



Canadian Forest Service

**Plantation Investment
Forum**

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CANADIAN FOREST SERVICE PLANTATION INVESTMENT EXPERTS FORUM

SUMMARY OF THE DISCUSSION

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Prepared by: Paul Griss
Boldon Group Incorporated
(T) 403-678-9956
(E) pgriss@boldon.org

Introduction

As part of the Government of Canada's *Climate Change Plan for Canada*, the Canadian Forest Service (CFS) is implementing the Forest 2020 Plantation Demonstration Assessment (F2020 PDA). The F2020 PDA Initiative is exploring investment opportunities into fast-growing tree plantations to help achieve Canada's climate change goals. To support this objective, the CFS is examining the economic returns from fast growing plantations and potential options to attract investment into future Canadian plantations by taking advantage of the combined benefits of wood fibre, carbon values and other environmental services.

As part of this investment analysis, the CFS hosted a Plantation Investment Experts Forum (PIEF) in Toronto on March 22nd and 23rd, 2005. During the Forum, national and international experts from a wide range of interests (i.e., timberland investment firms, foreign governments, environmental commodity brokers, forest industry and researchers) discussed the key drivers behind plantation investment. Twenty seven experts attended, including representatives from the governments of Canada, New Zealand, United States, and Chile as well as development agencies such as the World Bank. Private sector representation included senior management from Canadian forest companies, Canadian large final emitters, timberland investment companies and environmental commodity brokers (see Annex A for a list of participants).

This report is a summary record of the PIEF based on the presentations delivered at the forum and the ensuing discussions. The CFS posed four principal questions to the PIEF:

- Are forest plantations a viable investment to achieve multiple benefits (fibre, carbon, etc.) and what are the investment risks?
- Will market benefits for fibre and carbon be enough to drive private investment into plantations?
- How are non-market values applied to plantation investments?
- What are the roles for government, industry, landowners, others?

Participants in the forum agreed that the word "plantation" and the associated images of straight rows of trees have a negative connotation and that the emphasis should be shifted to afforestation. Further, the ensuing discussion generally followed a different path from the questions posed above and the themes of the PIEF can be better characterized as follows:

- Is afforestation a viable investment and what are the investment risks?
- What are the barriers to and incentives for afforestation in Canada?
- What is the role of the federal government in afforestation?
- What are the priorities for action to attract greater private investment?

This summary of the PIEF discussion is organized accordingly.

A. IS AFFORESTATION A VIABLE INVESTMENT AND WHAT ARE THE INVESTMENT RISKS?

Generally, the question was not whether afforestation itself was a viable investment as the business case for afforestation varies internationally and regionally within Canada. The issue is whether opportunities exist at a competitive rate of return. For example, it was noted that between 1-3% of most large portfolios are already devoted to timber investments and one participant suggested that approximately \$3-5 billion may be available for afforestation through Canadian pension funds but opportunities for investment are not apparent.

Preliminary economic analyses by the Canadian Forest Service have suggested that afforestation for timber could provide returns on investment in the range of 3.6% - 4.0% in Canada based on fibre and pulpwood prices of \$8-12/m³. When carbon is added to the equation at a guaranteed price of \$10/tonne of CO₂, the average return on investment increases to approximately 8%. There are areas of Canada where considerably higher returns may be obtained; for example, Al-Pac is expecting a return of more than 8% on its investments in afforestation in northern Alberta. Additional public investment to secure the co-benefits of afforestation could increase the average return on investment even further but the methodologies for assigning a value to those co-benefits need to be developed. While acknowledging that benefits from carbon and other environmental services could be substantial, many participants emphasized that the economics of plantation establishment is based on the current situation and not on what might exist. Carbon and other values are thus included in assessments at a very low or zero level.

A.1. Afforestation for Fibre Production

Although afforestation is most often cited as a means of enhancing timber supply, a forest industry participant warned that afforestation alone will not support a new facility; however, it is a good complement to an existing fibre supply that is being eroded due to factors such as the establishment of protected areas, settlement of land claims, meeting the demands of other resource users, or the increasing demands of an existing mill.

Hancock Timber Resources Group (HTRG), a timberland investment company, informed the forum that in their experience afforestation provides high risk-adjusted returns (15.3% since 1987 with 6.0% cash yield). Investments in afforestation are less volatile than large-cap equities and have a positive correlation with inflation. Afforestation investments are also preferable to investments in natural forests as returns on the former are related to growth, whereas returns on the latter are more dependent on timber prices. HTRG prefers to acquire existing plantations to provide some ongoing cash flow and then refocuses their management to maximize long-term returns.

