

**Silviculture Funding for
Sustainable Forest Management:
Principles & Policies for the Next Decade**

Policy Paper
of the
Western Silviculture Contractors Association

**The Honourable Mike de Jong
British Columbia Minister of Forests**

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Authorship

This report was developed by a Policy Committee of the Western Silviculture Contractors Association (WSCA). The final draft was prepared by Dirk Brinkman, a Director of the Canadian Silviculture Association (CSA) and a member of the WSCA. The WSCA Policy Committee is composed of Chris Akehurst, John Betts, Dirk Brinkman, Tony Harrison, Kevin McLaurin and Chris Norman. Advisors to the committee were Aidan Vining and Ken Drushka.

The WSCA has represented BC silviculture contractors for twenty years and is a member of the CSA. The WSCA's silviculture industry members deliver over 80% of government and industry initiatives for sustainable forest management on the ground and in the forests. The silviculture industry in BC employed a peak of over 18,000 people and will employ about 14,000 people seasonally in 2002. It has enjoyed good wages, labour peace and a relatively stable professional workforce. Today's still vital professional silviculture practitioners survived the last eight years of FRBC's funding instability, training subsidies to entice their exit from silviculture and attempts to replace them with laid-off loggers.

The CSA is composed of member associations from across the country including the WSCA, publishes Canadian Silviculture, the magazine of the silviculture industry in Canada, in which an early draft of these principles were published.

These policy recommendations follow from over thirty years of industry operational experience working within a variety of funding and policy options across Canada. The principles emerge from the unique and practical perspective of working on the ground and are designed to lead to policies that avoid the dysfunctions of past programs.

Appendix C: BC Liberal New Era Forest-Related Election Promises:

The BC Liberals made a number of specific forestry election promises in their New Era Election Document. Other promises relevant to sustainable forest management are also selected here. Taken together, these commitments set a fairly clear "user pay" and "Province indemnify" policy path, as reflected in the Silviculture Funding Principles for SFM. These promises are numbered by the Author for reference.

On Page 9, "A New Era of Hope"

1. *Protect private property rights to prevent government from expropriating assets without fair compensation.*
2. *Outlaw "offloading" of provincial government costs onto the backs of local property taxpayers.*

On Page 10, "A New Era of Prosperity"

1. *Eliminate all government subsidies to businesses that give some firms an unfair advantage over their competitors in BC.*

On Page 12 "A New Era of Sustainable Forestry"

1. *Increase the allowable annual cut over time through scientific forest management, proper planning, and incentives to promote enhanced silviculture.*
2. *Either fix or scrap Forest Renewal BC; start by removing the political appointees to the Board.*
3. *Scrap the 'HCL' silviculture hiring hall policy that discriminates against silviculture workers.*
4. *Invest in research to promote forest stewardship.*
5. *Establish a working forestland base to provide greater stability for working*

families and to enhance long term forestry management and planning.

6. *Streamline the Forest Practices Code to create a workable results-based code with tough penalties for non-compliance.*

7. *Cut the forestry regulation burden by one-third within three years without compromising environmental standards.*

8. *Apply 1% of all direct forest revenues, excluding 'super-stumpage', to global marketing of BC's forest practices and products.*

9. *Create a Market Based stumpage system that reflects global marketing realities and local harvesting costs.*

10. *Eliminate "water-bedding".*

11. *Protect private property rights in treaty negotiations.*

12. *Work to expedite interim measures agreements with First Nations to provide greater certainty during treaty talks.*

On Page 13, "A New Era of Environmental Stewardship" the following were select, relevant commitments:

1. *Adopt a scientifically-based, principled approach to environmental management that ensures sustainability, accountability and responsibility.*

2. *Work to develop an internationally accepted standard for "eco-labeling" of BC forest products.*

On Page 31, "A New Era for Public Safety"

1. *Fully protect private property rights and resource tenure rights.*

2. *Vigorously defend the Crown's ownership of provincial land and resources.*

Since 1970, many silviculture practitioners have reported that British Columbia's forest policies and practices are inadequate for effective, affordable and practical sustainable forest management.

