sequestered carbon credits are extremely low (approximately \$2 per megatonne CO<sub>2</sub>). This has limited the scope of the carbon market for afforestation for many. Should legislation be introduced that places limits on GHG emissions, it has been estimated that the value of bio-sequestered CO<sub>2</sub> credits may reach as much as \$30/Mt, thereby making afforestation a much more viable initiative (Zach Willey, Environmental Defense, pers.comm.).

In anticipation of such a carbon market, a number of environmental organizations and private companies are initiating sequestration programs through afforestation or no-till agricultural practices. Companies like Winrock International, a private consulting firm with offices and carbon sequestration projects around the world are emerging as leaders in carbon measurement and storage, offering a number of project designs, measurement options and monitoring services for this burgeoning carbon market.

The US Nature Conservancy has initiated a Climate Change program to sequester CO<sub>2</sub>. The Midwestern Forest Restoration Project has been ongoing in Ohio and Indiana to preserve existing forested land and reforest barren land. This program focuses on land acquisition rather than conservation easements and is expected to sequester a net of 150,000 Mt CO<sub>2</sub> (Zoie Cant, TNC, pers.comm.). It was noted that TNC has shifted to working solely on land acquisition for this project due to the increasing number federal government of programs offering paid easements or conservation agreements to landowners. Many landowners are now asking for similar payments from the ENGO programs, at prices comparable to land purchase. Therefore, TNC has found it more cost-effective and simpler in the long term to purchase the land and transfer it to a public entity (Z.Cant, pers.comm.).

The City of Vancouver has conducted extensive climate change studies, particularly on the potential for urban reforestation initiatives to significantly contribute to CO<sub>2</sub> sequestration. Strictly from this perspective, the City concluded that there was no case for it. For example, a tree over a lifetime sequesters very little “net” carbon. A City planting regime resulting in 3,500 new trees would only sequester approximately 600 tonnes CO<sub>2</sub> over their entire lifetime, which is insignificant, given that the City’s Climate Change plan calls for a reduction of more than 400,000 tonnes, just to meet a Kyoto target.

## **COMMON STRATEGIES IN EXISTING PROGRAMS FOR CONSERVING LANDSCAPE INTERESTS**

The review of programs across Canada and the USA indicated there were a number of common characteristics exhibited by successful conservation easement programs or other land securement programs for purposes of perpetuating tree plantations. These fell into several categories:

### *1. Ecological:*

Virtually all programs that encouraged private landowners to plant and manage trees addressed a perceived need to protect natural ecosystems and biodiversity. Easements or some sort of related agreement between the private landowners and the taker of easements usually had some ecological conservation objective. In the case of large programs in the eastern United States, the easements have been used to prevent fragmentation of landscapes around cities by real estate development. Similar landscape protection initiatives are starting to gain popularity to gain control of rapidly expanding urban interests in natural areas of Canada. The land protection initiatives by Nature Conservancy of Canada, NCC, and the Southern Alberta Land Trust Society (SALTS) in the foothills area around Waterton National Park are Canadian examples. The popularity of any national program using easements would likely be enhanced by having an ecological conservation aspect to it.

### *2. Financial:*

Although surveys have indicated that a relatively small proportion of land holders will participate in an easement program for altruistic or other reasons, a financially attractive program will attract significantly higher numbers of private land holder participants. Most conservation easements involve a relatively large initial payment by the purchaser and no further financial commitment. Under current Canadian taxation laws and real estate values, these easements can provide some annual financial benefits because the land values are reduced and tax assessments are reduced. They have benefits for older landholders who are concerned about capital gains in family estate transactions. Some programs are using lease or rental agreements that pay landholders an annual leases or rental fee. These fees coupled with the option that the landholder can be contracted by the lessee or easement holder to do O & M work on the property makes this type of arrangement quite attractive to many landholders. This kind of program does require the lease or easement holder to

have considerable resources at their disposal to maintain lease payments for many years on a sustainable basis.

3. *Ease of administration:*

Bureaucracy and “red tape” were sometimes listed as a deterrent to participation by land holders. If the program included a component that provided readily available advice and assistance to the landholder in going through the easement process, the level of landholder participation often increased.

