

Scaling Up AFOLU Mitigation Activities in Non-Annex I Countries

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Bernhard

Shortly after completing this paper, Bernhard Schlamadinger tragically passed away. Climate Strategies and GHG Offset Services mourn deeply the loss of a great and towering colleague, friend and companion. We hold this paper dearly as his last research contribution, and as a tribute to him in the field of analysis which he did so much to create and inspire.

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Executive Summary

Agriculture, Forestry and Other Land Use (AFOLU) activities in non-Annex I countries can play a significant role in achieving reductions in the accumulation of greenhouse gases in the atmosphere, it is predicted that in the order of 20% of current annual global emissions or some 10,000 MtCO₂ of annual reductions can be achieved through forest-based activities in developing countries (IPCC, 2007a).

AFOLU activities also have the potential to aid non-Annex I countries achieve sustainable development as well as contributing to the ultimate objective of the Convention. This is especially true in least developed countries where activities can be of substantial benefit to rural communities and for which non-AFOLU activities are limited due to a lessened reliance on fossil fuels.

To date there has only been one AFOLU project activity registered under the Kyoto Protocol's Clean Development Mechanism (CDM) and as yet no units have been issued. The uptake of AFOLU projects is currently largely restricted to the voluntary market where forest-based activities make up some 30% to 40% of all voluntary offset projects. The modalities and procedures for Afforestation/Reforestation (A/R) activities that were agreed in 2003 were designed to restrict activities whose inclusion was not taken into consideration when establishing targets and whose risks were perceived to be greater than they are.

Of the differences in the modalities and procedures between A/R and non-A/R activities discussed in the report it is those aspects that directly affect investment confidence that have had the greatest impact on reducing the uptake of A/R CDM projects. They include their determination as expiring units, their non-bankability and that the responsibility for replacement falls to the retiring Party. Their exclusion from the main immediate market, the European Union Emissions Trading Scheme (EU ETS), has also been significant.

It is important to re-address the modalities under the CDM for A/R as this will remain the only feasible mechanism for many non-Annex I countries in the immediate future. The single most important aspect is that of the issued units. The creation of expiring units has proven limiting for A/R activities, an alternative approach is proposed where a buffer of credits is established based as a percentage of created units to be held in the event of a reversal. In this way the liability is taken off the buyer, holder or retiree of the credit, enabling the creation of a fungible unit. Uptake could also be increased by addressing the other inconsistencies in the rules applied to AFOLU activities, including the restriction of verifications to 5-yearly events, the simplification of approved methodologies and associated tools, increasing the threshold limit for small-scale activities and allowing all AFOLU activities to be eligible.

While the CDM's programme of activities is a useful step in allowing greater flexibility for AFOLU activities, it is unlikely to make a substantial change of itself. However the approach to extend non-Annex I countries the ability to account for reforestation and deforestation activities is likely to significantly increase activity as well as progress capacity in non-Annex I countries. Of particular importance is the ability to enable participating host Party governments the opportunity to address non-permanence.

Introduction

As part of the Eliasch Review the UK Office of Climate Change is seeking an evidenced-based assessment of the institutional and design factors behind the low uptake of sequestration opportunities from A/R activities under the CDM of the Kyoto Protocol.

This report is designed to inform the Review on the potential to streamline or scale-up the certification process for mitigation through sequestration activities and to provide transferable lessons for how to design an effective certification mechanism for the mitigation of emissions through reduced deforestation.

Between 2004 and May 2008 there have been ten methodologies approved from the CDM A/R sectoral scope. Currently only one A/R project has been validated and registered, the project was approved in November 2006 and remains the only registered A/R project. Even so while it has been registered this or any other project is yet to have its initial verification, certification and have issued any tCER or ICERs. The modalities and procedures for A/R projects were agreed in 2003, yet after five years still not one certified unit has been created.

Many prospective A/R project developers are increasingly seeing the costs and time involved with the creation of certificates in respect to the likely returns under the CDM as unattractive and are looking at alternatives within the voluntary market such as using ISO 14064-2 or the Voluntary Carbon Standard (VCS).

Currently forest-based activities make up some 30% to 40% of voluntary projects (Kollmuss et al, 2008), which is the largest single category, this is in part due to the co-benefits that forest-based activities afford but also as the degree of rigor and especially the trading of *ex ante* units, which represent projected future mitigation rather than actual realized removals, reduces the cost and increases the returns possible.

As a consequence national parties and other bodies are considering improvements and alternatives to the CDM for A/R projects as part of post-2012 negotiations. With the increased interest and development of policies for including reductions in emission from deforestation and forest degradation (REDD) and its potential inclusion as a market-based mechanism post-2012, it is timely to consider alternative arrangements for A/R and other AFOLU projects in non-Annex I countries, which may have synergies to REDD mechanisms.

The objective of this report is to highlight the current institutional and system barriers to undertaking AFOLU mitigation activities, and to propose means of removing barriers to allow greater participation and uptake in non-Annex I countries.