Global Forest Partners (a timberland investment company) identified the factors that lead them to invest in afforestation projects. These include: depth of timber and timberland markets; infrastructure development; land tenure; regulatory environment; commercial relationships; legal system; tax efficiency; intangible costs; and upside potential. A major consideration, though, is land prices. For land values to support investment in plantations there can not be a lot of competition for the land.

While not addressed specifically, it was clear that only a few forest companies in Canada actively pursue afforestation as a means to enhance timber supply. The uptake of afforestation for timber production appears to be limited primarily by land values and the inability of afforestation to compete with other land uses, such as crop production, many of which are subsidized by government.

A.2 Provision of Environmental Services Through Afforestation

A variety of models for the provision of environmental services through afforestation were discussed, lending themselves to a wide range of potential partnerships.

A.2.1 Land Conversion Programs

Canada and the United States have long histories of government-supported land conversion programs stretching back over a century. In the United States, there have been a wide variety of cost-shared programs and tax credits available to small private landowners to enhance forest stewardship and convert marginal agricultural lands. Over the years, these programs have evolved from having timber objectives to supporting conservation more broadly. Interest from landowners is principally influenced by the financial benefit provided (compared to other economic uses of the land), the provision of professional assistance in land management from government experts, and the fact that funding programs are administered by agencies that have no regulatory authority. It was pointed out that despite the significant amount of funds available and the effort expended in outreach, less than 1% of eligible

private landowners avail themselves of these programs even though analysis of these programs has shown them to be cost-effective from the government's perspective.

A.2.2 Purchase of Environmental Services

Environmental services are public goods (e.g., biodiversity conservation) but they aren't likely to be a driver of afforestation on private land unless government is involved through either regulation or the provision of incentives, such as tax measures or payments for environmental services. While preliminary work is underway internationally on the potential for markets in environmental services credits, this is a long way from reality in Canada.

According to CFS research, there is considerable spatial variation in the type and extent of environmental services that can be provided through afforestation across Canada as well as in the viability of afforestation itself. Thus, the value of these services and the willingness of government to invest will be regionally variable.

The traditional way of securing these benefits through afforestation is for governments to offer planting subsidies. Another option that could be explored is for government to purchase these benefits as they are delivered, as is the case in Costa Rica under their Payment for Environmental Services program. The former approach reduces the amount of capital that an investor is required to invest but the latter approach provides the investor with cash flow to help even out revenue streams over the life of the project.

Further, up-front planting subsidies for afforestation assume that the project will deliver the expected environmental services over time, which may or may not be the case. For government to invest effectively, there is a need to ensure that commensurate environmental services are actually provided and there is also a need for research to better understand the link between management actions and the provision of environmental services. A purchase approach to the environmental services delivered through afforestation helps to address these concerns.

It was also pointed out that there is already significant investment in the provision of environmental services by both private landowners and industry but it is being done largely in the form of partnerships between the landowner or licensee and NGOs such as Ducks Unlimited. It was suggested that while these investments are welcome, they tend not to include many afforestation projects and are an order of magnitude removed from what is required to sequester carbon or secure other environmental services.

A.2.3 Environmental Mitigation

While significant incentives for the provision of environmental services and/or a market for credits are likely a long way off, there are opportunities for applying afforestation where it is synergistic with the immediate needs of society. For example, high technology solutions for the management of waste water and sludge are prohibitively expensive for small communities but fast-growing plantations can contribute to this objective while also providing the basis for fibre production and potential carbon credits. Further, across the Prairies, leachate problems are being identified with many small, unregulated landfill sites and afforestation can help to address these issues. Many remote and northern communities also require options for meeting their energy needs and biomass driven systems are a viable option. Currently, most of these are fueled by waste wood from the forest industry but dedicated plantations offer an opportunity to ensure a more stable and predictable supply of biomass. All of these applications of afforestation have much greater potential for engaging rural communities and landowners than afforestation for fibre and/or carbon.

A.3 Afforestation as a Means of Sequestering Carbon

The carbon sequestration component of afforestation, in and of itself, was not seen to be the sole driver of private investment in Canada now or in the future. It was argued that carbon values are a bonus that will complement the business case for establishing plantations for other reasons. Internationally, very few projects are funded entirely on the basis of the future carbon value and most projects are based on a combination of sources of capital.