The silviculture sector has worked with industry and government since then to develop more effective and efficient regulatory and policy changes, both in B.C. and in other provinces.

We believe that the silviculture funding principles recommended in this report are the basis for maintenance, restoration and enhancement aspects of SFM in British Columbia. We also believe that these principles have the support and endorsement of the professional silviculture community.

In Canada: Forest Stands, not Plantations

The silviculture practiced in the rest of the world is based on monoculture plantation farming. SFM in Canada involves planting ecologically appropriate mixed species forest stands. Canada's interventions are designed to not only improve the harvest timber volume of value, but are also "beneficial" in terms of complex ecosystem values as well as for scenic, recreational, habitat, biodiversity and conservation values.

FAO's latest ten year forest report, "Global Forest Resources Assessment 2000" issued just last year, does not list Canada among the countries with plantations because of this difference. Canadians should prefer the term 'forest stands' to 'plantations'.

Recognizing the historical difference between Canadian silviculture and that practiced in other parts of the world underlies the development of the funding principles outlined in this document. That is why the terms 'forest stand', 'reforestation'

and 'tending' replace the historical but inappropriate terminology in this document. These terms reflect the uniquely Canadian goals of the SFM funding principles, enhance the marketability of BC forest products, and eliminate incorrect impressions of how BC forests are managed.

Reports Referenced
'Beneficial Interventions' Winter Issue, Canadian Silviculture, 2002

British Columbia Atlas of Resource' BC Natural Resources Conference, 1956

'The BC and Coast Forest Sector; Employment and Economic Contribution Facts for 1999' Coast Forest and Lumber Association, 2000

'Forest Management Opportunities in Non-merchantable Forest Types' Prepared for BC's Ministry of Forests by L. P. Atherton & Associates March 2000

"Global Forest Resources Assessment, 2000" FAO Forestry Paper 140, FAO 2001

"New Era For British Columbia: A Vision of Hope & Prosperity for the next decade and beyond" BC Liberal Party, 2000

Summary of NSR and Impeded Forest Land, 2001 Report' Ministry of Forests, Forest Practices Branch, January 2002

Silviculture Funding Principles and Policies for Sustainable Forest Management

BC's silviculture policies and practices have been inadequate for effective, affordable and practical Sustainable Forest Management (SFM). Society and government's vision of forest management now demands sustainable and effective use of the resource.

The forest industry's role in meeting society's evolving vision for managing the forests requires structured forest use planning, implementation, restoration and enhancement. The silviculture sector's role is in the restoration and enhancement component of SFM. The goal of SFM is:
to maintain and enhance the long-term health of our forest ecosystems for the benefit of all living things, both nationally and globally, while providing environmental, economic, social and cultural opportunities for the benefit of present and future generations. (National Forest Accord)

Government should adopt a set of principles that mandate and clarify effective and affordable SFM. This document presents such a set of principles.

In the absence of a set of basic principles for funding silviculture, government policies have suffered from predictable failures of government intervention, a lack of accountability, and ineffective, bureaucratic management.

The Fundamental Principle

The fundamental principle is "user pay", a central feature of the B.C. Liberal government's general policy approach. The first three of the silviculture funding principles are based on this fundamental principle. The BC Liberals also promised to

increase the Annual Allowable Cut (AAC) through silviculture.

The resource enhancement principle establishes user incentives for investments in the resource. User investment depends on incentives and government protection from natural and catastrophic disturbances.

Principles for the Next Decade

<p><i>1. Reforestation Principle</i> <i>Forest land resource users who harvest or deforest will pay to reforest each disturbed stand.</i></p>
<p><i>2. Sustainability Principle</i> <i>Those that have property rights to the forest resources will pay to sustain their forest area's productive capacity and biodiversity values.</i></p>
<p><i>3. Depletion Off-set Principle</i> <i>Forest land resource users who permanently displace the forests will pay to afforest areas of equal value to that lost.</i></p>
<p><i>4. Resource Enhancement Principle</i> <i>Forest land resource users that pay to add sustainable value will enjoy that value or be compensated</i></p>
<p><i>5a. Annual Disturbances Principle</i> <i>BC will establish and fund an annual reforestation program adequate to reforest the average area depleted by natural disturbances.</i></p> <p><i>5b. Catastrophic Disturbances Principle</i> <i>The Federal government will maintain an emergency reforestation fund to reforest catastrophic provincial disturbances.</i></p>
<p><i>6. Backlog Principle</i> <i>BC will fund the restoration of the ecosystem health of the backlog of disturbed forest areas or ecosystems.</i></p>
<p><i>7. Carbon Credit Principle</i> <i>BC will define its forest level carbon sink and set a context to capture the forest carbon sink enhancement opportunities of various international global warming agreements.</i></p>

