

BioSequestration in Canada's Offset System - Assuring Permanence

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Preface

The importance of developing sound policy for the Canadian Carbon Offsets market, particularly as it relates to the volume of potential offsets generated by land-based sequestration projects across the country, cannot be overstated.

This document is intended to provide recommendations for biosequestration emission removals that balance environmental integrity with practical, workable solutions by those who can implement the policy.

The expectations for the large volumes of Offsets (40 Mt from land-based projects, such as agriculture and forestry, by 2017) to be generated through voluntary actions taken by offset suppliers is critical for compliance purposes, as well as for development of a long-term and stable carbon market.

If the policy is ineffective, the supply will not be realized. This report outlines the reasons why the current proposed approach to assuring permanence is problematic and recommends a package of policies to find workable solutions that are designed with Canada's best interests in mind.

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1.0 Context

This submission to Environment Canada, on behalf of Canada's Industry Provincial Offsets Group (IPOG), is intended to provide a **workable** solution to dealing with the risk and liability of reversals (i.e. non-permanence) of biological sequestration of CO₂. Creating an offset system based on a liability period, or the use of temporary offsets to manage the risk of sink reversals, will be difficult to implement and commercialize, from a government administrative; offset supplier and buyer perspective. Farmers, ranchers, forestry companies and other suppliers will not participate.

One need only look to the lesson of Afforestation and Reforestation projects in the Clean Development Mechanism; after 6 years, the number of projects and volumes of tonnes has been less than 1.0% of the created instruments, largely because of the approach to permanence (i.e., temporary credits).

The main issue with the current federal proposal is that it effectively downloads the risk and liability onto the private sector to guarantee permanence. The authors of this submission contend that building flexibility into the federal policy approach by allowing a choice of options to address risk of reversals is prudent and will be well-received by stakeholders. Offset project developers would have several options to recover net losses by drawing down on a reserve – either at the project level or through a government developed discount factor that covers the risk; purchasing private insurance or, depending on the sector, managing a carbon account balance to cover the risk - all to encourage re-growth and resumption of practices that sequester carbon.

The authors contend that to predict the most cost-efficient remedial activity at this point is too difficult, but the flexibility of the recommendations below will provide valuable options and allow for the most efficient and effective path forward - that maintains the same level of environmental integrity as the current proposed approach.

2.0 Recommended Approach

The following section outlines the recommended policy approach that the writers of this submission believe will result in an implementable, effective policy for Biosinks with commercializable opportunities for offset suppliers and buyers in Canada. In the March 10, 2008 *Turning the Corner* federal release, over 40 Mt of carbon offsets are expected to be generated by the Agriculture and Forestry sector – it's imperative that we get the policy right for the viability and sustainability of the Offset market in Canada.

It's expected that with the following approaches, a sink credit can be part of a homogenized commodity system, unencumbered by liability that transfers itself from one side of the market to

the other with the choice of a temporary or permanent offset credit – resulting in a non-operational system.

From a process point of view, and given this is a new system that will take some time for the market to find its way, we recommend a review after the first or second cycle, to modify or adjust if the uptake is simply not occurring on some of these options. This commitment to continuous improvement on the Offset side of the regulatory framework will be important going forward.

2.1 The Package:

The following approaches in Table 1 are intended to represent a package of policy options on managing the risk of reversals and associated issues, available for project developers to use.

It's believed these will result in an administratively efficient, environmentally effective and cost effective approach that will allow the market to operationalize the policy.

Based on experience in other offset markets, such as Alberta, and due to the lack of uptake in the Clean Development Mechanism, the **most preferred option** would be for the federal government to develop a risk-based approach to discounting of the potential carbon tonnes, factoring in the likelihood of reversals over the longer term – Option 1a in Table 1 below.

The cases and justification for these approaches, in the context of the major market implementation issues are outlined in the next section.