Nevertheless, this incremental value can be a significant incentive for ensuring a project goes forward and enables a broader range of potential investors to come to the table. According to both Ecoscurities (an environment commodity brokerage) and Global Forest Partners, investors require projects to be viable or almost viable without the inclusion of a value for carbon.

According to Ecoscurities, the carbon component of an afforestation investment is attractive as it:

- provides a cost-effective measure to comply with binding emission reduction targets or to show voluntary commitment to action;
- makes an almost viable forestry operation viable, allows for expansion of current/planned new plantations, or is simply a means to increase revenues;
- compensates for losses caused by shifts in management systems towards sustainable forest management, for example; and it
- opens the door to engage in 'different' or new project types in collaboration with others that would not have been considered before (e.g., collaborations with communities or NGOs and/or multi-component projects with other components in addition to commercial plantation activities).

The focus of much of the debate at the forum was on how to realize the carbon value of plantations. Most participants felt that the future potential in this area was significant and that realizing this value would augment the business case for afforestation and cause investment to increase substantially. In order for that to happen, existing risk factors must be addressed. Some of these include the:

- lack of familiarity with afforestation by investors;
- uncertainty of regulation and crediting and the political risk of early adopters not being in compliance;
- lack of clarity surrounding the ownership of carbon credits;
- credit risk associated with the financial stability of project developers;
- potentially expensive carbon measurement and monitoring requirements;
- long lead time to produce credits which means too little return and no cash flow; and the
- liability issues associated with temporary or permanent crediting, especially as addressing liability at the point of sale drives up costs.

Box #1: Success Factors for Investment in Afforestation

The following is a summary of some of the general factors for success of afforestation programs based largely on the experience of the New Zealand Ministry of Agriculture and Forests supplemented by the views of other PIEF participants:

- development of a strategy and a commitment to a clear and justified objective;
- understanding of the nature and motivations of investor groups;
- positive public and stakeholder attitudes;
- an integrated approach from nurseries to markets;
- availability of land;
- identification of suitable species;
- innovative research;
- demonstrated commercial viability;
- provision of appropriate infrastructure in the right places at the right times at the right levels;
- supportive economic and regulatory regimes;
- authoritative statistical information; and
- recognition of and support for co-benefits of afforestation.

B. WHAT ARE THE BARRIERS TO AND INCENTIVES FOR AFFORESTATION IN CANADA?

B.1 Generic Barriers to Afforestation

B.1.1 Lack of Clear Policy and Price Signals

Several participants pointed out that if investments in afforestation are to be increased then there need to be clear policy and price signals. Some government actions can act as a disincentive to private investment, for example:

- planting subsidies are capitalized into land values which increases risk and hurts forward-looking returns;
- tax incentives tend to attract investments from high-bracket individuals and away from the large pools of relatively more stable institutional capital;
- tax incentives also have the potential to create an aura of a poor investment outlook;
- government subsidies for afforestation keep timber prices lower than they would otherwise be, discouraging private investment;
- agricultural subsidies artificially inflate land values and rates of return from agricultural activities making it difficult for afforestation to compete; and
- land under covenants is viewed as being restricted and so is often worth less than surrounding land that is not managed for environmental services.

Not all of these currently apply to Canada, but several participants emphasized that poorly constructed incentives or the wrong policy and price signals would either not result in increased private investment or may stimulate inappropriate afforestation investments.

B.1.2 Difficulty in Land Assembly

Due to the success of the Government of Chile's afforestation programs, entry into the Chilean market is now very difficult as available land is expensive and fragmented. Canada faces a somewhat similar problem in many regions for other reasons. In areas where afforestation may be most feasible, land prices are high due to other uses such as agriculture. Conversely, areas exist in which lands may be marginal for afforestation but afforesting them can provide significant environmental services; however, incentives may not exist or may not be sufficient. For example, there is a lot of available land in Saskatchewan but the returns from timber production are low and climate (drought) risks are high. Low stumpage rates in Saskatchewan coupled with a limited timber market and few interprovincial wood flow options further discourage private investment into afforestation.