Economic and Environmental Benefits

Economic and environmental benefits of reforestation in developing countries

Plantation forests play an important role in allowing for the efficient production of wood and in balancing the loss of forests from deforestation and the removal of production management from natural forests to designated conservation areas.

Wood products are one of the only truly renewable materials where sustainable forest management is practiced. Additionally wood products represent a low energy-embodied material, the raw material is essentially greenhouse gas neutral, and compared to alternative products such as aluminium, cement, steel and plastics they require significantly lower energy use in their extraction and processing. Further solid untreated wood products result in negligible releases of other pollutants into the air, soil or water compared to alternative materials.

The potential for climate change mitigation from the forest sub-sectors in developing countries has been estimated at around 10,000 MtCO₂/yr by 2030 from a global total forests mitigation potential of some 14,000 MtCO₂/yr (IPCC, 2007a). That is the majority of the potential mitigation, some 70%, is predicted to lie in developing countries. This includes potential mitigation from reforestation of around 3,000 MtCO₂/yr and reduced deforestation of around 4,000 MtCO₂/yr by 2030.

Global greenhouse gas emissions in 2004 were estimated at 50 GtCO₂-e (or 50,000 MtCO₂-e) per year, and are predicted to increase in 2030 by between 10 and 35 GtCO₂-e or to between 60 to 85 GtCO₂-e (IPCC, 2007b). Mitigation from AFOLU in developing countries of around 10,000 MtCO₂/yr then represents an important option from which to achieve significant reductions in the amount of greenhouse gases accumulating in the atmosphere.

In developing countries reforestation mitigation activities can result in a number of economic and environmental benefits as well as climate change mitigation. They can reduce the pressure on other natural and less productive sources of timber and provide livelihoods and sources of fuel and materials for rural communities including providing a source of regular income.

Many reforestation projects further result in improved water quality and soil protection. A reasonable proportion of the proposed A/R CDM projects undertake planting on degraded lands, which make productive use of land providing wood products and revenue while also protecting and reversing land degradation. Reforestation and other AFOLU mitigation activities are also believed to have a more pronounced potential in achieving sustainable development in developing countries.

Reforestation in developing countries

Worldwide plantation forests continue to expand and now provide almost half of all global wood products (FAO, 2006). Asia leads the world as having the greatest area of plantation forests followed by Europe. Productive forest plantations make up 78% and protective forest plantations 22% of all plantation forests (FAO, 2006).

The total global plantation forest area in 2005 is estimated to be 140 million hectares (FAO, 2006). China has the largest area with 31 million hectares followed by the United States of America and the Russian Federation with 17 million each, Japan with 10 million, Sudan and Brazil with 5.4, India with 3.2 million, Thailand with 3.1 and Chile and Vietnam with 2.7. Other developing countries with more than 1 million hectares include Malaysia and Argentina.

The United Kingdom was estimated to have 1.9 million hectares of plantation forest in 2005 (FAO, 2006). Sudan, Malaysia and the Philippines have all dropped in area under plantation forest from 1990 to 2005 (FAO, 2006).

With the exception of some short rotation plantations, investment in plantation development is almost always driven by government funding or subsidies, this is due to the high up-front costs of acquiring land, ground cultivation, planting and ongoing tending costs, and the long timeframes of investment return. This is true in both industrialized and developing countries.

The cost of AFOLU mitigation projects

Determining a standard figure for the cost of AFOLU projects is highly problematic, particularly in non-Annex I countries with a diversity of land and labour costs and capacity and available skills.

The costs can be separated into three areas, first the cost of project implementation such as land, initial surveys, ground preparation and planting, early monitoring and treatments, on-going management and tending, and recurrent forest inventory, secondly the costs of ensuring and increasing the awareness and abilities of local participants, and lastly the costs associated directly with the development of the greenhouse gas project documentation, auditing and registration and then on-going monitoring, reporting and verification.

Within the various funds, the World Bank allows up to US\$200,000 per A/R CDM project for certification costs to the point of registration.

Between 23 April and 23 May 2008 eleven people were interviewed using a standard set of questions regarding the functioning of the CDM and comparisons to other greenhouse gas certification processes. This included nine leading project developers, three of whom are past or present members of the AR Working Group, the World Bank and the only accredited auditor for A/R CDM projects.

During interviews those involved with project development were asked to comment on the costs associated with projects they had been involved in, understandably few were able to deliver specific figures, but most indicated that the cost of registering carbon units on the CDM would be greater than \$200,000, perhaps \$250,000, and that in general the other forms of greenhouse gas certification they had followed were around 50% or \$100,000.

It should be noted that a large part of the costs for developing A/R CDM projects at present relate to the need to utilize specialists for the development of methodologies and project design documents due to their complexity and the complexity of the modalities and procedures.

Identification of Institutional and Systematic Barriers under Current Arrangements

The CDM and A/R

The purpose of the CDM is to aid Annex I countries in achieving their target under the Kyoto Protocol and to assist non-Annex I countries achieve sustainable development and in contributing to the ultimate objective of the Convention. The modalities and procedures for the CDM were agreed in 2001 in Marrakech, they set out the criteria for consistent project validation, monitoring and reporting.