Table 1 – Recommended Policy Approach

Option	Approach
1. Risk of Reversals	
a) Risk-Based Assurance or Discount Factors	<p>This approach relies on discounting coefficients or credits for a region to account for the probability of a reversal occurring over a set period of time, based on historical evidence/expert opinion or predictive modeling (for more explanation see Appendix A).</p> <p>Each coefficient is discounted, and the amount of carbon to cover the risk of a reversal (e.g., 10% discount on every verified tonne, resulting in 0.1 tCO_{2e} set aside) is held by the government in a 'virtual pool' or reserve. This reserve essentially belongs to the 'atmosphere' and assures against carbon lost to the atmosphere through reversals in the future – it functions as a reserve holdback that is operationalized through government policy.</p> <p>No lien or legal instrument is needed against the property; ownership checks occur at verification of project as in other projects.</p> <p>Allows for more flexibility in management and contracting; since a discounted approach to address liability, annual contracts can be used.</p>
b) Mandated Reserve Holdbacks	<p>In this case, the appropriate protocol will lay this out as an option that the project developer can use to cover off reversals in the project(s).</p> <ul style="list-style-type: none"> The Program Authority (PA) will need to select an appropriate percentage depending on the Project Type and location (i.e. a Reserve Holdback in mountain pine beetle regions in BC, may require greater reserves than a forest in Quebec).

Option	Approach
	<ul style="list-style-type: none"> Reserve holdbacks could be kept by PA through the Registry, even after the Project wrapped up, for a specified period of time. <p>The protocol will have wording to notify Verifier of additional verification requirements as a result of using this option. No liability period required. Would be continued from Registration Period to Registration Period. – held in case of reversal.</p>
c) Private Insurance	<p>This option could be indicated at the time of validation and the Program Authority could request proof of insurance registration with a credible firm before the Project is registered. PA could request to see annual premium payments as proof that insurance is still maintained. No liability period required. PA could mandate minimum insurance terms.</p>
d) Balanced Carbon Account	<p>This option involves a project developer creating a “carbon account” that would include all of the developer’s managed area (to prevent transference or “leakage”).</p> <ul style="list-style-type: none"> A commitment to performance measurement will be made for the <u>long-term</u> (a suggested period of 10 years for agricultural projects and 30 years for forestry projects). Over this term, the account will grow (through activities that increase carbon sequestration) or may be depleted (through reversals or selling credits from the account). However, a positive balance must always be maintained <p>These credits achieve permanence because the net quantity of carbon credits is permanently sequestered in the project as long as the carbon account stays positive.</p>
2. Managing Reversals	<p>For option a) above:</p> <ul style="list-style-type: none"> Project developer will disclose any reversals of practice during the registration period. Verifier confirms, no credits issued for that year. Replacements come out of the assurance factor pool. These are reported in the overall Verification report which is posted on the Registry. Verifier will monitor, in past and subsequent Verification reports that the project developer has not reversed past the regional average. If so, PA notified and action taken. PA reviews the overall discount factor on a regular basis and adjusts it based on the actual reversals that have occurred in projects. <p>For option b) or c) above:</p> <ul style="list-style-type: none"> PA sets a significant reversal threshold at which time a reversal needs to be reported (eg 25% of stored carbon to date). Options b) and c) will need quantified reversal coefficients for each practice, in that ecozone. Project Developers then will activate their options to meet the required credit replacement to the satisfaction of the PA. Verifier will need to verify the reversal report and verify that the option was utilized. <p>For option d) above:</p> <ul style="list-style-type: none"> If there is an unplanned reversal the developer is required to augment the account to maintain a positive balance through prudent management (e.g., utilization of a reserve, purchasing additional credits or some other means (e.g., insurance). Credits will be realized only from a net positive balance based on actual performance and verified results.
3. Land Transfers	<p>Alberta has seen innovative contracts that define the consequences of a transfer of land under the duration of the contract. The seller is obligated under contract law to notify the aggregator of the sale or transfer of a land lease and can follow up with the new manager. Liabilities can be managed through the aggregator pool of offset contracts if new arrangements can’t be made. The aggregator enters into an MOU with PA to guarantee a certain amount of sequestered carbon at all times.</p>

2.2 The Case for the Package:

The following sections outline the major implementation and commercialization issues that will pose significant barriers to market participation and successful outcomes of the proposed policy approach.