Whether private land is to be secured for afforestation for timber, carbon, the provision of environmental services or some combination of these products, a significant challenge is providing incentives to thousands of small landowners to convince them to allocate a portion of their lands to afforestation. As was pointed out, despite decades of effort in the United States less than 1% of eligible landowners take advantage of cost-sharing programs. While the provision of environmental services may offer site-specific benefits and can thus be dealt with on a smaller scale, it was made clear that establishing an economic case for the production of timber or carbon would require the aggregation of a substantial amount of land, which is difficult where land values or the values of competing uses are high and ownership is fragmented.

Regardless of the product, or combination of products, of afforestation, the transaction costs entailed in securing landowner participation and ongoing management are significant even in circumstances in which land values make afforestation competitive. In situations in which an investor is prepared to assume these transaction costs there may be other barriers in place; for example, Al-Pac's private land afforestation program is limited by provincial restrictions on foreign land ownership in Alberta. Innovative ways of reducing costs or overcoming barriers are required if any meaningful land assembly is to occur.

B.1.3 Plantation Management Issues

Forest industry participants identified a number of barriers to afforestation that must be addressed for investment to increase and for afforestation to deliver the maximum potential benefits. These include:

- public acceptance of the planting of genetically modified tree species;
- restrictions on where hybrids can be planted due to fear of genetic pollution;
- a focus on hybrid poplar as opposed to a mix of locally appropriate species;
- the inability to apply pesticides or herbicides approved for other uses (eg., agriculture);
- regulations governing effluent use; and
- uncertainty and costs associated with the measurement of carbon pools.

In particular, herbicide use was seen to be a key issue. Some pre-emergent herbicides are registered for use in the United States but not in Canada. The application of a limited amount of herbicide may also have less environmental impacts than intensive mechanical preparation. It was reported that major forestry herbicide manufacturers, such as Dow, DuPont and Monsanto, have moved their forestry specialists out of British Columbia, for example, due to a lack of business.

B.2 Specific Barriers to Afforestation for Carbon Sequestration

B.2.1 Lack of Awareness of Opportunities

Some prospective buyers of carbon credits have no concern over how the credits are produced as long as they are officially recognized. For those who may be more motivated to invest directly in offsets, an impediment is their lack of familiarity with forestry and its associated issues. Continued controversy over issues such as permanence and the inability of afforestation to deliver carbon credits in a timely manner will drive investments into other areas unless the investor thoroughly understands the investment opportunity. It was suggested that Canada is clearly in a transitional period with respect to carbon and therefore there is a need for education and promotion to get things moving as well as incentives for early adopters, perhaps with sunset clauses to phase out the incentives over time as the business case for afforestation improves.

B.2.2 Uncertainty Surrounding Eligibility for Emissions Trading

A large amount of the discussion at the forum was focused on the lack of certainty with regard to carbon credit trading and the stifling impact this has on investment in afforestation. Ontario Power Generation stated that it has invested \$30 million to date on voluntary greenhouse gas emissions reductions but is reducing its investments due to the continued uncertainty, and even with clear rules it is not certain that a commensurate return on investment will exist.

The issue of temporary credits for afforestation, as outlined in a presentation on the current status of Canada's offset trading system, generated a negative response from participants. Investors indicated that they would always demonstrate preference for permanent credits with some suggesting that temporary credits would eliminate any market for forestry or agriculture. It was suggested that if temporary credits are to be permitted then buyers are likely to purchase the land rather than the credits. It was also not clear how temporary credits would be integrated into the offset trading system.

B.2.3 Liability Issues

The permanence issue with respect to carbon credits for afforestation generated additional discussion. Investors made it clear that they tied the permanence of a carbon credit directly to the life of the emitting facility and not as something that had to be maintained in perpetuity. Further, there was discussion over who ought to bear the liability for reversals and at what stage in project development this would be addressed. Some felt that the full onus for reversals should be borne by sellers as a sale would be similar to any other contract to deliver a certain amount of product at a specified price. Others argued that buyers ought to take some responsibility as they themselves use the credit to meet a regulatory target or to sell on. And others saw a role for government in that they sanction the credit. How liability should be shared is thus unclear. Further, dealing with liability at the point of contract negotiations between buyer and seller drives up costs and the insurance of carbon credits is currently prohibitively expensive if it can be secured at all. Finally, buyers identified an inherent risk with the lack of

institutional grade sellers and the creditworthiness of afforestation proponents is a liability and an impediment to investors.