The first non-A/R CDM methodology was approved in September 2003 and the first project validated and registered in November 2004. The first CERs were verified and registered in October 2005. There are currently 51 approved large-scale methodologies, 15 consolidated methodologies and 33 approved small-scale methodologies with 1033 registered projects and a total 137 million CERs issued (as of 30 April 2008). Some 1,250 million CERs are expected to be issued during the first commitment period.

Potential eligible LULUCF activities for the first commitment period of the Kyoto Protocol were restricted in the Marrakech Accords in two ways, firstly eligible activities were limited to afforestation and reforestation only, secondly it was ruled that the use of eligible LULUCF project activities under the CDM by any one Party could not exceed one percent of base year emissions times five for the first commitment period. While unlikely to be met¹ this limit was perceived as an additional limitation or risk in investment in an A/R activity.

The modalities and procedures for A/R activities began development in 2001 and were agreed at COP 9 in Milan at the end of 2003. The simplified modalities and procedures for small-scale A/R activities were agreed at COP 10 in 2004. Compared to the modalities and procedures for non-A/R activities, those for A/R were agreed in a substantially more political process, which was influenced by ideological opposition to the use of LULUCF mitigation activities. The main differences between A/R and non-A/R modalities and procedures are as depicted in Table 1 below.

¹ Total base year emissions of all Annex B Parties are around 26,000 MtCO₂-e, the current ratifying Annex B total is around 20,000 MtCO₂-e, this means that if all Parties included the maximum amount allowable, credit generation from A/R CDM activities would be limited to between 850 and 1,300 MtCO₂ for the first commitment period, or on average around 170 to 260 MtCO₂ annually. To remove 170 MtCO₂ per year during the first commitment period would require the project approval and planting of around 1.5 million hectares each year from 2000 until 2012. The total proposed planting area for projects associated with approved methodologies is around 227,000 ha, with an average area per project of around 7,000 hectares (UNEP Risoe, 2007), using this average some 2,700 A/R projects would require approval by 2012 to meet this restriction.

Table 1 – Main additional requirements for A/R project activities under the CDM

Aspect	Considered Appropriate Requirement	Considered Inappropriate Requirement
Participation and host Party approvals	DNA's need to have selected and reported to the EB the chosen parameters to define a forest	Project participants require a written declaration from the host Party that small-scale projects are developed or implemented by low income communities or individuals
Validation and registration	There is a 45 day period for receiving public comments (instead of 30)	There is a requirement for an analysis (and potentially impact assessment) of socio-economic impacts as well as environmental impacts - which is determined by the DNA
	The crediting periods are extended to up to 20 years renewable (instead of 7 for non-A/R CDM activities) 30 years fixed (instead of 10)	The project activity needs to be designed in such a way as to minimize leakage
Monitoring	The monitoring plan needs to provide for changes in circumstances that affect legal title to the land or rights of access to the carbon pools	
Verification		Verification occurs at five yearly intervals from the first verification until the end of the crediting period
Issuance		A/R activities can only create expiring certified emission reductions
		tCERs and ICERs cannot be carried over to subsequent commitment periods
Small-scale activities		Small-scale A/R projects were defined as less than 8,000 tCO ₂ per year whereas non-A/R were 15,000 tCO ₂ , there is now an even greater discrepancy with up to 60,000 tCO ₂ annually for non-A/R activities and up to 16,000 tCO ₂ for A/R

The first new A/R methodology was proposed in November 2004, it was November 2005 before the first methodology was approved. There are currently ten approved A/R methodologies and one consolidated methodology for degraded lands. The first project was validated and registered in November 2006; no other project has been registered since that time (as at 30 April 2008). No project has been verified, certified or issued any t or ICERs to date.

Other GHG programmes and forms of certification inclusive of AFOLU

A number of greenhouse gas programmes that include AFOLU projects now exist that function outside the operation of the Kyoto Protocol. They include programmes designed for developed countries such as

the New South Wales Greenhouse Gas Reduction Scheme (GGAS), the California Climate Action Registry (CCAR), the Regional Greenhouse Gas Initiative (RGGI) and the Alberta-based Offset Credit System.

A number of voluntary greenhouse gas programmes and standards have been designed for both developed and developing countries, the ones being used by interviewees included the Chicago Climate Exchange (CCX), the Plan Vivo Standard and ISO 14064-2. Most interviewees were also considering the use of the Voluntary Carbon Standard (VCS), which released Guidelines for AFOLU in 2007 and which are currently being worked into the language of ISO 14064-2, which is the greenhouse gas accounting framework for the VCS.

The VCS has created a means of allowing fungible certificates with an approach that can be implemented in non-Annex I countries; that of requiring a buffer on generated units against possible future reversals.

