Permanence of LULUCF CERs in the Clean Development Mechanism[1]

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Introduction

At COP6, the Parties will need to negotiate a decision on the eligibility of land use, land-use change and forestry (LULUCF) projects under the Clean Development Mechanism (CDM). While some Parties praise the potential greenhouse gas (GHG) and sustainable development benefits from LULUCF projects, others raise concerns about how to ensure the environmental integrity of the certified emission reductions (CERs) from LULUCF projects. These concerns relate to the issues of measurement, baselines and additionality, leakage, and permanence. Of these issues, only the risk of impermanence is unique to LULUCF projects.

This paper compares three proposals being considered by the Parties for addressing the possible lack of permanence of LULUCF CERs: the Colombian proposal,[2] ton-year accounting, and stock-change crediting with protective measures. We start by defining the problem and the principles for a good rule and then consider how the proposals meet these criteria. We conclude that the Colombian proposal has the best environmental and economic characteristics, and that with two minor modifications, this proposal would effectively resolve the permanence issue.

Summary of Recommendations

We recommend that the permanence rule for LULUCF CERs should have the following characteristics:[3]

- As sequestration/avoided release occurs, CERs are generated and can be sold. The buyer Party adds the CERs to its adjusted assigned amount.

- CERs should be verified at least once per commitment period with mandatory payback of CERs by the CER holder during the commitment period when credited carbon stocks are lost or monitoring ceases, whichever comes first.

- Liability for payback of CERs should be carried with ownership of the specific CER when it is traded and shared proportionately among the CER holders when partial payback is required.

Why Is Permanence an Issue?

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[1] These ideas were developed with Alex Pfaff at Columbia University in conjunction with a larger interdisciplinary group funded by the National Science Foundation that is modeling land use and land cover change in Costa Rica. The authors would like to thank Ned Helme, Executive Director of CCAP, for his substantive comments.

[2] FCCC/SB/2000/MISC.4/Add.2/Rev.1, 14 September 2000

[3] Very similar conclusions have been reached separately by Don Goldberg at the Center for International Environmental Law and Ken Chomitz at the World Bank.

The basic problem arises because unlike an emission reduction (e.g., from replacing fossil fuel energy with wind energy) that cannot be reversed later, sequestration and avoided release[4] of carbon from a forest or agricultural land can be reversed at any time by destroying the forest or changing the agricultural land use. This difference requires a different set of rules for CERs from LULUCF activities and CERs from other sectors.

When choosing among possible rules, we need to consider how they satisfy various desirable criteria. First, the rule should ensure that LULUCF credits have the same environmental impact as any other CER, assigned amount unit (AAU), or emission reduction unit (ERU). The crediting systems should be compared in terms of how they reflect atmospheric GHG levels at every point in time. This principle of environmental integrity means that any risk from reversibility should be borne by the buyer and/or seller (as determined in the project contract), not by the international community. Second, subject to achieving environmental integrity, the rule should maintain maximum flexibility in how the credits are created and hence achieve maximum economic efficiency in climate mitigation. If two rules achieve the same ends both environmentally and economically and one is simpler than the other, the simpler rule would be preferred.

Equivalences between LULUCF CERs and Other CERs

An effective permanence rule should be designed to reflect the following equivalences:

- One ton of permanent sequestration/storage from LULUCF activities is directly equivalent to one ton of avoided fossil fuel emissions (e.g., from a wind farm).

- The release of one ton of emissions from LULUCF activities (e.g., burning forest) is directly equivalent to one ton of emissions from fossil fuel.

Illustration: Wind Farm Project vs. Avoided Deforestation Project

As an illustration, consider a CDM project that permanently avoids deforestation of one hectare and hence reduces atmospheric CO_2 by 100 tons. The Annex I Party that acquires those CERs can then emit 100 tons of CO_2 from fossil fuel use. Over time, the project continues to store the carbon, thereby maintaining a lower CO_2 concentration in the atmosphere. In contrast, the Annex I emissions from fossil fuel use gradually decay in the atmosphere, so the project yields a net benefit as long as the carbon storage continues.

However, note that this is identical to the following non-LULUCF situation. A CDM wind farm project avoids 100 tons of CO_2 emissions. The Annex I Party that acquires those CERs can then emit 100 tons of CO_2 emissions from fossil fuel use. As time passes, the 100 tons of avoided emissions from the wind farm project are not returned to the atmosphere, so the project continues to maintain a lower atmospheric CO_2 concentration. As in the previous case, the 100 tons of Annex I fossil fuel emissions gradually decay in the atmosphere, so the wind farm yields a net benefit.

[4] We are using the term "avoided release" for clarity when referring to the GHG benefits from conserving carbon stocks in the LULUCF sector, but in effect the terms "avoided release" and "emission reduction" should be interchangeable.