4. *Length of commitment:*

Conservation agencies, with few exceptions, used conservation easements that extend into perpetuity. This is understandable because conservation easements are being used to substitute for outright purchase. On the other hand, land owners, especially those actively farming the land, were leery of long term easements. Sometimes it appears that this reticence can be overcome through enhanced education programs that clearly show that what the landowners are committing to, i.e. giving up, coincides with their long term land management objectives. Shorter-term agreements for land management where the land owner gives up some of the interests on the land such as carbon credits tend to use lease agreements for specific time frames. (e.g. twenty year lease agreements of Alberta Pacific Forest Industries)

5. *Social Acceptability:*

Some jurisdictions have legal roadblocks that would stifle use of mechanisms such as conservation easements to encourage tree planting on land that is zoned for other purposes such as traditional agriculture. (Quebec is concerned about having enough cultivated land available to accept manure produced by continued development of factory agriculture programs such as large hog barns). In British Columbia, large afforestation plantations were not welcomed by the conservation community if plantings were to be intended to afforest rare grasslands that are already being encroached upon by natural woody vegetation. On the other hand tree planting for shelterbelts and wind breaks to protect against wind erosion and for wildlife habitat enhancement has a long tradition on the prairies.

6. *Partnerships:*

Virtually all afforestation and conservation easement programs reviewed by this study worked with partners to accomplish their objectives. For example, the US Department of Agriculture makes large grants available to individual state agencies that administrate various conservation programs. The grants are only available to states that do a suitable plan for using the funds. The state run program then involves a variety of municipal governments and non-government organizations as partners to deliver various programs. When these programs have a conservation orientation, conservation easements have often been the mechanism of choice to secure land interests. They are used both by the government agencies and private organizations. The private organizations often assist greatly in expediting the easement process as facilitators or intermediaries.

In Canada, government agencies are less likely to actually hold easements. Instead, organizations such as the Nature Conservancy of Canada, NCC, Ducks Unlimited or a large number of smaller ENGOs and Land Trusts secure the easements. Because the easements are legalized under provincial legislation, the provincial government usually keeps records of the land dispositions and helps facilitate navigating the red tape.

7. *Regional Differences:*

Canada encompasses a great variety of forested or formerly forested ecosystems. Land uses and social values of the people using the forested lands differ as well. It is no surprise then that the existing incentives and disincentives for afforestation also differ. In eastern North America and the Pacific coast, this study found that there was a superabundance of tree growth in many cases and incentives to plant trees would be difficult to find. In Quebec, there was little to no interest in afforestation, particularly through a federal program. On the other hand, people on the prairies are more likely to see tree plantations as an asset especially if they can be used as a crop. This is not to say that afforestation could not be an attractive option in local areas through out the different ecological regions across the country.

8. *Certification and administration according to standards:*

The forest industry and governments are just starting to look at certification of woodlands and other ecologically important areas as meeting conservation standards to assist with management and regulation of private woodlands. This certification has addressed various conservation opportunities and challenges such as riparian habitat protection, sustainability of woodlot management and wildlife habitat. Carbon sequestration has not really been part of this certification other than in general terms.

Virtually all Canadian provinces have legislation that governs conservation agreements (including easements). This usually requires monitoring and record keeping of the conservation easements to ensure that the land is being managed according to the terms of the agreement. This monitoring commitment is an activity that has to be factored into the cost of conservation easements (usually in perpetuity).

A Canadian inter-departmental federal governmental committee is presently developing an offsets credits manual that is creating criteria for green house gas reduction and removal. This will assist in setting standards for, among other things, establishing eligibility of programs for planting and managing woodlots to meet Kyoto objectives. This follows efforts in the USA to create a "Field Guide for Standards and Accounting for Carbon Sequestration and Terrestrial GHG Offsets" (Zach Willey, Environmental Defense, pers. comm.) This work is in anticipation of development of a Carbon Market in North America.

The Canadian Forest Service is also developing measures for quantifying carbon sequestration in forests. These measurements are being used on provincial boreal forests and with some modifications could as well be applied to private woodlots which are likely to be more hardwood in composition.

9. *The impacts of perpetuity*

Government and non-government agencies use conservation easements as an alternative to land purchase to protect various interests on private land. As such the purchaser of the easements seek to protect their interests that are usually long term in nature by stipulating that the easements are in perpetuity. This prevents the landowner from changing his use of the land to something less favourable for conservation if his personal situation changes or if the owner changes (the easements are retained even though ownership is transferred).

Land holders entering into a conservation easement, although they may have the same objectives as the easement purchaser, are often concerned that land values, best practice land management, family financial situation or some thing else could change over time. They are looking for both security and flexibility. Details of terms and conditions for easements and other agreements that dictate land use and management “forever” require careful thought by the private landholder. In the United States, where conservation easements have been used for a longer period than in Canada, the academic literature contains a number of analyses that identify situations where landowners were taken advantage of or where easements were part of land flip schemes.