Benefits of Implementing the Principles in Policy

Implementation of 'user pay' principles (1-3) and Annual and Catastrophic Disturbance insurance principles (5a & b) would maintain the half-trillion-dollar-plus public forest land asset in its current state. Implementation of the Resource Enhancement (4), Backlog (6) and Carbon Credit (7) principles will enhance the resource.

The Annual and Catastrophic Disturbance principles protect users who pay to maintain or enhance a resource against fire or pest risk.

The Backlog principle restores the damage caused by the forest practices of past generations.

The Carbon Credit principle can help fund society's SFM vision. Implementing it will encourage investment in forest ecosystem enhancement. The Sustainability principle creates a baseline against which enhancements can be measured.

The endorsement and implementation of these principles can reduce or even eliminate many forest sector problems.

The adoption of the Sustainability principle will result in resource users paying to sustain the productive volume, by which is meant also the value. The Swedish government, in developing its silviculture strategy, has operationalized the concept as "volume of value". Volume of value reflects the importance of either increasing volume without reducing value or of increasing the value of the volume.

Current strategic silviculture interventions can increase the sustained yield of defined forest areas. Each possible intervention must have the change to the flow of volume of value agreed to (within each ecosystem).

The day after an agreed-upon intervention in a defined forest stand has occurred the allowable cut for the forest area may be adjusted (increased).

Funding the silviculture component of SFM will not only sustain and enhance the flow of wood and pulp volume of value, but also the flow of tourism, recreation and conservation values. Over time, non-wood values may be of greater economic and social value than wood products to BC. SFM provides for growing eco-tourism, as well as growing and diversifying the wood products industry.

The partial 1987 implementation of the Reforestation principle has resulted in:

- ecologically-appropriate, species-mixed, free-growing stands on all areas logged
- government expenditures being cut by \$100's of millions per year
- reduced free-growing cost per hectare
- two billion dollars in private investment in public assets over the subsequent 14 years
- 30-35% increase in growth on the reforested areas
- development of a globally competitive reforestation industry

Implementation the silviculture funding principles and policies for SFM will result in:

- adequate funding for SFM
- increased resource volume of value
- industry profits and capital investment
- employment and community health
- increased government revenues
- reduced aggregate government expenditures
- endorsement by the environmental sector
- qualification of BC forest products for the highest sustainable certification
- elimination of a perception of subsidy by US countervail lobbyists
- a globally competitive full service BC silviculture industry

Appendix B: Sustainable Forest Management in Canada

The term Sustainable Forest Management as used within this report refers to the evolving definition developed through the *Canadian Council of Forest Ministers* (CCFM) working within the context of international protocols to which Canada is a signatory.

Formed in 1985, the CCFM began its work on SFM after the Brundtland Commission's 1987 report, "Our Common Future". The *Forest Principles*, which recognized the need to formulate scientifically based, internationally accepted criteria and indicators of sustainable forest management, were developed the UN Conference on Environment and Development (UNCED) held in June 1992 in Rio de Janeiro, Brazil. <http://www.un.org/documents/ga/conf151/acof15126-3annex3.htm>.

In March 1992, the CCFM committed to develop Canadian criteria and indicators of sustainable forest management using Canada's National Forest Strategy entitled "*Sustainable Forests: A Canadian Commitment*". They defined their SFM goal "is to maintain and enhance the long-term health of our forest ecosystems for the benefit of all living things, both nationally and globally, while providing environmental, economic, social and cultural opportunities for the benefit of present and future generations".