The VCS applies a buffer which incorporates two aspects; a longevity component and a project-specific risk component. Part of the reason for the longevity buffer is due to the fact that the VCS do not impose mandatory future verifications, which is a difficult feature to include under a voluntary framework. The longevity buffer is the same for all projects and is reduced over time with subsequent verifications. The risk buffer is an assessment undertaken by auditors at each verification event where the specific risk of each project is assessed.

In this way projects maintain adequate buffer reserves of non-tradable credits to cover unforeseen losses in carbon stocks and also an incentive to undertake on-going verifications is created. The buffer credits are held in a single pooled buffer account. The longevity buffer can range from 30% to 3% from year 0 to year 70 and the risk buffer can be up to 60% (AFOLU Advisory Group, 2007).

Investment and non-permanence in the CDM

In order to address concerns regarding potential non-permanence the modalities and procedures for A/R allowed for the creation of one of two kinds of expiring certified emission reductions, either a temporary CER (tCER) or a long-term CER (ICER). The tCERs expire at the end of the commitment period subsequent to the one in which they are issued, while ICERs expire at the end of the project crediting periods. Neither can be carried over to subsequent commitment periods. Further, responsibility for ICER replacement in the event of either a reversal of removals detected at periodic verifications or through failure to provide a certification report falls to the Party that has retired the units.

While the creation of expiring units was considered a universally acceptable solution at the time, it has relegated A/R CDM credits to a substantially lower class of credit. It is estimated that the pecuniary impact is to make tCERs worth around 14-35% of the value for other CERs and ICERs potentially 45-100% depending on the discount rate and the crediting period length (Dutschke *et al*, 2005). In practice both are estimated to be worth around 25% the value of standard CERs.

When reforestation projects require significant upfront or front-loaded costs and have a delay before the first substantial units can be generated or back-loaded returns, the impact of this is especially significant. Unlike most other types of activities A/R projects have a delay from project implementation until

substantial opportunities for credit generation, usually of at least five years as trees become established. The requirement for verification at five-yearly intervals then further delays the creation of certified emission reductions and associated returns, compounding this problem.

The nature of the issued certificates and then the exclusion of use of A/R units from the main immediate market of CERs, the EU ETS, have been significant.

At the time in 2003 the creation of the expiring CDM units seemed to be a good solution, especially as it addressed the perceived risk equally across all non-Annex I countries. However since then there has been growing recognition that the risks inherent in A/R projects are not as great as has been allowed for within modalities. Further alternative means of addressing non-permanence that allows for the creation of fungible credits have been explored and applied in other greenhouse gas programmes.

AFOLU greenhouse gas removal activities that increase carbon stocks in biomass pools are different to emission reduction activities in that the increase is potentially reversible due to relatively uncontrollable aspects such as wildfire or pest and disease outbreak or through management or the timing of thinning and harvesting of wood products (IPCC, 2000).

In order to provide equivalence and environmental integrity to all project activities the Kyoto Protocol Article 12, paragraph 5 established that project activities need to be real, measurable, additional and *long-term*. Rules for AFOLU activities should focus on an accounting approach that provides incentive for the creation of long-term removals of greenhouse gases without reducing the benefits arising from such activities to such a degree as to preclude their uptake.

An alteration to the nature of the issued units is proposed. This proposal is based on the underlying premise that created units need to achieve a balance of (i) environmental effectiveness and credibility in regard to ameliorating climate change, (ii) reducing or eliminating any risk to those acquiring the units, and (iii) allowing sufficient incentive to undertake activities.

To achieve this it is proposed to allow for the creation of CERs from long-term AFOLU activities under the CDM. Instead of the creation of expiring units allow reversal events to be addressed through the creation of a risk buffer similar to that used within the VCS. Consideration might be given to imposing more stringent buffers on projects with shorter required or nominated monitoring periods. The exact buffer approach needs to be carefully designed as reducing returns early in the crediting period will have a significant effect on project viability and initially unknown and potentially changing buffer quotients will increase investment uncertainty.

Providing incentive to undertake activities at all scales

One means of allowing for increased participation in reforestation projects and particularly at small-scales is to provide an accounting or crediting basis that attributes benefits based on long-term net accumulation, is relatively risk-averse (to both buyers and creators) and fair to participants of all sizes, such an approach is currently applied within the VCS known as the average carbon stock approach (Schlamadinger et al, 2004) and has been suggested for use within the GGAS as the non-declining yield approach (Baalman & O'Brien, 2006).

Options for Improving the Efficiency of the CDM through Simplified and Streamlined Procedures

Interviews and responses from participants on A/R CDM modalities

The interviews held between 23 April and 23 May highlighted a number of common issues. Of greatest significance to the uptake of A/R CDM projects was the difficulty in securing investment for projects which are perceived to be of such high risk and which are not fungible to other CDM units. This aspect came through strongly. It was believed that the arrangements for A/R credits have greatly diminished their attraction.

Another issue that was discussed by all interviewees involved in project development was the formality of communication within the process, the delays and the difficulty with getting timely feedback.