When a land holder and another agency enter into a land management agreement, the both parties need to understand the legalities and pros and cons clearly. A feature of the Ecological Gifts program administered by Environment Canada, takes great pains to protect the landowner and the donated easement holder. The administrators of this program recognize that although their process appears somewhat bureaucratic and lengthy, the leisurely pace of the process does serve to protect the participants against hasty and unwise action.



## POSSIBLE MECHANISMS OF AN AFFORESTATION PROGRAM USING EASEMENTS AND OTHER INCENTIVES

### CREATION OF A CENTRAL COORDINATING AGENCY

It is apparent that an essential element of any national afforestation program involving private land holders would be the creation of an overall coordinating agency. This agency could be contained either within government or established through creation of a private sector company that provides this service on a fee for service basis. This agency could have among its duties the following responsibilities:

- Arranges for certification of conservation easements or the like as part of a registered carbon sequestration program recognized as part of Canada's commitments to Kyoto,
- Coordinates information exchange about carbon sequestration opportunities and markets and is a source of educational materials. It would serve as a bulletin board for advertising services within the carbon exchange and afforestation field; this information would be made available through effective communication means to the Canadian publics involved with afforestation and carbon sequestration,
- Acts as a record keeper of who is doing what with respect to carbon sequestration through afforestation, reforestation, natural lands and waters that are useful for preserving existing carbon sinks and keeps the carbon sink register at the national level,
- Acts to promote a variety of programs, including conservation easements and other agreements that would be available to private land holders. This agency could set the rules and interpretation of rules to provide a complete shopping cart of opportunities and options that can be made available to all parties that are interested and capable of becoming involved in the carbon sequestration aspects of meeting Kyoto commitments,
- Provides financial or other incentives and logistical assistance to further partnerships between large greenhouse gas emitters and potential carbon sequestration producers. The potential purchasers may start out being Canadian but could quickly become international in scope,
- Acts as the Canadian contact for international carbon trading market places such as the Chicago Climate Exchange and the European Union's greenhouse gas emissions trading scheme.

**SCENARIOS FOR USING CONSERVATION EASEMENTS AS AN INCENTIVE FOR CARBON SEQUESTRATION:****Scenario A: Integrating with existing land conservation programs employed by Canadian Conservation Organizations and the Eco-Gifts Program:**

Large habitat conservation programs such as those used by Nature Conservancy of Canada, Ducks Unlimited Canada, a number of land trusts and other ENGOs are already using conservation easements to supplement land purchases and donations to support their biodiversity protection goals. Their focus has been to use donated conservation easements, purchased conservation easements, fee simple land purchases and land donations to protect lands with ecological values. Across Canada these agencies have protected over 2 million acres. However, at this time, these agencies are placing little emphasis on sequestering carbon to meet their goals and are not considering carbon credits as a conservation initiative. Some of the ENGOs are actively promoting reduction of greenhouse gas emissions but most have not philosophically recognized that their habitat protection and sustainable use initiatives are resulting in useful reservoirs of sequestered carbon. Further to this is the fact that these conservation organizations have not considered large scale planting of fast growing trees as a useful way of neutralizing greenhouse gas emissions.

Some parts of Canada have historically been involved in extensive tree planting programs aimed at improving wildlife habitat, reducing water and wind erosion and for aesthetic purposes. In regions such as south-western Ontario, tree plantation establishment has diminished in recent years because lack of available inexpensive tree stock following closure or privatization of the Provincial Tree nurseries. Trees for large scale planting are either not available or expensive and assistance to plant is harder to come by. Organizations such as the various Conservation Authorities in Ontario have reduced their tree planting programs and focused more on sustainable management of existing natural woodlots.

Wildlife and biodiversity conservation groups could be made partners in a national program for promotion of carbon sequestration if they were to make carbon sequestration a priority objective. These organizations could contribute their capabilities in coping with the bureaucracy and logistics of developing conservation easements with individual private landholders. The conservation agencies treat the administrative costs as part of the cost to buying conservation easements and as a result have become proficient real estate agents. With their extension and monitoring programs, these agencies could incorporate carbon sequestration criteria into supplementary planting and forest management parts of their programs.

