Canadian Council
of Forest Ministers

Consiel Canadian
des ministres des forets

# Framework for Forest Management Offset Protocols

## Executive Summary

### Introduction

Interest in the use of forest management as a tool to help address climate change is growing world-wide. One mechanism for encouraging this is to include in offset systems forest management activities, such as planting improved stocks instead of unimproved stocks, and planting faster-growing species rather than slow-growing species if allowed by site conditions and climate. Carbon credits generated through the reduction of greenhouse gas (GHG) emissions or increased sequestration can be sold to regulated emitters in a market-based solution to reduce Canada's overall carbon emissions.

The Framework for Forest Management Offset Protocols is designed as a reference document that identifies and examines technical issues involved in quantifying forest management carbon benefits. It brings information on the few forestry protocols in use together with research and insight from government, academic, and industry experts on forestry protocols. The target audience consists of those in Canada who are interested in forest management protocol development. The objective of the framework is not to provide the basis for a forest management protocol, but rather to identify and analyze key issues and substantive possible solutions that protocol writers and project proponents can consider as they research and draft forest management protocols.

The framework identifies key issues in each of the following areas, which are either critical elements of or directly related to forest management quantification protocols:

- baselines and incrementality
- leakage
- measurement
- verification
- permanence
- risk management, and
- crediting.

Verification and crediting are not elements of quantification protocols, but they help form the basis for successful forest management offset projects.

**Baselines**

There are a number of ways in which baselines can be established. They can be set on the basis of historical emission and removal data, projections about future emission and removal trends, or a performance standard. They can also be adjusted or normalized on the basis of aggregated activity levels or regulations. An adjusted or normalized baseline is a hybrid method that includes business-as-usual (BAU) activity levels in the accounting, with a discount based on performance standards or other constraints. For example, the Climate Action Reserve (CAR) forest protocol mandates a bottom-up modelling projection but imposes additional constraints based on average carbon stocks. The Regional Greenhouse Gas Initiative (RGGI) applies an average carbon stock approach based on data from the US Forest Service Forest Inventory and Analysis Program (FIA), but applies a discount to the amount of credits generated based on original carbon stocks at project start.

Baselines could be set for the duration of a project (static baseline). However, given that the economic, social, and physical conditions in which a project is taking place can change over time, it might be important to periodically reconsider the baseline upon which emission reductions/removals are assessed (dynamic baseline).

It is likely that baselines would need to remain fixed (static) for a given period of time in order for project investors to have some certainty about offset generation prospects. Assuming that project conditions are more likely to undergo change as time goes by, the period for which baselines are fixed would determine the capacity of a baseline to promote environmental integrity while minimizing market uncertainty. This trade-off is not unique to forestry projects; however, the long time scale over which some forest management projects are expected to generate credits makes this issue more relevant for forest management.

Given the need to be conservative while maintaining procedures that are as objective, transparent, and technically sound as possible, an adjusted approach to baseline-setting may be the best way to take each of the legal, physical, natural, and market variables into account with the greatest accuracy while providing more transparent and objective criteria. An adjusted approach thus seems best suited to promoting economic efficiency while safeguarding the environmental integrity of the scheme. A reliance on bottom-up modelling based on all legal, physical, and financial constraints is well understood within the forest practitioner community, and along with a modest use of top-down standards or constraints presents a viable hybrid option.

**Permanence**

Permanence risks are unique to forestry, certain agriculture projects, and carbon capture and storage projects. Forest management protocols must therefore include provisions and methodologies for assessing and managing permanence risks. Several major issues have been identified as needing attention in addressing permanence risk, including:

- assessing and measuring risk of reversal
- managing risk of reversal
- liability for reversal
- due diligence required to ensure that the program authority does not bear disproportionate risk
- addressing permanence at project end.

A complete risk assessment would need to account for the most important risk a project faces. In some cases this would be a straightforward exercise, while in others it might require a combination of one or more of the main reversal risk assessment options (macro level, micro level, quantitative, and qualitative).

With regard to the question of where liability for reversal should sit, the options are not necessarily mutually exclusive and could be combined in a number of ways. Liability for some risks could be placed on one entity, while liability for other types of risk could be placed on another. For example, the CAR forest protocol distinguishes between unintentional reversal (due to natural disturbances) and intentional reversal (due to harvest), with the program authority accepting liability for unintentional reversals but making forest owners liable for intentional reversals.

Managing risk of reversal is an insurance problem. Along with insurance products, there are different mechanisms that could be adopted to provide insurance against the damage of a reversal. The questions revolve around distribution of the risk and distribution of responsibility for the cost of mitigating the risk. The main options are reserves (basically offset asides or buffer pools), discounting, and traditional insurance products.