There was also a common issue that the capacity of the Designated National Authorities (DNAs) was quite variable; where some were considered to be well organized, there were often significant delays or additional requirements due to the level of capacity for A/R projects within DNAs who were trying to ensure they were following the process properly.

Many respondents were hesitant about further participation in the development of A/R CDM projects under the current process.

Review of literature and submissions on CDM

Recent submissions to the UNFCCC as part of the *Second Review of the Kyoto Protocol pursuant to its Article 9* highlight some of the institutional barriers to uptake of A/R CDM activities. Two submissions that specifically address A/R activities within the CDM highlighted similar issues.

One of these papers discussed the failure of the CDM to support A/R activities including the impact that the perception of risk has had on the determination of rules and consequently investment in A/R activities. It discussed how the perception of potential reversal of removals and measurement uncertainty led to an over-stated perception of the inherent risk attached to A/R activities and the subsequent additional requirements imposed on them (Carbon Markets Association, 2008). It also discussed how LULUCF activities have significant potential for least developed countries.

The synthesis of views compiled by the Subsidiary Body for Implementation (SBI) notes that comments were received by Parties regarding regional distribution, where Parties expressed the view that a review of the functioning of the CDM, and in particular a revision of the scope, effectiveness and functioning of A/R CDM project activities may help to achieve a more equitable regional distribution of projects (SBI, 2008).

A/R Methodologies

Approved methodologies for A/R project activities are more complex than those for other project activities. This is in part due to the complexity in A/R monitoring and reporting requirements inherent in the nature of assessing biological systems.

Whereas a non-A/R project methodology and design document might consist of 20 to 40 pages. On average A/R approved methodologies are currently 90 pages long. This depth and complexity of the methodology then carries through to the development of the project design documents, which are often also of around 100 pages in length, which then creates considerable problems when new tools are added or forms changed requiring documentation adjustments.

The development of appropriate A/R methodologies and project design documents is then strongly reliant on acquiring highly specialized consultants in the area. Considerable expertise is also required in undertaking the validation and verification of A/R projects, which reduces the amount of Designated Operational Entities (DOEs) able or prepared to validate and verify A/R projects. As no verification has occurred to date experience on monitoring and verification is not available, but given the importance of monitoring for successful issuance in non-A/R CDM projects, it is expected that the complex monitoring plans in A/R projects pose an elevated risk at verification and issuance stages.

The main difference between large and small-scale A/R approved methodologies is that under defined conditions baseline and leakage estimations can use default values or be excluded from consideration under default assumptions, leaving the focus on the monitoring of the carbon stock changes in the biomass carbon pools of the project, there is also a more straightforward additionality screen. Even small-scale methodologies are complex and lengthy, the main methodology (for grasslands and croplands) consists of some 30 pages, which is comparable to large scale methodologies in other sectors.

After the aspect of high-risk credits the most consistent message from the interviewees involved with project development was that the methodologies need to be simplified, a number suggested that both small-scale and large scale methodologies should be greatly simplified to around 20 to 40 pages of the core requirements. Some suggested that the bottom-up approach has not proven an efficient process for A/R projects and given that most reforestation projects have core similarities, in hindsight it would have been better to develop the methodologies top-down.

Recommendations for improving the efficiency of the CDM

Now that approved methodologies have been established for most A/R project types, the first consolidated methodology has been approved and small-scale requirements have been developed for each of the broad categories a review of the methodologies and methodological tools should be undertaken to develop simplified, robust methodologies for the main types of A/R projects.

The lessons learnt in the development of A/R methodologies should also be applied to the possible inclusion of other AFOLU project types with top-down creation of modularized simplified methodologies instead of requiring considerable expert skills for the development of every methodology and subsequently project design document.

In regards to verification one aspect that could be considered is the approach used by the GGAS where at each verification a projection of likely or conservatively estimated greenhouse gas removal enhancements for the subsequent five years is included, project participants then produce annual monitoring reports, on the basis of the report being consistent or less than the findings of the previous verification at least a proportion of units could be issued without necessarily requiring an on-site verification, verifi-



cations could occur at any time but no more than 5 yearly intervals and could be determined based on a project specific risk assessment undertaken by the DOE on the initial verification.

A change to the threshold for small-scale A/R projects should be made to allow equivalence to non-A/R activities. This could include a change from a basis of average annual removals to total planted project area to provide greater certainty in design and incentive for enhanced project performance.

To allow comparability with non-A/R project activity thresholds, an area limit of between 1,500 to 5,000 hectares could be considered, which represents the average annual removals of an exceptional to an average performing reforestation project (based on projects associated with approved methodologies) with annual removals of up to 60,000 tCO₂-e. A higher area limit will be of greatest benefit to the streamlining of projects especially for least developed countries for which the CDM will most likely continue and for which A/R activities can be of substantial benefit.

Assessment of the Potential for Scaling up to Programmatic Certification

The impact of the CDM PoA

At MOP 1 in Montreal in 2005 it was determined that a policy could not be considered a project under the CDM however a programme of activities could.