One might ask, “What benefit could these conservation agencies expect from becoming involved with afforestation other than the inherent carbon sequestration benefits?” The answer might lie in the opportunity to add to the size and ecological value of the existing protected lands by creating a treed buffer around the protected lands. This need for ecological buffers has been identified by ENGO’s such as Canadian Parks and

Wilderness Association who have identified, as a serious concern, habitat fragmentation and clearing and breaking around island parks such as Riding Mountain in Manitoba. Afforestation could contribute to the creation of travel corridors and escape cover for wildlife and thus enhance biodiversity. These afforested lands managed in conjunction with natural habitats could help protect critical habitats for all wild taxa and especially species at risk.

Existing non-government agencies such as the provincial woodlot owners associations could provide a recognizable group that already works with landowners to sustainably manage woodlots. These groups have some interest in woodlot management for conservation purposes, but also assist landowners to reap financial reward for good forest management. Our research indicates that, in most cases, a well-managed woodland is also an efficient sequester of carbon. These organizations would likely be receptive to being part of an afforestation program and could play a vital role in helping with contacting groups of landholders and in communicating vital information related to any afforestation program.

The key to piggy backing a national conservation easement program for carbon sequestration onto existing conservation easement programs would have to address the following:

1. The various ENGOs would have to become supportive and in fact be made partners in the afforestation initiative to help with Canada's commitments to Kyoto. This could be addressed through:
  - an educational program that identifies how afforestation incentives supports the other goals of the ENGOs
  - providing economic incentives to the ENGOs such as a share in carbon credits, provision to bill fees for their services in arranging and administering conservation easement purchases and/or fees for service in administering easement programs.
  - assisting the ENGOs in advertising and profiling their contribution to the Canadian public and recognizing their role as important partners,
  - issuing annual grants or non-monetary benefits to the agencies in support of staff upgrading and other costs associated with a heavier demand on the agency to handle conservation easement purchases and the follow-up operation, management and monitoring.
  
2. The ENGO partners and landowners and any others who end up owning carbon credits would require assistance to identify potential markets and especially buyers of carbon credits. This service could be supplied by:
  - the central coordinating agency described above
  - as the market matures, by private carbon credit brokers such as are starting to appear in the USA and the European Union
  - by a marketing agency such as those used by various farm commodity groups, (eg. Saskatchewan Hog Marketing Agency, Canadian Wheat Board).

3. Establishment of a base or upset price for carbon credits that can be used for planned and for setting conservation easement prices and other land rental rates. The current situation is so fluid that a common ground for negotiation between a conservation easement buyer and potential seller can not be established. Until Canada is able to establish the basic domestic price on which to trade carbon in Canada, few landowners will be persuaded to commit land for carbon sequestration alone. At best carbon credits will only be viewed in the next few years as a small supplemental to other benefits derived from setting land aside and protecting it.

Conservation agencies showing most promise for becoming involved in a national conservation easement program for afforestation:

- Nature Conservancy of Canada
- Provincial Woodlot Associations
- Manitoba Habitat Heritage Association
- Ontario Conservation Authorities
- Southern Alberta Land Trust Society

On the basis of this analysis, integrating conservation easements for carbon sequestration as well as biodiversity and other conservation purposes by the various conservation agencies holds promise. However, one has to be cautious about how much land could actually be secured because of the limited staffing and resources available in the existing conservation agencies both at the government and non-government levels. It is possible that large ENGOs like NCC and DUC could partner effectively with a large emitter of greenhouse gases to afforest a large area in order to sequester enough aggregated carbon credits to be useful to the large emitter. The feasibility of this scenario would require considerable fact finding and negotiation between all partners involved.

### **Scenario B: Large Scale Afforestation On Privately Held Agricultural Land**

This scenario would focus on planting large numbers of fast growing trees on formerly treed land that has been converted to agricultural and other uses. The tree plantations would be considered a crop. Private landholders would have to be convinced that growing large acreages of trees would yield an economically viable return to their business operation. It must be recognized that these plantations would sequester little carbon for the first five or more years after planting and would not be available for harvest for fibre for at least twenty years. The landowner is then tying up his land and opportunity for future, potentially more economically favourable uses for a long period.