2.2.1 Liability Period Issues

Difficulties with Offset credits that have liability periods of several decades (see Appendix C for reference August 2005; Environment Canada/Agriculture and Agri-Food Canada presentation where liability period was under 100 years), beginning after the last tonne is sequestered, translates into unmanageable amounts of years in total sequestration maintenance timeframes.

These timeframes and associated implications will prove to be problematic from several aspects of implementation for stakeholders:

- These are beyond normal work-span lives for farmers or company employees;
- Legal instruments applied to the land will be a significant barrier to farm participation;
- Administration of these legal instruments will require long term agreements - how will this work with provincial policy on private and crown lands, since there is no government program that pays an incentive directly to the farmer?;
- Who and how will land use be monitored for reversals out into the future? What reporting structures will be required? Will these persist 40 to 65 years from now?;
- Farmers will perceive uncertain future prices and volumes of credits as huge barriers to participation. Will carbon markets even exist since they are created by government policy?; and
- How accessible will carbon offsets be in the future, and what will the price of carbon look like? Already farmers are correct in saying that large accessible supplies of offset credits to buffer them if delivery fails to occur (i.e., reversals), like grain markets, are not going to materialize; they currently consider it too risky to engage.

2.2.2 Carbon Ownership/Clear Title Issues

It's important for any biosinks policy to take into account the reality of private and public land ownership and management in this country. Prairie agriculture is characterized by close to 50 % of the farmed land being leased and managed by someone other than the landowner, and these rates are on the rise. This has significant implications for assuring ownership rights to carbon offsets in land based projects. Further, legal instruments applied against the land will be a non-starter for many landowners. Alberta's experience in the first compliance cycle is that 25 to 50% of potential sink offset credits could not be verified due to undefined, unclear or unresolved ownership. Landowners were reticent to engage in signing off on any agreements that assigned title to carbon offsets, for actions already taken (never mind committing to a 25 year liability period into the future). This has occurred in a system that has a government-backed risk management system for reversals through a discount, and no legal instrument applied to the land.

2.2.3 Commercialization Issues

Canada needs to get its policy right in order to find a policy that offset suppliers of biosink offsets and buyers of those offsets can commercialize in a cost-effective manner – otherwise Canada will miss out on a huge opportunity.

For offset suppliers, temporary credits are not commercializable because their lower market return/value will not support the high start up costs of aggregation. Aggregation of offsets from private lands is a much-needed service to package a financially attractive number of offsets buyers in the carbon market. Alberta's first compliance period saw over 1 million tonnes of offsets used for compliance, and over 60% of those were from reduced tillage biosequestration projects -this represented almost 25% of the compliance used by companies in Alberta. Aggregators were a big part of that success - the viability of the aggregation industry depends very much on permanent offset credits, with their higher value (*Keith Anderson, Chair, Carbon Offset Suppliers Association, pers comm.*).

For those sectors with targets under the federal GHG framework, little interest exists for temporary sink offset credits. It has been a consistent assertion from Environment Canada that market interest exists for temporary biosink credits. This report is going on record; representing a significant portion of stakeholders, that temporary credits will not be a preferred form of compliance option in the federal system. The learning's from the CDM afforestation/reforestation temporary credits must be taken into account.

The regulated sectors are recommending more flexibility in options to address biosink offsets and their permanence, in order to create the potential for high volumes of credits from land-based projects. These are important for compliance purposes – and for development of a long term and stable carbon market.