“Local/regional/national policy or standard cannot be considered as a CDM project activity, but that project activities under a programme of activities can be registered as a single CDM project activity provided that approved baseline and monitoring methodologies are used”

Between 2006 and the end of 2007 the requirements for participants wishing to undertake a programme of activities were developed by the Executive Board. A managing entity develops a programme of activities (PoA) design document that establishes the framework of the programme and defines a CDM programme activity (CPA) within it. The duration of a PoA can be up to 28 years for non-A/R activities or 60 years for A/R activities. The participants then develop the CPA design document which defines and describes individual activities.

Without greater participation it is difficult at this time to assess the impact that inclusion of the Programme of Activities (PoA) will have in the A/R sector. From the interviewees involved in project development, views on the PoA were reasonably split. Some considered it to have a good potential to streamline the process and make feasible certain types of projects, especially where having to specifically define land areas at the time of submission of the project design document was highly problematic and resulted in substantial reductions in the potential inclusion of participants and subsequently planting areas. Others considered that the problems in the CDM process for A/R, as described above, would still exist and that the impact would in fact be negligible.

Most of the project developers interviewed had considered undertaking development of a PoA but were reluctant to be ‘pioneers’ in the area as many were for standard A/R activities. Nearly all interviewees commented that they would follow the progress of others but were reticent to undertake a PoA themselves as while it represented a step forward in addressing the fixed boundary problems, it also represented an additional two processes of unknown cost, time and complexity.

Amendments and alternatives to the PoA

None of the interviewees involved with project development commented on weaknesses of the PoA or suggested amendments or alternatives. One challenge noted was in regards to the auditing of the PoA in potentially needing to validate and verify very large areas.

One option that could be considered is to allow the use of official development assistance in the establishment of early PoAs as case studies.

Another option worth considering is whether a less complex means can be found to address the problem of fixed boundaries without the need for a programmatic approach. A/R activities are different to most other CDM sectoral scopes in that in the majority of cases the project boundary for given project



participants is unlikely to be static, that is nearly all reforestation programmes aim to create a group of forests planted in subsequent years. It may prove more efficient to enable all A/R CDM projects to incorporate a non-fixed boundary approach, where additional planting areas using the same methodology and project design features under the control of the same project participants can be submitted for approval as a matter of course.

The GGAS follows such an approach where the entity themselves forms the validated party, their ability to undertake monitoring and meet long-term compliance obligations is assessed using one representative project or fixed land area as an example to highlight application of the monitoring methodology and project design documentation, all subsequent land additions under the control of the project developer are then submitted for approval as documented and planted and fall under the same monitoring, reporting and compliance requirements.

Assessment of the Potential to Extend the Generation of RMUs to Developing Countries

Removal units or RMUs are those units under the Kyoto Protocol relevant to the activities listed under Article 3, paragraphs 3 and 4 and include afforestation and reforestation and potentially forest management, revegetation, grazing land management and cropland management.

Most Annex I countries are yet to develop robust systems for monitoring the additional LULUCF activities included under Article 3.4. Further there are issues related to the factoring out of indirect and natural effects from the additional LULUCF activities that make them much more problematic. For these reasons the focus of this section will be on inclusion of reforestation activities and will also consider the mechanism for the reduction of emissions from deforestation.

Extension of Article 3.3 to non-Annex I Parties

One option for increasing the uptake of AFOLU activities that is being considered by various parties is to extend non-Annex I countries the ability to establish national systems for accounting emissions and removals from reforestation and deforestation to generate units from positive changes in these sub-sectors.

Article 3.3 of the Kyoto Protocol states:-

The net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990, measured as verifiable changes in carbon stocks in each commitment period, shall be used to meet the commitments under this Article of each Party included in Annex I. The greenhouse gas emissions by sources and removals by sinks associated with those activities shall be reported in a transparent and verifiable manner and reviewed in accordance with Articles 7 and 8.

The extension of the ability to account national emissions and removals arising from reforestation and deforestation could be a cost-effective means of achieving substantial mitigation. As noted above the potential mitigation from developing countries by 2030 has been estimated at 3,000 MtCO₂ for reforestation and 4,000 MtCO₂ from deforestation per year.

This would require some changes to the rules currently defining Article 3.3, namely a separation of the treatment of reforestation from deforestation and the application of separate rules, where reforestation benefits would be registered against a change in the land base since a set date on an absolute (gross-net) basis and deforestation would be accounted for on a relative (net-net) basis with the use of a negotiated reference level.

Such a mechanism could address the main issues for both deforestation and reforestation effectively, that is the determination of national reference levels and the addressing of national-level leakage for deforestation, and underpinning at the national level reforestation non-permanence. Through capacity building and effective national accounting systems this would address the most significant issues facing both activities; the uncertainties, delays and costs for participation should be greatly reduced.

Appropriate project-level monitoring, reporting and verification would still be required, however the more substantial inequities would be removed, allowing reforestation and deforestation activities to compete for investment finance with other project types on an more equal basis.