The implication is that if the CDM LULUCF project yields permanent benefits, it should be treated identically to the wind farm project.

Some people have argued that the decay of emissions should mean that the amount of LULUCF carbon needed to offset a one-time emission will fall over time. If this were true, it would also be true of all other emission reductions. Therefore, all CERs would convey not only the immediate right to emit an equivalent amount but also the right to continue to emit as the initial emissions decayed. If we do not treat wind farm credits this way, then we should not treat LULUCF credits this way either. The decay of atmospheric emissions should be dealt with through appropriate choice of targets for different commitment periods aimed at achieving certain atmospheric concentrations at each point in time.

The Colombian Proposal

Under the Colombian proposal, as sequestration/avoided release occurs, CERs are generated and can be sold. The buyer Party adds the CERs to its adjusted assigned amount.[5] *At the end of the project, the CERs expire and are subtracted from the buyer Party's adjusted assigned amount. Therefore, all of the CERs must be repaid by the buyer Party.*[6] *At this point, if the sequestration/avoided release continues, a new project could be created and new CERs generated. If credited project stocks are lost prematurely during the project lifetime, no separate adjustment of the credited CERs is made because the payback of all CERs at the end of the project eventually compensates for this loss. The rule does not specify the project lifetime.*

This rule successfully preserves long-term environmental integrity. As long as the release of credited carbon stocks does not occur before the official project ends, carbon storage is matched by CERs created and carbon released is matched by CERs repaid.[7] This makes LULUCF CERs equivalent to CERs created through an emissions reduction project such as a wind farm. If the storage is reversed, the CERs are repaid after the project ends so the international community bears no long-term risk. The only problem is that in a long project, if credited carbon stocks are lost early on, those CERs do not need to be paid back until the end of the project. If taken literally, this could be exploited and lead to considerable short-term environmental losses.

This rule provides substantial economic flexibility to both the buyer and the seller. If the seller wants to maintain the option of changing the land use, the seller can specify a short project and retain the option to renew it later if desired. If the buyer prefers the certainty of a long project, the buyer can negotiate with the seller to write a contract for a long project. The buyer may have to pay an additional cost for the seller's loss of flexibility in maintaining a long project. The only constraint here is that the project length must be specified in advance, although choosing a series of short projects avoids that constraint in effect. As long as the correct number of CERs exists at all times, the buyers and sellers can contract and arrange payment any way they like. This proposal satisfies the concerns expressed by some developing countries that in order to be awarded CERs, a LULUCF project would "lock up the land" for a very long time, thereby

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[5] In this paper, we use the term "adjusted assigned amount" to refer to the initial assigned amount (as defined in Annex B of the Protocol) ± domestic LULUCF emissions/removals ± transfers of CERs, ERUs and AAUs.
[6] The Colombian proposal states that expired CERs must be repaid by permanent CERs or CERs from other projects. However, we suggest that because the payback of CERs occurs through a reduction in the adjusted assigned amount of the buyer Party, the buyer Party could potentially use domestic emission reductions, AAUs acquired through international emissions trading, or ERUs to compensate for the reduction in assigned amount.
[7] Because all CERs must be repaid at the end of the project, any continued carbon storage after the project lifetime would represent an additional uncredited environmental benefit.

preventing the host country from altering the land use to reflect changing priorities such as ensuring food security.

Recommended Modifications to the Colombian Proposal

We recommend two modifications to the Colombian proposal.

The first recommendation is for the project's credited GHG benefits to be verified and adjusted (if necessary) at regular intervals. These intervals, defined as "crediting periods," could be equal to or shorter than a commitment period. The default period would be the commitment period, but the contract between the buyer and seller could opt for more regular monitoring and hence evaluation and adjustment.[8] A net increase in carbon stocks relative to the baseline during each crediting period would be awarded CERs. These CERs would be identified as specific to the project.[9] These CERs could be maintained in a registry or added to the adjusted assigned amount[10] of the buyer Party to achieve compliance. During each crediting period, any net loss of previously credited carbon stocks would require payback of the CERs by the buyer Party. If project monitoring stopped for any reason, all net accrued CERs must be paid back by the buyer Party.

- In the case where a buyer Party had surrendered those CERs for compliance, payback would consist of subtracting the equivalent number of CERs from that Party's adjusted assigned amount.

- In the case where the CERs were still in the buyer Party's registry, payback would consist of the subtraction of those CERs from the registry.

As long as no carbon release occurred and monitoring continued, the CERs would remain valid. Allowing indefinite projects would require that long-term baselines or at least a clear process for extending a baseline be defined in advance in case the project were to continue indefinitely. This would be needed in any case if projects are to be renewed.