2.2.4 Socioeconomic Issues

The return per acre back to the land lessee/landowner for carbon offsets, even at an average of \$10/tonne (average price in Alberta 2007 compliance market) works out to about \$0.50 to \$1.00 per acre for 'permanent' offset credits, once the 35 to 40% transaction costs by aggregators is taken off the top. Many potential farm sellers think that these values do not warrant their time, resources or a case for engaging their landowners time, in a discussion of possible contracts for carbon offset sales.

These two factors – high rental rates and small carbon return per acre pose significant social and economic barriers that need to be overcome to get producers to voluntarily participate in a domestic offset system. The close to 40 Mt of offsets predicted to originate by 2017 from the agriculture sector in the March 2008 Economic and Modeling paper, will not materialize with the current proposed policy approach.

In Alberta, the policy discussions leading up to the Offset system launch, indicated that a temporary-permanent with liability period, coupled with land caveats would not get much uptake from farmers and ranchers so an alternative commercializable solution was found – based on risk and historical evidence towards that risk. The point remains, that even with a ex post

verification system with a flexible approach to assuring permanence, farmers (land lessees and land managers) were still reticent to participate in projects (25 to 50% verified adjustment of asserted tonnes based on unclear ownership).

Alberta's experience does not bode well for Canada's approach of liability periods and legal instruments with permanent offset credits.

3.0 Conclusions:

We are likely in agreement that having a successful policy on biosinks, designed to achieve the intended outcomes we are collectively seeking, and promote maximum participation, depends on the ability for offset suppliers and buyers to implement the policy.

This set of stakeholders believes that creating an offset system based on a liability period, or the use of temporary offsets to manage the risk of sink reversals, will be difficult to implement and commercialize, from the perspective of government administrator, offset supplier or buyer. In essence, farmers, ranchers, forestry companies and buyers will refuse to participate in the market.

It's important to remember that Canada led the world in paving the way at the UNFCCC tables for inclusion of biological sinks in the Kyoto Accord (Marrakesh 2006). There, our negotiators successfully convinced the international community that sinks provide multiple ancillary environmental benefits, can be managed effectively and the likelihood of the stored carbon reversing en masse is not likely to happen. The case was made internationally, and now we need to bring the domestic policy in line with what was portrayed to the international community. It worked then, why won't it work now?

Respectively Submitted,

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Appendix A - Background

Biological sequestration, through activities undertaken by the agriculture and forestry sectors, offers multiple environmental benefits for Canadians (improved water quality, biodiversity, improved nutrient cycling etc) and has and will continue to significantly contribute to Canada's national GHG balance.

Proposed policy approaches in Canada and elsewhere have tried to resolve several challenges relating to **equity** (early adopters, late adopters), **effectiveness** (permanence, maintenance of the sink) and **efficiency** (administrative and financial) aspects associated with enabling activities that monetize Biological sinks in offset systems.

It's recognized that high volumes of credits from land-based projects are important for compliance purposes – and for development of a long term and stable carbon market. It's imperative that a policy solution be found that will enable participation of land-based biosequestration projects, and the accompanying environmental co-benefits they provide.

The Agriculture Sector in Canada:

Canada has over 167 million acres of agricultural land, and over 80% of the annually, cultivated portion resides in the Prairies. The agriculture sector currently contributes 7.6% of Canada's GHG emissions, but has the potential to reduce 2 to 3 times that much, through carefully crafted policies to encourage voluntary participation by Canada's 250,000 farmers. In addition, approximately 29.5 million hectares of Canada's agricultural land is in a forage perennial cover including pasture, hay, silage, legume and grass seed, feed pellets, cubes and compressed hay – the management of these lands represent significant sequestration opportunities as well.