B.3 Potential Incentives for Afforestation

B.3.1 Generating Cash Flow from Carbon and Environmental Services

Many participants in the forum observed that the cash flow generated by an afforestation project was a major factor in an investment decision. A disincentive to investment is the relatively large up-front cost of afforestation coupled with the time lag before cash can be generated from the sale of timber or carbon credits. In some cases, grants or subsidies may be available to offset the up-front costs (eg., in the case where government is promoting the conversion of marginal agricultural land) but while this reduces the capital investment required it does not contribute to early returns from the project. One suggested method for providing a cash flow stream was to allow early or forward sales of carbon credits associated with the project.

With respect to securing the co-benefits of afforestation, several options were suggested:

- a) Public purchase of the environmental services associated with afforestation.

Generally, this has been done through planting subsidies and/or the establishment of covenants governing the management of land. Rather than subsidizing up-front costs, one option proposed was to have government purchase the environmental services delivered by the project on an annual basis, ensuring both that the services are actually provided and that the proponent can generate cash flow from the investment. It was pointed out that a significant program of public financing for such a purpose would be an expensive role for government and such a program would always be in competition with other services to be funded from the public purse (e.g., health care); however, another approach that taxes the users who benefit from the provision of these environmental services to pay those who provide the services could also be pursued.

- b) Extending property rights to include environmental services.

In this scenario, landowners would own the environmental services provided by their lands and would be free to maximize those benefits and sell them to beneficiaries directly or participate in a market for credits.

- c) Reflecting environmental values in land prices

Currently, land set aside for environmental values - either taken out of production or managed under a covenant - tends to be valued at a lower price than surrounding lands. Proper valuation of environmental services could make this land more valuable and could attract investment in maintaining or enhancing the services it provides.

B.3.2 Taxation Incentives

There was some discussion of the pros and cons of taxation incentives for afforestation. Some saw tax measures as a disincentive in the long term as they send the message that afforestation is not viable without some form of compensation to the investor and tax incentives are generally only of value to relatively wealthy investors who are interested in tax breaks thus distorting the market. Some government participants, however, described their successes in the favourable tax treatment of plantations.

New Zealand has changed its tax treatment of afforestation several times but during a period when afforestation costs were deductible against all forms of income, huge investments in afforestation resulted especially as it coincided with a period of depressed prices for agricultural land and high international prices for wood.

Chile provides 75% of the costs of new plantations and invested \$US 250 million in afforestation over the period 1965-1995 as a means of sharing financial risks with investors in economic development of timber resources.

The success of their plantations allowed the government to change the classification of afforested land from agricultural to industry, which has a higher taxation rate. The result is that Chile now collects more in taxes annually from afforested lands than it has invested.

It was pointed out that a tax and spend approach to afforestation would likely incur high transaction costs; however, if tax incentives are to be provided a preference was expressed for flow through tax credits or production credits, perhaps resulting from carbon market sales, as they could be particularly useful for keeping investment in Canada.

B.3.3 Risk Reduction Options

As discussed in B.2.3, investors seeking carbon credits from afforestation entertain a number of risks and many participants in the forum felt that government could play a role in mitigating those risks. Some options include:

- assisting in the aggregation of a diverse portfolio of projects with reserve margins;
- assuming full or partial responsibility for future reversals of registered credits;
- providing tax incentives (as described in B.3.2);
- reducing transaction costs;
- providing a guarantee in cases in which sellers may not be investment grade; and
- supporting the development of a variety of insurance tools.

B.3.4 Provision of Policy Certainty

Many investors see the current policy uncertainty as a significant barrier to investment in afforestation and greater certainty clarifies the investment risks. Policies that contribute to a favourable investment environment for afforestation can be seen to be an incentive to action. Certainty is particularly important in the case of afforestation due to the up-front costs and the lag time in generating carbon credits. For this reason, most participants felt that little could be accomplished in the first commitment period of the Kyoto Protocol at this time; therefore policy signals for the way in which afforestation investments will be treated post-2012 are extremely important as that is when most of the carbon credits will be produced. This does not necessarily mean trying to anticipate future Kyoto Protocol requirements but can simply mean providing long term domestic policy and regulatory support for afforestation activities.

It was pointed out that getting the rules straight with respect to forest carbon will encourage companies involved in credit enhancement and insurance to move into the field. A lot of the seemingly intractable issues will resolve themselves once a clear market is created. In establishing rules, though, it was emphasized that Canada should not create a system that is so costly and expensive that the only buyer becomes the government or that protocols are so onerous as to discourage investment.