The second recommendation is that instead of making the initial buyer responsible for repayment of expired CERs, this obligation should be passed on with ownership of the project-specific CERs if the CERs are traded internationally. If a CER is surrendered for compliance, the Party that surrendered it should ultimately be responsible for repayment when the CER expires. In the case where multiple Parties ultimately hold CERs from a project and not all CERs need to be repaid, the Parties should bear proportionate liability to repay the CERs.

Note that here we support buyer liability. This contrasts with the Center's earlier arguments in the context of Annex I trading.[11] The key difference here is that the seller Party is not in Annex I and so does not have binding commitments under the Protocol and is less able to be held liable by the international community. Because seller liability would be extremely weak in this case, the costs of buyer liability would be outweighed by the benefits. To ensure environmental integrity,

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[8] The increased monitoring burden may be economically justified for large projects.
[9] This could be accomplished through the assignment of a serial number to each LULUCF CER.
[10] In this paper, we use the term "adjusted assigned amount" to refer to the initial assigned amount (as defined in Annex B of the Protocol) ± domestic LULUCF emissions/removals ± transfers of CERs, ERUs and AAUs.
[11] See Kerr, Suzi, (2000) "Additional Compliance Issues Arising from Trading" in Suzi Kerr ed. *Global Emissions Trading: Key Issues for Industrialized Countries* (Edward Elgar Publishing Inc. Glos. United Kingdom)

the ultimate liability at the international level for payback of LULUCF CERs must be held by Annex I Parties, who will be legally bound by their Protocol commitments and will face penalties for noncompliance. However, Annex I Parties could still choose how to distribute the burden of that liability domestically through specific regulations between the Annex I Parties and their legal entities or the specific contracts between buyer and seller.

The proportionate liability for repaying expired CERs would not be necessary if all CERs from a project were ultimately surrendered by one actor or if all of the carbon were released at the end of the project. With the secondary market and with projects of significant size, the involvement of multiple Parties and partial losses of CERs will likely occur.

Implications of the Modified Colombian Proposal for Buyers and Sellers

The permanence rule applied to LULUCF projects under the CDM will impact their economic competitiveness relative to a Protocol regulatory structure that did not require replacement of LULUCF CERs by the conclusion of the project. Under the modified Colombian proposal, the buyer and seller would want to undertake a LULUCF project if they estimated that the present value of the cost of sequestration (or avoided release) over time was less than their expectation of the value of delaying buying permanent CERs. Both buyers and sellers would want to minimize the risks they faced. They would need to decide between them what the price of the CERs would be, how that price would be paid (i.e., one permanent payment or annual payments) and who would have to repay the CERs if the project stopped (because the carbon stocks were lost or monitoring was discontinued). Different contract designs could be used to allocate the project risk differently while still making both the buyer and the seller better off. For example, at the level of the contract between the buyer and the seller, an Annex I legal entity who assumed full liability for payback of the CERs at the end of the project (or sooner if credited carbon stocks were lost prematurely) would be willing to pay less to purchase those CERs than if some or all of this liability were assumed by the seller. In both cases, the buyer Party would bear the ultimate liability for payback of the CERs.

Each contract would have a different payment structure and total value. The best contract for both entities would depend on the expectations, attitudes toward risk, and discount rates of the entities involved. The total value of each contract to buyer and seller combined will be very similar, the key difference will be the timing of payments between the buyer and seller. Some contracts will provide immediate returns to the seller but with the risk of later liability while others will provide the seller with an income stream spread over time. Regardless of the allocation of risk among the buyer and seller, the environmental integrity of the CERs would always be protected at the international level.

In summary, the proposed modifications to the Colombian proposal ensure the environmental integrity of LULUCF CERs, prevent environmental gaming of the rules by providing equivalent credit to equivalent atmospheric benefits generated by all projects during each commitment period, and clarify what happens when CERs are traded among Annex I Parties.

Evaluation of Other Proposals

Ton-Year Accounting

The ton-year accounting approach attempts to equate the environmental impact of a ton of LULUCF sequestration or avoided releases with an offsetting ton of emissions from other sectors that decay over time. Permanent CERs are awarded incrementally to LULUCF projects on the basis of both how much carbon benefit they generate and how long this benefit is maintained. The rate at which the project benefits would be awarded CERs would depend on two factors:

- *An international decision about the "equivalence" period: the duration of one ton of sequestration/storage required to offset the impact of one ton of emissions. Proposals range from 46 to 100 or more years.*

- *An international decision about the rate at which CERs could be issued relative to the rate of actual stock changes achieved by the project. Options range from awarding a fraction of permanent credit for each ton of carbon storage on an annual basis to full stock-change crediting with ton-year liability for loss of benefits before the equivalence period has been achieved.*

This approach operates on the assumption that any delay in the buildup of atmospheric CO_2 achieved by a LULUCF project represents a permanent benefit to the environment and deserves some amount of permanent credit, with more credit awarded for longer storage.