It is also important to consider transition measures. The best practices of today may not be the best practices of tomorrow; nevertheless, today’s best practices are the ones that can be implemented to facilitate a functioning forest management offset initiative. The program authorities could opt to wait for better mechanisms to emerge, such as forest management offset project insurance, but at the cost of viable projects potentially being lost because the offset incentive is missing.

As a starting point, the program authority would ultimately be liable for reversals. However, reversal risk could be attached to project proponents or a third party through a combination of contract provisions and program rules. Individual risk, however, could be reduced through the traditional avenue of “pooling” risk and assessing a risk premium on each project in the pool. A project proponent with many projects could create its own risk management pool, but the most efficient option would likely be for a program authority to actively manage a reserve based on several projects. Protocols should specify a risk management approach to determine the percentage of offsets that a project must set aside or discount.

The handling of crop insurance, with its risk attached to weather vagaries, offers much instructive knowledge and experience in the search for ways to deal with forestry offset reversal risk. Coming up with an approach that successfully pools risk within as large a pool as possible is likely the option that will remove a significant barrier to forest management offset projects being considered seriously. In the near term, however, it is unlikely that there will be sufficient projects to form a viable risk-sharing pool. In the absence of a risk-sharing mechanism, prospective proponents will be hesitant to forge ahead and bear all the risk, and this could prove to be a major barrier to getting the first group of major projects under way.

A major part of the dialogue about reversal risk has focused on the arrangements for ending a project. The options include a permanent commitment realized through a covenant, a variable duration contract, the aforementioned temporary crediting (which is allowed under the Clean Development Mechanism [CDM] system), a long-term contract (100-year), or an evergreen agreement (for a suggested 25-year period). An evergreen agreement approach would allow more flexibility than either a covenant or 100-year contract, while providing more assurance of permanence than does a variable duration contract. It is also a familiar practice in the Canadian forestry industry, as several provinces issue long-term tenures that incorporate evergreen provisions.

Approaches to addressing the due diligence issue could include setting eligibility requirements to impede the registration of projects deemed too risky; the implementation of risk management systems to mitigate risks of project failure or natural disturbances; or the application of a deductible for reversals in order to promote good management.

### Measurement and monitoring

Fundamental to the Framework for Forest Management Offset Protocols is the need to provide guidance on accurately measuring and monitoring changes in carbon stock, including increases or decreases in emissions to the atmosphere. The main issues include what carbon pools must be measured, whether harvested wood products (HWP) should be measured (and if so, how), and what the protocol requirements should be for measurement.

In agreement with the Kyoto Protocol, all forest carbon pools should be accounted for, including living biomass (above-ground biomass and below-ground biomass), dead organic matter (dead wood and litter), and soil organic carbon. Protocol developers, however, should be given the flexibility to exclude elements of pools where they can be shown to be immaterial under the protocol's materiality or *de minimus* rules.

Because of the ongoing dialogue at the international level about inclusion of and accounting for HWP in national inventories, it might be best not to make HWP a mandatory or required pool, and instead leave the matter of HWP pool inclusion to the discretion of project proponents.

Incorporating into forest management protocols highly prescriptive requirements for measurement methodologies and tools, such as models, could lead to considerable resistance within the Canadian professional forest practitioner community. There is a Canada-wide base of professional and academic expertise in forest resource measurement, and forest carbon measurement is simply an extension of timber supply modelling and vegetation resource inventories. The key to high-quality measurement and monitoring is likely an emphasis on an outcomes-based approach through the inclusion of accuracy targets in forest management protocols.

### Leakage

Leakage refers to GHG emissions that are shifted from a project area to an area outside the project boundaries as a result of project activities, thereby partially or completely cancelling the GHG benefits generated by the project. It is essential to the success of an offset system that leakage be accounted for and either mitigated or discounted from offsets generated.

The main issues in dealing with leakage in forest management protocols are the need to carefully define project sources, sinks, and reservoirs (SSR) and the market and ecological effects of forest management offset projects.

The ISO 14064 standard requires that a project proponent identify relevant SSR for surveillance and justify the exclusion of any SSR. The objectivity of this process could be enhanced by setting clear requirements for the measurement of controlled and associated SSR (pools, materials/products, and energy fluxes for activities and under certain conditions). This method could be based on decision trees for the identification of key SSR similar to those provided in the Intergovernmental Panel on Climate Change's (IPCC) good practice guidance documents (IPCC 2006). For example, in the CAR forest protocol, planners must estimate the amount of GHG emissions produced by machinery used in management activities (CAR September 2007).

Most interviewees considered entity-wide reporting at the Forest Management Area level necessary for avoiding the creation of perverse leakage incentives. While this approach could be well suited to large-scale timber operations on Crown land, there are difficulties with applying this method to projects in private forests.

Market leakage refers to the impact on SSR of shifts in supply and demand for wood products caused by a forest management project. An increase in timber extraction in existing managed forests and the development of new timber extraction activities on formerly unmanaged land are examples of negative market leakage that could result from a decrease in supply. Application of eligibility criteria, such as a project having to maintain timber yields, and use of a discount based on estimated leakage are seen as the two main options for addressing this matter.