Later in 1992 at the *Conference on Security and Cooperation in Europe*, criteria and indicators of sustainable forest management were developed that lead to both the seminar on sustainable development in temperate and boreal forests and the *Montreal Process*. http://www.mpci.org/whatis/criteria_e.html

In 1993, the CCFM established the *Steering Committee on Criteria and Indicators of Sustainable Management of Canada's Forests*. In 1995, Canada helped to develop, then subsequently ratified, the *Santiago Declaration* <http://www.fs.fed.us/global/pub/links/santiago.htm> which identified 7 national and 67 technical criteria for the conservation and sustainable management of the temperate and the boreal forests.

SFM is supported Canada wide through the broad endorsement by all sectors of the forest industry through the *Forest Accord* <http://nfsc.forest.ca/accord2.html>.

Operational discussions of specific applications of SFM can be found on the model forest web sites throughout Canada; e.g. the McGregor Model Forest <http://www.mcgregor.bc.ca/> The second status report on the sustainability of Canada's forest management "*2000 Report of the CCFM Criteria and Indicators of Sustainable Forest Management in Canada*" can be found at http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/full_report_e.pdf.

The silviculture industry has an important role in the restoration and enhancement component of SFM. Successful silviculture for SFM requires policy based on user pay and incentivized resource enhancement principles protected by government indemnity of major risks from natural and catastrophic disturbances.

The Canadian Silviculture Industry

Meeting government's criteria for society's evolving SFM vision requires structured forest use planning, implementation and then restoration and enhancement. The silviculture industry's role is in the restoration and enhancement component of SFM.

planning reduces the area under license in favour of more set-asides for parks and ecological reserves. Whatever the political outcome of the area for the working forests, a 20% to 50% increase in the AAC is possible.

Commercial thinning and selection harvesting is a silviculture practice that salvages and utilizes natural mortality within a stand. B.C has been a commercial thinning 'free zone' due to an absence of stumpage pricing which recognizes that this form of harvesting is also a silviculture treatment.

Implementing P#5a Natural Disturbances

The Ministry of Forests established a budget for the current fire and pest program in 1987 to match the allocation of responsibility for reforestation of harvest areas on the forest industry. Since 1987, District Managers have also been given the legal obligation to reforest areas burned or destroyed by pests that were not salvage-logged and could not be classed as inoperable or inaccessible, an obligation that is now under the FPC.

Fire and pest disturbances are one of the qualified expenditures within the grab-bag of FIV-eligible priorities but FIV has no targets for fire and pest areas.

With the administration of FIV now being tendered through an RFP to the major accounting firms, a large portion of the funds will be used to pay the high hourly rates that are the hallmarks of these firms.

Any licensee could pick up those obligations under the FIV.

Implementing P#5b Catastrophic Disturbances

The Northern Forest Products Association is asking the federal government for \$60 million per year for nine years to reforest the area damaged by the pine bark beetle.

The total federal and provincial government revenues, from direct, employment and other sources in 1999 was \$5.78 billion—a renewable resource contribution which will be worth insuring.

Implementing P#6 Backlog

Licensees with resource rights in some DFMA may not be able to take on bringing the entire backlog assumed within their AAC as having free-growing status. In some TSAs there is an excess of impeded area due to past fires and pest catastrophes. The excess of impeded NSR will still have to be a provincially funded backlog program.

Allocating these areas to a provincial backlog program would result in a reduced AAC if the AAC depended on these areas being stocked, but this would be negotiated after an updated inventory and with the implementation of the Sustainability principle.

Implementing P#7 Carbon Credits

Canada negotiated successfully for the right to sink hundreds of millions of seedlings into Canadian forests. These rights were hard won, and if Canada eventually ratifies the Kyoto Accord, the province who has prepared itself to capture the benefits from these negotiations will have an advantage over the other provinces.

At this time, BC is unprepared.

BC's Proposed Forest Investment Vote

In the BC Liberal government's core services review, the Minister of Forests (MOF) set their new mission "to protect and manage our public forests for the sustained benefit of all British Columbians".

To meet its core mandate of sustaining current forest benefits, the MOF is undertaking numerous reforms. Most relevant for silviculture is the end-results Forest Practices Code and a temporary forestry fund called the Forest Investment Vote (FIV).