B.3.5 Identifying and Removing Disincentives

Section B.1.1 describes some of the factors that act as disincentives to afforestation. Many of these, of course, have been put in place over the years to achieve other public policy objectives which may or may not still be relevant. They also affect the ability of afforestation to compete with other land uses by giving alternate uses a financial or regulatory advantage. If governments wish to emphasize afforestation and secure private investment to support it then these factors need to be addressed. In addition, there are aspects of afforestation that may be beyond the capacity of an individual landowner or group of landowners to address independently and these can also serve as disincentives. Some suggested actions for government included:

- reducing compliance and transaction costs;
- review of land use and management regulations;
- elimination of agricultural subsidies or their extension to forest crops;
- free market access to allow for better returns;
- provision of infrastructure to support market development;

- provision of training opportunities; and
- undertaking research and disseminating information about afforestation.

C. WHAT IS THE ROLE OF THE FEDERAL GOVERNMENT IN AFFORESTATION?

C.1 Set Clear Standards and Expectations

One of the factors for success of an afforestation program identified in Box #1 and confirmed at the forum is a vision and clear objectives of what the program is expected to accomplish. Various methods of doing this were proposed. Several participants suggested that targets need to be set, which may vary from region to region and may depend on whether the principal product of afforestation is to be timber, carbon or environmental services. Identification of afforestation “zones” with different objectives may be one approach. Once clear targets are established, incentives need to be put in place to ensure that they are met. From a fibre perspective, identifying the incremental needs of existing facilities and the best areas for meeting those needs may help in setting priorities.

Further, some participants discussed the relationship between targets and government intervention and suggested that an ambitious target did not necessarily need to be attached to spending, for example. Government efforts may be better targeted to the creation of a neutral investment environment rather than the provision of incentives. In some areas, such as renewable energy, government simply sets a target and certifies zero emission generators and receives monthly registrations. Everything else is left up to the market.

Regardless of whether afforestation is to be encouraged through government intervention, a market for one or more of its products, or some combination of these factors, clear expectations of what afforestation is expected to accomplish are required.

C.2 Bridge the Gap Between Forestry and Agriculture

Confusion surrounds many of the policy and regulatory aspects of afforestation as it is both a forestry activity and an agricultural practice. It was pointed out that forestry and agriculture are wrestling with many of the same challenges with respect to the generation of carbon credits and integration would be beneficial. Many of the issues surrounding afforestation would be less contentious if they were viewed from an agricultural perspective (eg., herbicide use). Further, the majority of the private investment that is hoped for in afforestation will likely go to private lands, most of which are agricultural. In these circumstances, the economic returns from afforestation will need to be competitive with those of other crops. With the range of opportunities created by the Kyoto Protocol that are open to private landowners, farmers could be faced with choosing among several federal initiatives all promoting competing farm practices to generate carbon credits (manure management, zero till, afforestation, etc.). It was suggested that a “whole farm” approach to carbon management provides a diverse stream of carbon credits that can mix short and long-term results and smooth out cash flow making investment more likely.

Clarifying whether afforestation is to be considered forestry or agriculture would be a significant step toward C.1 and would facilitate the resolution of many of the identified issues. This distinction may vary from region to region and on Crown and private land but it should be clearly understood who will take the lead in which areas and coordination of federal activities in support of afforestation should be a priority.

C.3 Developing and Facilitating Partnerships

Afforestation, and particularly private investment into it, will be facilitated by the establishment of a range of partnerships, including those among non-traditional stakeholders. For example, willing buyers may be ignorant of afforestation opportunities and willing sellers may be unaware of the opportunities available to them and some form of capacity building and perhaps brokering may be an appropriate role for the federal government.

As indicated earlier, any significant investments in afforestation are unlikely to occur on a single, contiguous block of land and will likely require the assembly of numerous landowners spread over a large geographic area. The creation of some mechanism that could pool landowners and provide certainty to investors who invest in these pools may be necessary. There is also an expectation that the decision of a landowner to afforest or not will be based largely on economic grounds whereas landowners have a variety of reasons why they will or will not participate. Understanding these reasons may open the door to new partnerships, particularly relating to the provision of environmental services.

Further, in areas such as those referenced in A.2.2, non-traditional investors may be identified. Where afforestation can be proven to be a cost-effective way of waste water treatment, for example, it opens the door to new sources of investment and/or revenue streams for the project.