The ton-year accounting approach raises the following problems:

- As illustrated above in the comparison of LULUCF and wind farm projects, applying ton-year accounting only to the benefits from LULUCF projects creates an artificial and incorrect distinction between those benefits and the emission reductions from projects in other sectors. This means of crediting of LULUCF projects would lack environmental integrity because it would not reflect the actual atmospheric impact of their reductions, and would lack economic efficiency because the same environmental outcomes would be rewarded differently depending on the type of project.

- Negotiating the "equivalence" period and the associated crediting mechanisms would pose a political challenge given conflicting interpretations of the implications from the decay rate of atmospheric emissions. In fact, this approach could never ensure the environmental equivalence of LULUCF and other projects. The selection of an "equivalence" period ultimately would be a political decision designed to create a relative economic incentive structure for LULUCF projects.

- Ton-year accounting systems would not be consistent with IPCC "best practice" methods for national inventory accounting in the LULUCF sector. This could make it more difficult to conduct comparative assessments of project impacts and national trends. It could also make it more difficult for the host country to integrate the project impacts into future inventory-based commitments to reduce emissions from the LULUCF sector.

Stock-Change Crediting with Protective Measures

Under this approach, projects would be awarded CERs as carbon benefits were generated by sequestration or avoided releases relative to the baseline. However, project developers would be required to implement measures to guarantee the permanence of those benefits, such as purchasing insurance, maintaining reserves that could be used to offset the loss of benefits,

enacting protective legislation, or maintaining fire and pest prevention programs. Presumably these measures could vary by project, and any loss of credited carbon stocks would have to be compensated for in some way.

Some experience with this kind of approach was gained under the Activities Implemented Jointly (AIJ) pilot phase of joint implementation under the UNFCCC. Under AIJ, no international rules or standards were developed for ensuring the permanence of benefits from LULUCF projects. This did not represent an atmospheric liability since no crediting was to occur during the pilot phase. As a result, project developers created their own standards for adequate permanence, which varied from project to project. The priority for most project developers and investors was to ensure the protection of carbon stocks during the project lifetime, which also varied from project to project.

In some of the LULUCF projects under the U.S. Initiative on Joint Implementation, project developers offered the following types of arguments to demonstrate the ultimate permanence of their project benefits beyond the project lifetime:

- If the project land was part of a protected national park area, the project benefits would automatically be preserved in perpetuity once the project ended.
- If the project land was to be harvested "sustainably" after the project ended, this would represent no long-term loss of the project benefits that accrued from carbon sequestration and avoided deforestation during the project lifetime.

While these kinds of arguments were acceptable under AIJ in the absence of crediting, they would not represent adequate assurance of permanence under the Protocol. The buyer and seller could negotiate to include these types of measures within their own contract to protect themselves from risk. However, the measures are not adequate or necessary as international rules. The rules under CDM must be robust even when commercially motivated players who have no concern for the environment are involved. Even a few cases of gross loss of environmental integrity would damage the CDM and the Protocol as a whole.

To apply this approach, the Parties would need to negotiate an "equivalence" period during which these protective measures would need to be in place and some kind of monitoring would be required in order for LULUCF CERs to be considered equivalent to other CERs. Negotiating this "equivalence" period would present the same political challenge as negotiating the "equivalence" period for ton-year accounting, and would involve the same loss of environmental integrity. In addition, the Parties would still need to establish a mechanism to compensate for the premature loss of credited project benefits despite the protective measures, such as the withdrawal of CERs from the marketplace.

Another disadvantage of this approach, particularly from the developing country point of view, is that it can result in long-term restrictions on what the host country can do with its land. There is no clear mechanism that would enable a developing country to opt out of a project to develop land in an alternative way. The country would be forced to lock up its land or violate the environmental goals of the treaty and face international criticism.

Conclusion

In this paper, we have compared three major proposals for addressing the permanence of LULUCF CERs, and concluded that the Colombian proposal is the best in terms of environmental integrity, economic efficiency, and flexibility for developing countries. We have proposed two refinements to the Colombian proposal that we hope will allow a clear resolution of this permanence issue for LULUCF projects in the CDM during COP6:

- First, CERs should be verified at least once per commitment period with mandatory payback of CERs by the buyer during the commitment period when credited carbon stocks are lost or monitoring ceases, whichever comes first.

- Second, liability for payback of CERs should be carried with ownership of the specific CER when it is traded and shared proportionately among the CER holders when partial payback is required.