Our analysis indicates that this approach would not be suited to many agricultural areas of Canada but has considerable potential for implementation in the parkland and transition zones of the three Prairie Provinces. This part of Canada covers in excess of 20 million hectares of land. Between 1971 and 1996, in Saskatchewan alone, approximately 1.4 million hectares of land were converted from natural vegetation to farmed land,

(Atlas of Saskatchewan, 1999). This area before conversion was largely land growing aspen groves and wetlands. These areas, if left undisturbed, quickly re-vegetate naturally to aspen, and balsam poplar and are already proven to grow hybrid poplars quickly. Ecologically speaking, the Aspen Parklands and transitional forests of the prairies provide considerable opportunity for an afforestation program.

Socio-economic factors must also be considered. The agricultural sector on the Prairie Provinces is under considerable economic stress at this time of writing and many landowners are receptive to land use options that show potential to diversify and supplement their farm returns. Some of these landowners already have woodlots and are working with agencies such as the PFRA Shelterbelt Nursery at Indian Head and the Manitoba Habitat Heritage Corporation to improve their woodlots and to plant shelterbelts using hybrid poplar and other fast growing species.

On the Canadian prairies and parklands, because of lower capability to grow agricultural crops, farm sizes are large, (average over 450 hectares in size) and land values are lower than in the rest of Canada. By comparison, in southwestern Ontario and southern Quebec, privately owned, agriculturally productive lands growing annual crops or forage are in high demand for disposal of increasing quantities of manure generated by large factory livestock farms. In central Canada, large forest plantations on land suitable for annual crop production do not appear economically or socially feasible. Agricultural land is in very short supply in the Maritimes and the Fraser Valley of British Columbia. Providing adequate compensation to farmers presently growing high value fruit, vegetable or feed crops for dairy cattle in return for planting large areas of trees would be uneconomical unless carbon credits reach obscene values. Thus the best opportunity for a large scale afforestation program on presently farmed land seems to point toward the Aspen Parkland and forest transition zone of the Prairie Provinces.

#### Basic Requirements for a Large Scale Prairies Province Afforestation Program:

1. In this scenario, a basic need before introducing the planting effort would be an extensive inventory of available lands, including the tenure of these lands, their ability to grow trees quickly, and expected land rent costs (to determine if afforestation easements could compete with existing land uses). The Canada Land Inventory classified the soils and agricultural and forest growth potential for Canada. It and provincial soil surveys, that have revealed considerable diversity in the landscape's capability to grow different forms of vegetation, will be valuable sources of information. However, traditions, and cultural institutions may dictate where particular planting programs should be focused.
2. Canada's commitment to carbon credit trading will have to be clarified. Once a Canadian institution such as that being contemplated by the European Union Greenhouse Gas Emissions Trading Scheme or linkages to existing entities such as the Chicago Climate Exchange are made, Canadian carbon trading will become a reality. Large emitters of greenhouse gases will be seeking sources of carbon credits. Private woodlots could supply some of these GG offsets. Our research

- indicates that until a clear picture of what the carbon market consists of and a trading range for carbon credits is established, Canadian farmers and other land holders will be very reluctant to enter into a large scale carbon sequestration program on their land.
3. Purchasers of carbon credits emanating from afforestation will initially likely be large emitters of greenhouse gases such as power generating companies, steel mills, fertilizer plants and other large industrial complexes. These large potential buyers of conservation easements for purposes of greenhouse gas off sets will look for carbon credits in large blocks from a single or very few suppliers. For example, TransAlta, a Calgary based company that releases 30 million tonnes of greenhouse gasses annually recently purchased equivalent of 1.75 million tonnes of greenhouse gas equivalents from a Chilean company Agricola, that is significantly reducing its greenhouse gas emissions by retrofitting its hog barns, (Globe and Mail, Aug. 25, 2004). Thus, when the afforestation program seeks to sell its carbon credits, there will be a distinct advantage for them to be able to pool their efforts and sell carbon credits in blocks.
  4. The key to a successful large scale afforestation program using conservation easements and other forms of agreements with private land holders will be convincing large numbers of prairie farmers to commit large acreages of arable land to tree plantations. This study identified a number of considerations and landowner concerns that would have to be addressed:
    - a) Much improved information and education about the whole carbon sequestration situation and opportunities for economic gain, environmental protection, and social acceptability
    - b) Inexpensive or free trees available to the landowners for planting at suitable times
    - c) Planting and maintenance costs to the landowner minimized
    - d) Minimal cost to the landowner for land assessment, and administration of agreements
    - e) Readily available professional help to deal with the easement and afforestation process
    - f) Annual cash income for the landholders based on local land rent values (farmers currently rent farm land in the parklands of Saskatchewan for \$30-40 per acre annually)
    - g) Payments for easements made flexible to satisfy individual landowner's situation (may wish to delay or accelerate for estate planning, taxation or other reasons)
    - h) Tax benefits (could be a mix of municipal, provincial and federal taxes tax breaks or credits)
    - i) Community acceptance for and participation in the program (individual landowners will more often join a group action than be isolated as being "different")

- j) Clear picture of carbon credit marketing opportunities and mechanisms available for selling
- k) Opportunities for other sources of income related to the plantation such as wood harvest, berry production, maple syrup, recreation)
- l) Insurance coverage in case of disease, fire, vandalism that could destroy the plantation's value as a carbon sink.