FIV is BC's 17th temporary silviculture fund, the latest of which was FRBC. FIV represents several steps in the right direction in that it requires:

- Defined Forest Management Areas (DFMA) such as a TFL, Timber Supply Area or Community Forest License for FIV plans and administration
- multiple users in each DFMA to cooperate
- Sustainable Forest Management Planning (SFMP)

A SFMP integrates all forest values – not just wood and pulp, but also biodiversity, habitat, watershed protection, carbon credits, landscape scenery, recreation, non-wood forest products and wood crafting, to name a few.

Despite these steps, FIV is no more likely to create SFM in BC than previous temporary funds. This is because FIV does not:

- allocate accountability to industry
- rest on clear funding principles
- avoid subsidizing licensee forest management responsibilities
- ensure effective industry delivery, despite being industry-administered
- set the target outcomes of the principles

- offer opportunities for cost reductions or efficiency (costs are based on a fixed stumpage levy)
- reduce administrative cost and bureaucracy (it introduces the added layer of an administration contract)
- offer incentives for investing in resource enhancement
- eliminate inefficient public "low bid" auctions that do not value quality of service and best practices
- permit the adaptive management flexibility needed to navigate the biologically complex SFM issues efficiently and effectively (rigid public funding rules to avoid conflict of interest)
- dampen special interest group lobbying that will distort local SFM planning and priority setting
- offer continuity of funding for essential multi-year project structure of silviculture
- provide permanent, guaranteed and independent funding

In addition to these structural weaknesses, the FIV *will not*:

- meet the BC Liberal New Era promise to increase the AAC or even, for that matter, prevent a further decline in the AAC

Once the user pay principles are mandated, there is a supportive role for a provincial government silviculture fund such as FIV. This role is embodied within the principles, particularly in the Annual Disturbance principle and the Backlog principle.

Within the context of these principles, a new FIV could become an enduring, independent, practical and effective Trust Fund. Such a Trust Fund would play an essential role in enabling private investment and management maintaining and enhancing BC's forest resources.

Some Policies Associated with the Funding Principles

The WSCA believes that government should immediately build the above principles for SFM into policy for implementation over the next decade. These policies are discussed in this section.

(P #1) Reforestation

All forest land users who harvest or deforest will pay to reforest each disturbed stand.

Current reforestation requirements in the Forest Practices Code (FPC) capture this principle in policy. But today, the FPC only applies to licensed forest harvesters.

Temporary harvesters or de-foresters also include the mineral and oil exploration industries, temporary helipad users, fires from highway and railroad vehicles and work crews, and temporary forest roads.

As an example, the oil exploration industry cuts seismic lines without reforestation obligations. This not only depletes forestland, but it adds to that company's carbon emissions. In Alberta, seismic lines displaced over 10% of the productive forest.

There are some practical solutions to the seismic deforestation problem. In anticipation of carbon emission costs, Alberta's oil industry recently developed seismic algorithms based on a wandering 1.5 meters wide seismic line rather than straight 5 meters lines because reducing the area deforested reduces carbon emissions.

Implementation

To put this principle into policy requires all temporary forestland users to comply with the new FPC and no new regulations. The Correlated Stocking Guidelines are required to maintain high standards.

(P #2) Sustainability

Those that have property rights to the forest resources will pay to sustain their defined forest area's productive capacity.

Government should make all crown land resource users legally accountable for maintaining all values in the working forest land base. This should specifically include the users' responsibility to ensure that the value of the sustained volume of their resource right will not degrade.

Forest resource property rights users include those with an AAC based on the long-term sustainable yield. But, it could also include other resource users such as harvesters of special forest products like mushrooms, fishing lodges, recreational or eco-tourism businesses.

Implementation

A policy that effectively allocates the stewardship responsibility of sustaining a forest resource to the user requires:

- defined forest management areas (DFMA)
 - licensing for all users; including special forest products harvesting
 - all users within that DFMA comply with "results-based" FPC
 - full, current, accurate, publicly accessible forest inventories
 - the AAC adjusted to a realistic sustainable use level (based on current inventories and with all assumptions explicitly declared)
 - inventory redefined to reflect value as well as volume; e.g.: species, piece size, quality
 - multiple users in one DFMA to cooperate
- Direct user pay accountability for maintaining the resource, such as an AAC on a DFMA, should replace funding by government subsidies, such as FIV.