C.4 Assist in Resolving Management Issues

While there was some discussion of the role of the federal government in resolving issues between the federal government and provincial governments and among provincial governments (such as conflicting policy and tax signals), the major management issue discussed during the forum was herbicide registration. Afforestation is more effective with immediate site occupancy and the application of herbicides is accepted in New Zealand, Australia and the southern United States. Some herbicides are approved for agricultural applications in Canada but are not permitted for forestry applications. The use of herbicides is consistent with forest certification programs as their requirements are usually to minimize not eliminate chemicals. As new herbicides are developed they can replace existing ones that may be more dangerous. Any registration of herbicides for afforestation should be tied to research and training programs geared to this objective. It was pointed out that mechanical site preparation requires heavy energy use which could compromise the carbon budget of an afforestation project. Finally, it was suggested that the herbicide issue would be less controversial if afforestation was portrayed as an agricultural activity on private land, which is where the majority of it will actually take place, rather than as a forestry activity on public lands.

C.5 Early Creation of a Domestic Carbon Market

Offset trading of carbon generated through afforestation projects was the main theme of the forum discussions. This is understandable as afforestation is an established method of enhancing timber supply but uptake is low and is not likely to change until the economics of the forest industry change. Afforestation has long been seen as a means of providing environmental services but uptake is limited due to the low valuation of environmental services, an issue that is not likely to be resolved in the short term. The carbon value of afforestation thus holds out the most immediate avenue for additional private investment in afforestation.

Throughout the discussion it was evident that there is considerable frustration with the lack of rules governing the creation of carbon credits through afforestation and there was a general sense that it is not important to get everything "right" before proceeding as the market will sort out inequities once it is established. While these matters have been debated in other fora, some of the key issues included:

- set clear standards for measuring carbon and a fair process for changing the standard based on experience;
- ensure that transaction costs (such as the costs of measurement and monitoring) of participating in the offset trading system are kept to a minimum;
- clearly determine how and at which point in the project life cycle liability issues are to be addressed;
- consider providing performance guarantees to address creditworthiness of sellers; and
- provide some assurance of how projects will be treated beyond the first commitment period of the Kyoto Protocol.

C.6 Recognizing the Creation of Environmental Services Through Afforestation

While afforestation is clearly understood to provide a range of environmental services and has been encouraged by governments for more than a century for that purpose, it is currently very difficult to assign a value to this role let alone create a market for these products. To date, afforestation has been encouraged through relatively small financial incentives from government and through partnerships with non-governmental organizations. The view of participants was that the emergence of markets for environmental services is a long way off; however a significant program of public finance for afforestation projects in this area, as indicated earlier, will be forced to compete with other beneficiaries of these funds (eg., national defence, health care). The difficulties of securing funds for similar purposes (eg., national park establishment and management) are indicative of the challenge and thus a determined effort to raise awareness of the need for the delivery of these environmental services is required.

C.7 Increasing the Knowledge Base for Afforestation

One participant suggested that it may be appropriate to offer investors an R&D style investment in afforestation which would support the activity but would not require the investor to buy the land or trees.

Others indicated that there was an ongoing federal role in afforestation research that could address such issues as:

- risk of genetic pollution;
- tree improvement and species suitability;
- measurement of non-timber carbon pools;
- economic analysis of present and future value of carbon;
- impacts of effluent use on plantations; and
- impacts of, and minimizing the use of, herbicides and pesticides.

Further, it was suggested that a program of outreach and education was required to overcome issues such as the lack of forestry knowledge/expertise on the part of investors and issues associated with landowner resistance to afforestation.

D. PRIORITIES FOR ACTION TO ATTRACT GREATER PRIVATE INVESTMENT

While the PIEF did not come to any specific conclusions regarding the promotion of afforestation within Canada, several issues affecting private investment in afforestation kept coming up in the discussions and merit further evaluation. These are presented below as potential priorities for action.

D.1 Be Clear About What Afforestation is to Accomplish

The federal government needs to put forward a clear vision and strategy for afforestation in Canada. If there was one common thread to the PIEF discussions it was that there is no single investment model for afforestation; rather the business case will vary regionally. The four principal benefits of afforestation - timber, carbon, environmental services, and environmental mitigation - will vary in importance across Canada and the barriers to afforestation as well as the level and type of incentives required to stimulate private investment will also vary accordingly. The federal government needs to be clear as to what is to be achieved in differing regions of the country and why afforestation is being promoted, and the concept of afforestation zones merits further examination. Once this has been done, the answers to many of the questions regarding enhancing private investment in afforestation will be more evident.