#### Approaches to Address Land Owner Concerns:

a) *Information and Education:*

Through the work of the central coordinating agency, an extensive education program directed at rural land holders could be developed. This would explain the principles of the Kyoto Protocol as it relates to carbon sequestration and the role of tree plantations. The information package could also contain information about how rural landholders could seize on this new revenue opportunity and generally promote the afforestation program. The education and communication program would also contain information about mechanisms for landowner involvement such as through conservation easements or other agreements and on how landowners, large industry greenhouse gas emitters and various levels of government can work together as partners in developing the afforestation program.

The information could be disseminated through rural newspapers, mail outs, electronic media and community workshops. Organizations who are involved in land use agreements with private landowners indicated unanimously in our discussions that the most effective means of communication with rural people is by "word of mouth". Piggy backing onto ongoing workshops and seminars hosted by local woodlot associations, environmental farm groups, and conservation organizations could be effective means of spreading the word.

b) *Free or Inexpensive Tree Planting Stock:*

The PFRA, Shelterbelt Nursery at Indian Head, SK. has been supplying tree and shrub planting stock for over one hundred years to prairie farmers. In recent years they have been developing hybrid strains of poplar through selective breeding and have perfected poplar varieties suitable for Kyoto forest purposes. The Forest 2020 experimental program is using these hybrids. The PFRA shelterbelt nursery is supplying genetic stock to commercial nurseries for use in producing large quantities of planting stock as needed. Most plantation planting could likely be funded by large emitters who purchase the conservation easements such that there would be no cost to the land holder for planting stock.

c) *Minimized Development and Maintenance Costs:*

Similarly, the planting and maintenance costs for establishing the tree plantations would be part of the agreement between the landowner and purchaser of easements. Tree planting, weeding, fire guard maintenance and monitoring would

all be the responsibility of the purchaser of carbon credit easements. In some cases, the holder of the easement could hire the landowner to carry out these tasks on a fee for work basis thus providing some revenue for the landowner in the early years of the plantation.

d) *Minimized Administration Costs of the Easement Process:*

The various costs of completing a conservation easement type of land agreement would have to be born by the purchaser of the easement. This would absolve the landowner from most administrative costs of entering into the contract. As is the case with any legal agreement, the landowners would be well advised to obtain their own lawyer to ensure landowner interests are protected.

e) *Minimizing Bureaucracy and Red Tape*

Conservation easements and other similar land covenants can be a bureaucratic nightmare. Landowners would benefit greatly by having readily available real estate and other forms of land dealing expertise to assist them through the various administrative hoops. In the USA there are non-profit agencies such as the Trust for Public Land that are among other things, expert real estate agents. Through their expertise and knowledge, they make the land interest transaction painless for both the landowners and the purchasers of conservation easements. Creation of such an entity would be advantageous for the Canadian afforestation program.

f) *Providing Competitive Land Revenue*

The information obtained from agencies currently using conservation easements indicated there were some landowners who were interested in placing a conservation easement on their land to protect its conservation values in perpetuity. These lands were invariably not productive agricultural lands. Conservation agencies such as NCC and DUC as well as actual landowners indicated that buying conservation easements or other forms of agreement to grow a Kyoto forest would have to provide annual revenue comparable to other agricultural products. In the parklands of Saskatchewan, a farmer is able to demand \$30 - \$40 per acre annual rent for agricultural land. If each acre of tree plantation could produce on average five tonnes of carbon annually over the 20 year period, the price of carbon credits would have to be valued in the \$10 per tonne range to make it economical for the purchaser of the easement. The federal government has imposed a \$15 price cap on greenhouse gas offsets that emitters would be responsible for paying. At the current price of land rental in the prairie parklands, it does appear that conservation easements or some form of land rental to grow tree plantations could be economically viable for both the large emitter purchasers and the private landholders.

g) *Providing Flexibility*

Each land owner has to be treated individually when negotiating easements or other land use agreements. Success of a successful business transaction will depend on the land owner being comfortable with it meeting his/her specific situation such as taxation implications for him/her, retirement plans, potentially



unique estate plans, current cash flow and over all value system. Those already successfully involved with securing conservation easements have stated strongly that flexibility and variety of options is very important to their success. Timing can be very important to landowners. They may require considerable time to make their decision to enter into an agreement but then expect fast action to complete the deal once they decide to be part of it.