Sustainability (Principle #2) does not include a requirement that property rights holders increase the AAC. The Principle simply requires that the full responsibility for all of the beneficial interventions required to maintain a realistic current level of harvest volume of value be maintained for future generations by the resource property rights owner in exchange for that right.

Principle #2 obligations would apply equally to Community and First Nation Forest Licenses.

Increasing the number of area-based tenures will simplify the implementation of Principle #2. 70% of forest harvest volume is quota-based, with cut areas allocated by the Ministry of Forests. Principle #2 is dependant on resource maintenance responsibilities being allocated by DFMA. Resource users who share quotas in a designated forest area will have to cooperate with each other to maintain their AAC. Principle #2's "user pay" requirements are natural extensions of the FIV requirement that quota licensees cooperatively develop their Sustainable Forest Management Plan to qualify for FIV funds.

In Ontario, the requirement that all licenses be consolidated into area-based tenures has resulted in consolidation in the industry. This may also be the outcome in B.C where larger players can afford the biologists and integrated GIS planning platforms required for Five Year Forest Management Plans and Sustainable Forest Management Plans that integrate with the Strategic Land Use Plans.

The business of growing a sustainable supply of harvestable wood from natural forest ecosystems has been described as "not rocket science—it's far more complex" by Fred Bunnell, UBC Forest Ecologist. This

complexity requires: delinking growing the forest from milling and setting clear accountability for forest management obligations through the application of the full set of Silviculture Funding principles. Given this, market forces will handle the complexity, even if SFM is more difficult than rocket science.

Implementing P#3 Depletion Off-set

The right-of-way off-set environmental policy of Ontario Hydro, which has been in place since the late eighties, is a precedent for off-setting permanent deforestation through an afforestation program.

A backlog of rights-of-way that displace forests also exists. This program did not include off-sets for existing rights of way or pondage at the time that it was adopted.

Implementing P#4, Enhancement

It may be appropriate for government to share some of the cost of enhancement. There are several precedents for funding assistance for tending. These can be found not only in Sweden where the government pays 35% of tending costs on private land, but also in the US. U.S subsidies for silviculture would astonish many Canadians (for examples of US funding see <http://www.americantreeseedling.com/assist.htm>).

In the election campaign, Premier Gordon Campbell set the goal for the provincial AAC at 100 million cubic meters, a 50% increase over the present 72 million cubic meters. To achieve this will require an MAI of just over 4 for the approximately 23 million hectares of forestland licensed for use today. This is a reasonable target that can be achieved within the principles of SFM. However, it may be that land use

The provincial backlog is pre-1990 and could be funded by carbon credits. These opportunities require a rigorous provincial inventory and policy context.

Appendix A: Implementation Discussion

Many of these principles have been implemented in other provinces' policies or are partially present in B.C government policy. These experiences and some of the context for implementing these principles in policy are discussed below.

Implementing P #1: Reforestation

The Reforestation Principle was first applied to forest harvesters in 1987. Government funded reforestation had been competing for a share of general revenue in all Canadian provinces. The effective privatization of the responsibility for reforestation not only has eliminated the perception of subsidy (relevant for the US countervail of that day), it has reduced government bureaucracy and an escalating government reforestation budget.

With application of the principle, reforestation is a cost of logging and a current cost of maintaining the capital asset – BC's productive forestland base – rather than being seen as a stand-alone, low-return, long-term investment. As a long term investment it was difficult to justify.

At that time, BC's forest ecosystem classification of all forest land was complete and the Correlated Stocking Guidelines for each ecosystem had been developed. Having these clear agreed-upon technical standards was essential for implementing these guidelines. The use of the BC Registered Professional Foresters' signature for this regulation became the model for the 1993

Forest Practices Code's user pay requirements in 1993.