The literature and interviews did not point to an obvious way to address the issue of market leakage. The application of a simple 2% sustainable timber extraction criterion proposed by the California Climate Action Registry (CCAR) seems to be the most promising option for dealing with market leakage; however, it would likely disadvantage forest conservation projects.

Neither the ISO 14064 standard nor the CDM methodologies deal explicitly with the possibility that leakage may occur through ecological processes. While the potential options are the same as for market-based leakage, ecological processes are complex and difficult to quantify with an acceptable degree of certainty. However, the carbon implications may be important.

## Verification

Emission reductions and removals must be verified in order to generate offset credits. Clear, transparent, and accurate verification procedures must be established in order for the various offset market stakeholders to have confidence in the environmental integrity of their underlying GHG reductions. The verification issues identified are:

- clarity and comprehensiveness of verification guidance
- inclusion of a recognized forestry professional on verification teams, and
- verification period or cycle.

In terms of clarity and comprehensiveness of verification guidance, the right balance should be struck between what the offset system program authority can require from verifiers and what they are required to do or committed to doing as professionals who follow international verification standards and rules of conduct. Verification guidelines that apply to groups of similar projects could help streamline the verification process; however, well-designed quantification and monitoring protocols, in combination with an emphasis on "professional reliance," could reduce the need for adopting specific verification guidelines for each project.

With regard to the composition of the verification team for a forest management offset project, requiring that verification be undertaken by qualified recognized professionals – for example, members of a professional association – could help ensure the quality of the verification process. In the case of forest management protocols, mandating that at least one recognized forestry professional be a member of a verification team would have important advantages.

In terms of the verification period, there is a need to strike the right balance to ensure that carbon stock variations are well accounted for and that project proponents face acceptable payback periods and verification costs. As such, there appears to be consistency among different offset markets and standards in the verification interval not exceeding five or six years in order to account for changes in carbon stocks. There are advantages and disadvantages to both having this interval fixed for all projects and allowing project proponents to decide on the verification period. But allowing for some flexibility might not significantly affect the environmental integrity of the system, and could reduce transaction costs.

**Crediting**

Crediting occurs when a program authority issues the amount of offset credits that a given emission reduction/sequestration project has generated between two verifications. Given the temporary nature of forest carbon, various credit certification mechanisms have been proposed to reflect the non-permanent nature of forest credits, creating a different carbon commodity that takes into account the risk of non-permanence.

Crediting issues are prominent topics in discussions about forest management offset projects. Although not a protocol matter, they are addressed in the framework because of their direct relationship with forest management offset project viability. The issues addressed in the framework are temporary crediting (as is allowed by the CDM system), *ex-ante* credits, and duration of the crediting period.

Although the ability to issue temporary credits for forest-based carbon projects has had little traction in the CDM offset marketplace, temporary credits could help preserve the environmental integrity of the system because they would account for the non-permanent nature of forest sinks. Temporary credits could also be an efficient way to mitigate non-permanence risks. Nevertheless, the CDM system experience shows that offset buyers have shown little interest to date.

*Ex-ante* crediting is seen by many in the forest industry as a means to bringing more projects to market, as it would allow project proponents to obtain the carbon benefits of their projects before they actually occur. In existing offset systems, credit allocation generally occurs *ex-post* – that is, after the delivery and verification of carbon benefits. For example, under the Offset Quality Initiative (2008), credits are issued only on an *ex-post* basis. However, the proponents of *ex-ante* credits argue that, because of the long time frame involved in generating climate benefits in the case of forest management projects, *ex-post* crediting could prove financially unfeasible for project proponents.

Advanced payments are possible under offset buying contracts, but the payments would still be made on the basis of the project proponent delivering *ex-post* credits. They would not become official credits until the reduction/removal enhancements had occurred and been verified. The advanced payment option is a typical risk issue between contractor and client. A basic tenet of offset projects has been the use of verified credits – that is, reductions/removals that have already occurred. Any project proponent, not just parties behind forest management offset projects, could ask for *ex-ante* credits. It is not that *ex-ante* credits are an impossibility; mechanisms could be devised to identify and accommodate their risks, but the disadvantages of paying for future performance are greater than the benefits of creating additional forest management offset projects. The well-established advanced payment option would provide a basis for creating worthwhile projects while avoiding the problems of *ex-ante* credits.

Allowing for long crediting periods would provide more economic certainty for project proponents and could make their projects more viable. However, long crediting periods could compromise the environmental integrity of the system if the baseline is susceptible to change during that period. Shorter crediting periods could be more environmentally robust if the baseline scenario is expected to change during the crediting period, but would be less financially attractive to project proponents. This dilemma could be solved by allowing for one or several renewals of the crediting period, conditional to a revision of the baseline scenario.