On the other hand it will be important that each landowner is treated equally and fairly to sustain the program over many years. ENGOs involved with conservation easements and leases devote significant resources to extension and monitoring. This aspect of the program is expensive but provides continual contact with the landowners and assists in keeping everyone working together. If this continuous contact and free exchange of information is dropped, problems with landowner compliance may result. Once a large scale afforestation program for carbon sequestration is put in place, the planning time frame has to be designed over several decades rather than for several years.

*h) Tax Benefits*

Tax benefits are often mentioned as a major incentive for conservation easements. In the aspen parklands, land taxes run at approximately \$700 per year per quarter section (160 acres) for good agricultural land. These taxes have to be paid whether the farm makes a profit or not. On the other hand, many farmers pay little or no income tax because they are able to write off equipment and other farm costs and often manipulate sale and purchases of commodities and equipment. Municipal tax relief would therefore provide a better incentive as part of the package of benefits potentially offered to the landowner. However, municipal governments are usually cash strapped such that these tax revenues would have to be paid either by purchasers of easements or through supporting programs from senior governments.

*i) Assistance with Aggregating Carbon Credits*

The Reedy Ventures report, (Reedy, 2003) prepared for NRCan, discussed the need for aggregating afforestation carbon credits in order to be able to market to potential buyers. Not only would this combining of carbon credits into marketable packages be useful to potential buyers, it would also be valuable to the landowners as well. Reedy also identified that accumulating these credits would be expensive and time consuming. However, there does not appear to be any other way around this situation. The question is how to accumulate the carbon credits most efficiently and effectively. One approach may be for the conservation easement purchaser to assume responsibility for accumulating the credits. The landowners may become share holders of some sort in the company buying the easements. The carbon credit selling becomes part of the whole conservation easement package negotiated between the company and each landowner. Within the company the landowners could become a specific entity and the individual carbon credits produced on their land would become part of the companies whole offset package.

If the landowners retain rights to the carbon credits, they would have to form some form of cooperative or company to aggregate and sell the credits. On the Canadian prairies, such cooperatives and marketing corporations are commonplace. Considerable time and effort would be required to pull such organizations together. Support would likely be needed from either government; financial institutions and/or industry to tie up all the loose ends and to finance start up costs. Once such a business entity was established successfully, some of the natural reticence of the landowners to be the first one in would be overcome. If this marketing group were linked to existing farm organization(s) the acceptance would likely be accelerated over a new entity that had no history in the community. An organization that was devoted primarily to marketing could have a wide geographical scope. An organization that provides a combination of services such as supplying tree stock, arranging funding etc. to the landowner group might be more locally based.

j) *Understanding the Carbon Markets*

This study found that, in Canada, there was little known about carbon sequestration or what was involved with carbon credits and marketing of same. This was the case for both conservation agencies and landowner groups alike. This situation will have to be rectified quickly before large numbers of landowners can be convinced to enter into afforestation agreements. Farmers will certainly have to understand the revenue generating opportunities but additionally many will have to learn the intricacies of nurturing tree plantations over an extended time period. It will be very important that all actors in the program as well as society as a whole perceive planted tree plantations as a valuable conservation initiative that will benefit the environment.

h) *Other Values Associated With Kyoto Forests*

In order to supplement financial incentives, the opportunity should be given landowners to combine poplar tree plantations with some other woody species that produce other products such as berries, nuts, mushrooms, maple syrup or as critical wildlife habitat. Tree plantations may also be useful in controlling serious weed infestation problems such as leafy spurge that are resistant to standard weed control measures. These extra fringe benefits could be the icing on the cake in convincing some landowners to enter into the afforestation program.

k) *Insurance Coverage*

Insurance is often a way of life for prairie farmers. Most landowners buy crop insurance each year to cover risks such as hail, frost, drought and wildlife damage. The insurance industry will have to be brought into the picture at an early stage of the afforestation program development. The level of risk to tree plantations from various dangers are somewhat equivalent to other agricultural crop damage risks but potential losses from forest fires and insect and disease risks may be harder to prevent in tree plantations than in other crops and therefore will have different premium rates. The insurance industry may not have yet

established those rates. Depending on whether the landowner has to cover insurance costs will determine whether insurance requirements are considered an incentive or liability by the landowner. If the lease purchaser covers insurance, there is a significant incentive because the landowner would have likely had to insure alternative crops he would have grown had he not entered into the afforestation agreement.