This would result in actual capacity building and technology transfer, contribute to sustainable development and allow non-Annex I countries to begin direct participation in global climate change mitigation efforts while developing the capacity to include other emission sectors in the future.

From the interviewed participants perhaps half had given consideration to such a mechanism, but all but one responded that this would be a significant improvement in increasing the uptake of activities to levels that would be effective in realizing the potential from AFOLU activities. One provided comment that as such a mechanism would not be possible to be implemented in any but the most developed non-Annex I nations, it represented a politically divisive option.

Non-Annex I case study

A basic modeling exercise was undertaken to consider the implications of extending the reforestation component of Article 3.3 to non-Annex I countries using India and China as hypothetical examples.

India is the sixth largest emitter of greenhouse gases in the world with total emissions in 2000 estimated at 1,884 MtCO₂-e per year (Baumart *et al*, 2005). From the total land area of 297.3 million hectares, in 2005 India had 67.7 million hectares of forest cover, representing 22.8% of the land area (FAO, 2006).

Of this forest land some 3.2 million hectares is classified as plantation forest. India's rate of plantation establishment has remained quite steady according to the latest FAO 2005 assessment, at around 84,000 hectares planted per year from 1990 to 2005.

If this rate of planting were to continue up to 2020, assuming reasonably optimistic growth rates and optimized silvicultural regimes, India would potentially be able to generate in the order of 15 MtCO₂ annually during the first commitment period, for the period 2013 to 2020 the average annual removals could grow to around 23 MtCO₂.

China with the highest rate of plantation expansion of 1,350,000 hectares per year might potentially be able to generate in the order of 300 MtCO₂ of annual removals in the period 2013 to 2020 from a country with the second highest total emissions in 2000, estimated at 4,938 MtCO₂-e per year (Baumart *et al*, 2005).

In context, for both industrialized and developing countries, where there is available land, reforestation activities have the potential to remove around 1% to 5% of annual country emissions up to 2050.

Lessons from the CDM to the Design of REDD Mechanisms

It is hoped that many of the barriers that have adversely affected the uptake of A/R projects can be avoided when considering the inclusion and design of a REDD mechanism.

There were probably three over-riding problems with the inclusion of LULUCF activities for the first commitment period, the absence of their consideration in the determination of country and overall targets, which lead to the fear of 'flooding the market' with LULUCF credits, the unknown and possibly over-emphasized aspects of their inherent risk, both reversibility of removals and measurement uncertainty, and the considerable ideological opposition regarding their inclusion that prevailed.

Emphasis should be placed on creating a mechanism that allows for the generation of fully fungible units from REDD activities, that is allowing a mechanism that practically addresses and maximizes their environmental credibility while minimising adverse effects to their application.

That said the aspects that have precluded A/R activities are not identical to those with the potential to affect REDD activities, A/R is a removal enhancement activity and the biggest single issue is addressing non-permanence, for REDD the activities result in emission reductions and the aspects of greatest issue affecting their credibility and environmental effectiveness are leakage, measurement uncertainty and additionality or determination of an appropriate baseline scenario.

Unlike A/R activities these difficulties are exacerbated at the project-level compared to the national-level. Determination of a baseline scenario or reference level at the national level will be difficult enough, but determination of the baseline scenario at the project level is much more problematic when the project and area of consideration boundaries are difficult to define.

Conclusions

Now that there is greater understanding and experience with the use of land-based activities for climate change mitigation afforded through the experience leading up to and during the Kyoto Protocol's first commitment period, it is time to consider adjustments to the CDM and to think about additional or alternative mechanisms.

As discussed in this report there were numerous aspects in the development of rules for A/R CDM projects that have resulted in precluding their uptake. The following changes are recommended, roughly in order of importance:-

- i. Allow for the creation of CERs from long-term AFOLU activities using a buffer to replace any reversals
- ii. Allow verifications to occur at intervals not more than 5 years apart
- iii. Hold AFOLU project activities to the same standards as non-AFOLU project activities other than when technically required (e.g. addressing non-permanence)
- iv. Do not restrict the amount of AFOLU units that can be retired by any Party, or if restrictions continue to apply ensure they do not pose considerable investment risk
- v. Move to consolidated, simplified methodologies at large and small-scale as soon as possible
- vi. Change the threshold for small-scale A/R projects to be equivalent to non-A/R activities including a change from a basis of average annual removals to project area
- vii. Allow any AFOLU activity to be potentially eligible subject to comparable requirements for project validity, monitoring and reporting
- viii. Provide funding support for capacity building of DNAs and host Party project participants
- ix. Allow as a standard feature for A/R projects the annual extension of project boundaries to include subsequent plantings by the same project participants

Arrangements for CDM need to be revised to allow for participation of least developed countries especially, for whom it is unlikely to be feasible to participate under alternative arrangements in the immediate future.

In addition new mechanisms for increasing the uptake of AFOLU activities in non-Annex I countries should also be considered for more developed countries. One option is of a sectoral approach for AFOLU inclusion by non-Annex I countries, which would allow recognition of reforestation and deforestation activities under national accounting and compliance requirements.