During the fifteen years since 1987, the silviculture industry has established over 2.5 million hectares of high quality second growth stands at a cost of over \$2 billion dollars. These stands grow 35% faster than the natural stands they replace, but this has yet to be measured and recognized in the current inventory in many DFMA's.

Implementing P #2: Sustainable

By requiring all users to maintain their assets, government helps to drive "one-cycle users" out of the forest and raises the value of sustainable users' practices and licenses.

In B.C, the AAC for DFMA's are set by Timber Inventory Branch, but they assume a level of reforestation and tending that has historically not been funded. Branch staff have calculated that for some licenses, unless an adequate level of reforestation and tending is funded and implemented, the long run sustainable yield for these DFMA's will be reduced by as much as 35%. Conversely, some DFMA's will have their AAC increased due to past decades of silviculture investments that exceed the former natural forest growth by 35%. Once a full, current and accurate forest inventory is complete, those designated forest areas with a significant proportion of such stands may have their AACs increased, while others may be adjusted downwards.

Regionally-based AAC sustaining silviculture programs require a reliable forest inventory. These inventories should be in the public record and should not be the private property of the licensee. In many designated forest areas this inventory is underway, but the completion of this inventory will require public funding – perhaps from the FIV.

(P #3) Depletion Off-sets

Forest land users who permanently displace forests resources will pay to restore areas of equal value to that lost.

Government should require of users who deforest crown forest land areas for permanent non-forest uses, that they fund the afforestation of an equal area of similar forest value. This will protect the resource, such as AAC, being sustained by each license within a DFMA.

This Depletion Offset principle should apply to all users, like hydro and pipeline companies seeking permanent rights of way, public or private organizations seeking to build roads or highways (including recreational, mining and forest companies building permanent forest roads) and developers and municipal, provincial and federal governments seeking to develop the provinces crown forest land.

Implementation

Opportunity areas for afforestation must be located and certified according to a defined set of qualifications. The government registry process for this should identify where there has not been, and will not be, forest without artificial reforestation within a specified time period.

This afforestation should be incremental to any other reforestation obligations. It should not replace the obligation to reforest temporary harvests, depletions or backlog.

Areas qualifying as off-sets for permanent forest roads could include NSR backlog or impeded areas within the same DFMA. Government could develop a covenant for qualifying private land such as uneconomic farmland. This would ensure that off-set forests will be allowed to grow to maturity and define resource ownership.

(P#4) Resource Enhancement

Forest land resource users that pay to add a sustainable volume of value will enjoy that value or be compensated.

Government should meet its New Era commitment to "Increase the allowable annual cut over time through scientific forest management, proper planning, and incentives to promote enhanced silviculture" by first of all, by;

- implementing the Sustainability principle
- completing current inventories and, adjusting the baseline AAC downwards or upwards to the actual sustainable level
- establishing agreed-upon resource quality or quantity enhancement for each silviculture intervention in each ecosystem
- developing a funding formula for sharing the costs of enhancing the baseline volume of value or value and determine whether the funding ratio would vary for different site types
- in the case of resource taking, developing a compensation formula for privately funded enhancements
- adjust commercial thinning stumpage rates to reflect the volume and value benefits

Implementation

The implementation of this principle does not require that the crown privatizes forestland or a revised tenure system. It requires the setting a context of business certainty for investments in resource enhancement. The risk that government will take these resources for other uses in future years has to be protected.

Pilot projects funded through the Innovative Forest Practices Program set a partial context for developing terms of reference for this kind of voluntary resource enhancement investment.

(P #5a) Natural Disturbances

The Province will establish an annual reforestation program adequate to reforest the average area depleted by natural disturbances.

The Provincial government should establish a Trust Fund that is adequate to reforest the annual areas in the merchantable forest lost to pests, disease or fires. Newly established forest stands under the reforestation principle, (FPC: Sect. 22) that have not yet reached free-growing affected by natural disturbances would remain the responsibility of the user.

The Natural Disturbance Fund protects user's obligations under the Sustainability and Resource Enhancing principles from the extreme cost volatility that can arise from natural disasters within their DFMA's.