A large-scale tree plantation program using conservation easements in the parklands zone of the prairie provinces is a scenario with considerable potential. Such a program also has many challenges to overcome. Our analysis indicated the success of such a program will key on a carbon credit price in Canada in the \$10 -\$15 range, sufficient buy in by landowners to commit the necessary land, a mechanism for aggregating the carbon credits produced by many small individual landowners, and a functional mechanism for marketing carbon credits.

## CONCLUSIONS AND RECOMMENDATIONS

Throughout our review of conservation easements and the numerous conservation organizations, agencies and programs established to conserve land and/or promote afforestation, it has become evident that very little effort or attention is currently being paid to afforestation, carbon sequestration or climate change issues on a wide scale. This has required us to broaden our range of information sources and program review criteria, resulting in a broad-scale assessment of afforestation, reforestation and forest conservation programs on private land in North America.

Traditional conservation easements of donated land in exchange for tax reductions are not being used to afforest, reforest or otherwise sequester carbon dioxide in Canada or the United States. These types of easements, although the least expensive to administer, are generally reserved for tracts of environmentally significant land worthy of protection. There are, however, a small number of government-administered conservation agreement programs that contain an afforestation or tree planting component on a cost-share and annual payment basis. The USDA's Conservation Reserve Program is an example of conserving land and providing monetary incentives/assistance to establish forests on marginal agricultural land.

In Canada, there are a number of programs that provide trees and assistance in establishing treed areas, largely as shelterbelts or hybrid poplar plantations. The Prairie Farm Rehabilitation Administration, an Agriculture and Agri-Food Canada agency, has operated its Shelterbelt Program from its Indian Head, Saskatchewan centre since 1901, providing trees, advice and equipment to landowners who wish to create shelterbelts around their farmyards and/or fields. Shelterbelts have been widely acclaimed as helping to reduce greenhouse gas emissions on a local scale, through reduced heat loss and wind erosion and are more recently being recognized as carbon sinks.

In both Canada and the USA, there are tree planting programs, and occasionally, incentives such as paid easements directed at reclaiming and restoring degraded landscapes. Ducks Unlimited and other conservation agencies are particularly active in using this approach to restoring and protecting riparian and other fragile habitats.

In Canada there is need to establish leadership in guiding use of mechanisms to sequester carbon in Kyoto Forests. This role can take the form of a national coordinating agency that provides strategic direction and logistical support to regionally based afforestation efforts. Use of conservation easements and related agreements with private landowners should be the core mechanism for this national strategy.

A national approach to an afforestation/reforestation program can build upon existing conservation easement programs used by agencies such as NCC, DUC, various land trusts and conservation authorities. These agencies will have to recognize and support the carbon sequestration goals and include carbon credits as part of their own biodiversity and environmental protection objectives. This approach can result in some afforestation but the acreages are likely to be relatively small and only supplementary to the core protection program of the conservation agencies.

The best opportunity for large-scale carbon sequestration using afforestation lies in creating tree farms in the parkland zone of the Prairie Provinces. These plantations could be created through partnerships between large greenhouse gas emitters seeking to obtain greenhouse gas emission offsets and a large number of private landowners supplying the land to grow trees. This initiative is ecologically feasible, and is further supported by relatively low land rents and a cash strapped farm economy that is receptive to opportunities for new sources of farm income. In addition, a readily available supply of genetically adapted hybrid poplar tree planting stock is available through the PFRA Shelterbelt Nursery, located in south central Saskatchewan, and cooperating private nurseries located in the area.

Under this tree farming initiative, the central coordinating agency will be most important as a vehicle to initiate the program. Its services will be essential to conduct an inventory of suitable sites for large scale plantations, to initiate contacts between landholders and the large emitters, and to develop a certification program. Other duties of this coordinating agency could be to establish and enforce the policy and guidelines for creation of the carbon credits, providing afforestation educational materials, and generally serving as a conduit and clearing house of information and general support for carbon credit marketing between producers, purchasers and governments.

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