Concerns of windfall credits should be placated by the fact that the same capability was extended to Annex I countries. To allow comparability with Annex I and equivalence to CDM projects reforestation could be defined as forest planted on areas that were not forest on 31st December 1999, and continued ability to generate units would be dependent on subsequent negotiated agreements.



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Appendix I – Interviewees

The following people were interviewed during the course of this report. Those involved with project development were given a longer more detailed set of questions than the investor and DOE participants.

Id	Name	Organisation	Type	Interview date
1	Igino Emmer	Emmer Internationaal	Project Developer	23-April-2008
2	Joseph Pallant	Carbon Solutions	Project Developer	24-April-2008
3	John Kendall	Ecosystem Restoration Associates	Project Developer	26-April-2008
4	Richard Tipper	Energy for Sustainable Development	Project Developer	28-April-2008
5	Frank Werner	Frank Werner Environment & Development	Project Developer	01-May-2008
6	Nick O'Brien	New Forests	Project Developer	02-May-2008
7	Robert Seaton	Brinkman & Associates Restoration	Project Developer	09-May-2008
8	Neil Bird	Joanneum Research	Project Developer	09-May-2008
9	Till Neef	Ecosecurities	Project Developer	09-May-2008
10	Andre Aasrud	World Bank	Investor/Fund Manager	16-May-2008
11	Martin Schröder	TÜV-SÜD	DOE	23-May-2008

Appendix II – Interview Questions

For project developers: -

1. CDM
 - a. If you considered developing a CDM project but have not done so, what are the main reasons why you did not proceed?
 - b. If you have attempted to develop a project under the CDM what stage did you get to?
 - c. Are you planning to continue until you have registered units?
 - d. What would you consider the largest barrier you faced?
 - e. What are other contributing barriers?
 - f. If you could list four aspects of the CDM you would like to see changed what would they be?
 - g. Are you still involved in the development of CDM projects?
 - h. Would you undertake the development of another CDM project?
 - i. Are there any AFOLU project activities you would like to see added to the CDM sectoral scopes?
2. Other certification processes or GHG programmes
 - a. For A/R what other GHG programmes or forms of certification have you considered?
 - b. Other than A/R what other AFOLU project types do you develop?
 - c. For non-A/R project types what other GHG programmes or form of certification have you considered?
 - d. What other GHG programmes or form of certification have you begun accreditation with?
 - e. How would you compare them to the CDM?
 - f. If you could list four aspects of the other certification process you were involved with you would like to see changed what would they be?
 - g. Would you undertake the development of another project under the process or programmes you have been involved with?
3. Scaling up
 - a. Have you considered or are you proceeding to develop CDM projects under a programme of activities?
 - b. Are there any changes to the CDM programme of activities you would like to see?
 - c. Do you see scope in extending Article 3.3 to developing countries and to use national systems of administration and compliance to underpin ARD projects?
4. Scale of projects and project costs
 - a. In what countries have you developed projects?
 - b. What 'style' of projects do you typically develop (i.e. wood production, environmental plantings, on degraded lands etc)?

- c. What size (ha, average annual tCO₂, total tCO₂ sequestered) projects have you undertaken in the different AFOLU sub-sectors?
 - d. How many different projects have you begun, are currently developing and have completed to the point of certification or sale of units from the different project types under the different certification processes?
 - e. Of the different project types under the different certification processes you have been involved in could you broadly indicate the difference in cost to the point of first registration of units and expected ongoing annual monitoring and verification costs?
 - f. Of the costs involved do you consider any of them inefficient or unnecessary barriers to implementation?
 - g. Of the various projects you have been involved with can you comment on the demand for and prices paid between CDM and other certification processes?
 - h. What aspect of projects and certification processes do you consider has the largest impact on both demand and price?
5. Are there any other relevant comments you would like to add?
 6. Do you want any of these answers to be anonymous?

For non-project developers: -

1. CDM
 - a. What would you consider to be the largest barrier to increased activity for A/R projects?
 - b. What are other contributing barriers?
 - c. If you could list four aspects of the CDM you would like to see changed what would they be?
2. Other certification processes or GHG programmes
 - a. Are there any design elements you are aware of in other GHG programmes or forms of certification that you think should be applied to increase activities?
3. Scaling up
 - a. How well do you think the CDM programme of activities will address the problems described above?
 - b. Are there any changes to the CDM programme of activities you would like to see?
 - c. Do you see scope in extending Article 3.3 to developing countries and to use national systems of administration and compliance to underpin ARD projects?
4. Project costs and returns
 - a. Of the costs involved in A/R CDM project development do you consider any of them inefficient or unnecessary barriers to implementation?
 - b. What aspects of projects and certification processes do you consider has the largest impact on both demand and prices attached to AFOLU projects?
5. Are there any other relevant comments you would like to add?
6. Do you want any of these answers to be anonymous?

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