Implementation

The Natural Disturbance fund should be set up as a separate Trust Fund, independent from government. In order to reliably indemnify user pay volatility in future funding for natural disturbance, natural disturbance reforestation funding cannot be based on the uncertainty of annual government bud gets.

Ontario's Forestry Futures Trust Fund is a precedent for a structure based on this principle. FRBC's 'rainy day' fund could be used to set up such a Natural Disturbance Trust Fund.

Care must be taken to ensure natural disturbance reforestation funding does not become a disincentive to reforestation obligations that could be funded by a salvage harvester.

In B.C, the annual average depletion due to natural disturbances such as pests, disease and wildfires, is about 20,000 hectares per year, about 40% of which may benefit from

artificial reforestation, suggesting a cost of approximately \$8 million.

(P#5b) Catastrophic Disturbances

The Federal government will maintain an emergency reforestation fund to reforest catastrophic disturbances in any province.

The Province should request that the Federal government formally recognize its obligations to indemnify provinces against extreme volatility in costs arising from catastrophic natural disturbances.

This is especially important since in the last decades Canada has begun to experience an increase in forest catastrophes from both fires and pests. Some of these may derive from the climatic anomalies or extremes associated with global warming. If this trend continues, securing such an indemnification will become increasingly important.

Implementation

The Federal government should commit this summer to reforest the portion of the pine bark beetle infested forest in B.C. This should particularly apply where there can be no salvage or the value of the salvage wood may not support the full reforestation costs within the provincial Reforestation principle.

Other provinces are aware that they may need to seek national support for a similar catastrophe in the future and know they will have their turn requiring support under this principle.

The catastrophe policy should become a part of the CCFM agenda and Canada's Forest 2020 program.

Federal responsibility for the Catastrophe Principle may be an important component for maintaining a baseline national forest

carbon inventory as a part of Canada meeting its Kyoto Protocol obligations.

(P#6) Backlog Principle:

The province will use some of the value of the resource harvest to regenerate and restore the productive capacity and ecosystem health of the backlog forest areas.

B.C should establish a Backlog Forest Trust Fund for the reforestation and tending of the portion of the backlog not selected for beneficial interventions under policies designed to implement the other principles.

In most forest licenses, treating NSR and impeded sites will be the means to meeting the obligations of the Sustainability Principle, off-setting the depletion of a permanent forest road under the Off-set Principle or the Resource Lift Principle.

This backlog includes all of the 80,000 hectares of "not sufficiently restocked" (NSR) areas and the 1.54 million hectares of "sufficiently restocked but impeded due to brush or stand density resulting in slowed growth and preventing free growing status" (hereinafter called 'impeded') stands.

The backlog may also include the incomplete clean-up of the 200,000 kilometers of streams damaged by poor harvesting practices of the past, the watersheds that need rehabilitation, the restoration of disturbed terrestrial and marine habitat and salmon enhancement.

Implementation

Treatment areas should be selected so that priority is given to those that give the greatest value lift with the best multiple value calculations from a SFMP.

As the NSR and SR impeded sites are all the result of pre-1987 logging or disturbances, these sites are ideally suited for adding to BC's 1990 carbon store by the Kyoto 2008's first deadline. A program should be considered to fund backlog restoration from future carbon credits. This funding portion of a Backlog Trust Fund could be used for increasing the diverse ecosystem biomass

To meet habitat or conservation goals some areas may be left untreated.

The 1956 *Atlas of Natural Resources of British Columbia* can be used as an inventory reference.

(P #7) Carbon Principle

BC will define its forest level carbon sink and set a context to capture the forest carbon sink enhancement opportunities of the various international global warming agreements.

The Province should proactively capture the emerging opportunity for funding silviculture interventions that increase the carbon storage in BC's forestland.

The Forest 2020 program being initiated through the Canadian Council of Forest Ministers and the Federal government is an important lead for this process but falls far short of capturing the opportunities created by the Kyoto protocol. Canada negotiated the most advantageous position of any country except Russia, for sinking some of its carbon emissions in its extensive forestland. The market for this is already very active, and carbon credit funded afforestation in the US has become a significant aspect of its reforestation program. BC should take the lead in securing this kind of funding.