Getting the policy right has been the subject of many recent reviews. Recently, an agriculture news circular called AgriSuccess, cited a George Morris Centre report that analysed the proposed federal policy approach¹, and concluded the liability period for sink offsets will be unworkable from an agricultural producer point of view, they write:

"Without the participation of producers... Canada's approach to climate change will miss an opportunity. The "Made In Canada" approach is voluntary, and the success of emission trading of non-permanent credits depends highly on producers' involvement"...: They're urging another look at the proposed system, taking into account lessons learned through current emission trading systems and pilot projects, particularly the Pilot Emissions Removal, Reductions and Learning Initiative which recently concluded in Alberta, Saskatchewan, Quebec and Ontario"

The Forestry Sector in Canada:

Forest Carbon Management (FCM) involves a number of forestry practices (e.g., tree planting and thinning) which result in enhanced growth in the forest as compared to the growth of the forest if left in an unmanaged state. FCM is the continued provision of optimal growing

¹ George Morris Centre is an Agricultural Policy think-tank in Canada, who recently prepared a report for the Australian government on Canada's agricultural GHG policy. See <http://www.georgemorris.org/GMC/Home.aspx#>.

conditions resulting in the enhanced performance of the forest eco-system as a carbon sink. The additional tree growth from FCM results in additional carbon being sequestered into the forest ecosystem.

Sequestering and storing carbon in trees is a proven, effective, and affordable method of carbon capture and storage. FCM can result in 4 times the volume of CO₂ sequestration compared to unmanaged forests. Within an administratively simple Canadian Offset System, the availability of FCM offsets will bring about significant behavioral change in managing forests in Canada and resultant environmental benefits.

- Canada has vast forest resources with enormous sequestration potential over the long-term. Our “natural advantage” includes:
 - 120 million hectares of managed forest.
 - 100 million tonnes of annual CO₂ sequestration by 2050 (National Roundtable on the Environment and the Economy report)
- FCM can result significant supply of compliance offsets that can be easily scaled to make a significant contribution to Canada’s climate change plan
- FCM is unique in its ability to sequester carbon previously emitted into the atmosphere

Forest management is a *long-term strategy*. Due to natural forest cycles, it is not possible to abruptly increase the net forest biomass in Canada over a short timeframe. In terms of tree harvesting, the key is to harvest at the right place at the right time in a sustainable manner. The superior forest management practices utilized by FCM in Canada will lead to sustainable harvesting with a positive impact on climate change over the long term.

Appendix B - Assurance Factor

Expert Opinion/Historical Evidence:

- Through a combination of historical evidence of reversals in a region, and expert opinion from professional practitioners in the field (PAgs, RPFs, Industry Associations, Extension services and Government staff), a range of estimates are gathered as to how often reversals occur in a given time period.

Predictive Modeling:

A risk assessment approach to determine more precisely the differentials in carbon gain from the cumulative impact of reversals over when and how often the disruption in sink practices occur over a given time period (e.g, twenty years):

- Since both agriculture and forest sink estimations are based on modeling, models can be run to generate carbon sequestration curves from reversing a practice in a time series, both as a consequence of when the reversal occurred (early on in the cumulative sequestration vs late) or frequency of occurrence (once, twice, more?).
- A Risk Matrix of impacts, with coinciding discount factors could be applied to account for the differentials in C gain from the reversals over time.
- The coefficients/credits could then be adjusted as the Project proceeds and if reversals occur, by using the matrix. This could also be used to inform the Reserve Holdback option

Appendix C – Federal Reference to Liability Period

Excerpts from a Presentation made August 2004, by the Federal Working Group on Offsets to the Saskatchewan Soil Conservation Association; Saskatchewan.



**Offset System
Agriculture Design Considerations**

Presentation Overview

1. Introduction
2. Design Considerations
3. Examples

Permanent Credits for removals

- Represents permanent storage of 1 tonne of CO₂e
- Length of term for maintaining sink is under discussion (will be less than the 100 years suggestion)
- Project proponent is liable for replacement if the sink is reversed. Options include purchase another PC, purchase insurance, or possibly purchase a temporary credit to temporarily defer the replacement obligation (this flexibility option is being discussed).
- Liability is between proponent and Program Authority (not buyer).
- Price will be the same as a permanent credit for a reduction project

**Reference to Liability
Period Timeframes**