D.2 Make Afforestation Competitive

Land values and the potential revenues from other land uses, principally agriculture, were identified as the main barrier to private investment in afforestation. Many of the factors that contribute to this, notably agricultural

subsidies, have been put in place to achieve other policy objectives of the federal government. For afforestation to attract private investment, similar levels of support may be required or existing subsidies for other land uses may need to be removed. Further, measures could be considered that could increase the value of land managed, perhaps only partly, for the provision of environmental services so that landowners contributing to this objective are not penalized financially.

D.3 Clarify the Rules for Carbon Offset Trading

It is more important to get basic rules for carbon offset trading in place soon rather than waiting to design a perfect system only to find no-one is willing to invest due to the costs of participation or the low anticipated returns. Private sector participants clearly felt that once a market is up and running inequities will be sorted out in the marketplace more effectively than may be possible through an exhaustive design process. Investors are looking for permanent credits tied to the life of an emitting facility and not credits that need to be maintained in perpetuity. Investors are also wary of the situation post-2012, which is when most carbon will be sequestered through afforestation.

D.4 Address Risk and Liability Issues

Whether investment is desired to produce timber, provide environmental services or sequester carbon, private investors undertake a substantial amount of risk to generate benefits which often reward society to the same or greater extent as the investor, such as enhanced timber supply, protection of watersheds, sequestration of carbon, etc. The federal government can send a clear signal to private investors that afforestation is a desired public policy goal by finding ways to share the risk of establishing afforestation projects, particularly with early investors, including providing some policy certainty for carbon credits post-2012.

D.5 Create a Cash Flow from Afforestation

Traditional approaches to afforestation require significant up-front investment, perhaps offset by subsidies or tax considerations, followed by a lag of decades before a revenue stream from timber or carbon may be realized. Private investors at the PIEF emphasized time and again that cash flow is a significant component of the economic analysis of an investment opportunity. One option for generating carbon credits is to combine afforestation with other land use activities to convey a continuous stream of credits derived from short, medium and long-term sequestration activities on the same landbase (the "whole farm" concept). Another is to offer annual payments in place of up-front payments to purchase the environmental services from afforestation as they are delivered. A third option is to allow the forward sale of timber or of carbon credits from an afforestation project. All merit consideration as a means of enhancing the business case for private investment.

ANNEX A

PARTICIPANT LIST

Kurt Akers

Director of Research
Global Forest Partners LP

Clark Binkley

Managing Director & CIO
Hancock Timber Resource

Darcie Booth

Director
Canadian Forest Service

Benoit Bosquet

BioCarbon Fund Coordinator
The World Bank Group

Jonathan Buttle

Economist
Canadian Forest Service

William Car

CSQ Environmental
Technologies Ltd.

David Coates

Senior Analyst
Ontario Power Generation

Neil Cohn

Director
Natsource

Aldyen Donnelly

President
Greenhouse Emissions
Management Consortium

John Ellison

Business Unit Leader
Alberta Pacific Forest
Industries Inc.

Jim Farrell

Director General
Canadian Forest Service

Glenn Fox

Professor
University of Guelph

Rory Gilsenan

Research Economist
FEPA
University of British Columbia

Terry Hatton

Senior Economist
Canadian Forest Service

Bob Izlar

Research Director
University of Georgia

Mark Johnston

Senior Research Scientist
Saskatchewan Research
Council

Tim Lesiuk

Climate Change Management
BC Hydro

Tony Lemprière

Senior Economist
Canadian Forest Service

Steve Lorimer

Operations Manager
TimberWest Forest Corp

Dan McKenney

Chief, Landscape Analysis
and Applications
Canadian Forest Service

Steverson Moffat

Research Forester
USDA forest Service

John Novis

Forest Policy Analyst
New Zealand Ministry of
Agriculture and Forestry

Jane Rigby

Associate Vice President
CO2e.com

Robert Tippmann

Senior Trader
EcoSecurities - UK

Ilan Vertinsky

Director
FEPA
University of British Columbia

Carlos Weber

Executive Director
Chilean Forest Service -
CONAF

Jeremy Williams

Arborvitae Environmental
Services

Paul Griss (Facilitator)

President
Boldon Group Incorporated