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Including Peatlands in post-2012 Climate Agreements: Options and Rationales

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EXECUTIVE SUMMARY

Peatlands cause an estimated 2,000 million tons of carbon dioxide emissions a year, making them a major source of greenhouse gas emissions. As a point of reference, fossil fuel combustion resulted in 8,000 million tons of CO_2 emissions in 2005. It is therefore critical to include peatlands in future climate agreements. The following report discusses pros and cons of key options for including peatlands in climate agreements now being discussed and negotiated.

From a greenhouse gas (GHG) perspective, peatlands are similar to old growth forests of Canada, the U.S. Pacific Northwest, and the tropics. Intact peatlands store approximately 1,300 tons of carbon per hectare, compared to 500 to 700 tons in these forests. Both old growth forests and peatlands remove carbon dioxide from the atmosphere when intact but release very large amounts when disturbed. The emissions can occur over short periods or over decades-to-centuries in both cases. Climate agreements should therefore encourage both:

- Restoration of disturbed peatlands to conditions in which they remove carbon dioxide from the atmosphere; and
- Reduction of further peatland disturbance

Currently the land sector is included in climate agreements through a human-activity based approach. This approach was adopted due to late decisions on whether and how to include the land use and management sector in the Kyoto Protocol and setting targets without taking the land base into account. The result was a complex, non-transparent system, which has also proved to be relatively ineffective. To alter this:

- Future negotiations should take past, current, and future land-based emissions and removals into account as part of the target and commitment setting processes.

Discussions of future agreements include consideration of approaches other than the one adopted in the Kyoto Protocol. One approach that holds promise for more effective use of the land base is a sectoral approach. A sectoral approach could:

- Ease reaching agreement on burden sharing between reductions undertaken in the industrial and fossil fuel combustion sectors versus reductions in land use and management
- Increase attention to, and use of, polices to address the land base.

A focus on policies may bring substantial benefits because policies can take the multiple objectives for land into account.

Adequate levels and reliability of incentives will be critical to significantly improve peatland management in developing countries. To date the CDM has not been successful in mobilizing funds for land management and its future effectiveness is open to question. Factors contributing to the uncertainty of the CDM's future effectiveness include: competition between CDM project types, investment options in Annex I countries, and the possibility of limitations on amount of credits that would be allowed.

- Additional incentive mechanisms should be considered such as: specific commitments by Annex I countries; incentives to change and implement

policies; and holding end-user responsible for emissions caused by production of goods.

Although peatlands could be included in the CDM through a project-based approach, current discussions on reducing emissions from deforestation and degradation (REDD) focus on national-level approaches. A national-level approach is also an attractive option for peatlands. Whichever approach is used it will be important to:

- Reduce effort required to set baselines
- Insure inclusion of all gasses, and both peatland conservation and restoration
- Avoid risks of substantial leakage
- Reduce impacts on land and food, feed and fiber prices

In Annex I countries, converting from voluntary to mandatory inclusion of cropland, grazing land, and forest management would encourage better management of peatlands in these categories. Restoration would reduce a country's emissions whereas drainage would increase emissions. Thus restoration would be encouraged and drainage would tend to be discouraged.

There is a need to improve measurement and estimation of peatland emissions. Current uncertainty levels in emission estimates may create resistance to mandatory inclusion of peatlands in Annex I countries and lead to significant discounting of credits generated through developing country projects or REDD-type mechanisms in the CDM.

- Inclusion of peatlands in a future agreement, or a signal that they will be included, will provide a powerful, effective means to reduce measurement uncertainties to levels prevalent in other activities.

I. Peatlands and other lands: similarities and differences

From a greenhouse gas (GHG) perspective, peatlands are similar to old growth forests in the Pacific Northwest of the United States and Canada and in the tropics. These forests contain some 500 to 700 tons of carbon per hectare compared to an average of 1,300 tons per hectare in peatlands. In both cases the undisturbed ecosystems provide carbon sinks. Old growth forests are believed to provide a net sink of 2.4 +/- .8 tons of carbon per ha per year (tC/ha/yr); the net carbon sink of peatlands is quite uncertain but is currently estimated to be 0.3 tC/ha/yr, including accounting for methane (CH_4) emissions. In both cases conversion to crop or grazing lands results in large emissions. In Southeast Asia, it is estimated that drainage of peatlands results in emission rates of approximately 50 tons of carbon dioxide per ha per year (t CO_2/ha/yr). IPCC emission factors for cultivated boreal organic soils are 18 t CO_2/ha/yr.

Where peatlands and old growth forests are converted to other uses, resultant emissions can be immediate or occur over decades to centuries. In both cases fires result in very large emissions over a very short time frame. When peatlands are drained, emissions continue for decades to centuries. If an old growth forest is clear-cut, emissions may also occur over decades to centuries because large amounts of the carbon may be retained in long-lived wood products such as timber in homes and furniture. Currently emissions from clear-cutting are attributed to the harvest year because the wood products pool is not included in climate agreements. However, if new agreements include the stored wood pool, the stream of emissions from harvested old growth forests will also turn up in accounts for over many decades.

II. Options for addressing peatland emissions post 2012

A. Peatland and fossil fuel accounting in Annex I countries.

The land use sector can not, ultimately, be treated exactly like other sectors because the land use sector is unique. Other sectors emit greenhouse gases (GHG) whereas the land use sector both emits GHGs and removes carbon dioxide (CO_2) from the atmosphere. For this reason, when the land use sector is included in agreements, it is critical that both emissions and increases in carbon stocks be taken into account.

In a post-2012 agreement the land use sector could be included in Annex A, which is the mechanism through which emissions from the combustion of fossil fuels are addressed in the Kyoto Protocol. Annex A lists the sectors and sources of emissions that must be included in Annex I accounting. Currently only methane and nitrous oxide emissions from agricultural soils, rice cultivation, livestock, and residue burning are included from the land sector. If cropland, forestland, and grazing land management were included in Annex A, emissions and carbon stock changes due to these land uses would be included in commitment period accounting.

If the land base is included in Annex A, a decision will be needed as to whether all lands should be included or only managed lands. It is likely that only managed lands would be included, at least initially. A restriction to managed lands at least in the near term would be advantageous for peatlands as it would be quite difficult to obtain data on emissions from remote, unmanaged peatlands in the near term.

Inclusion of the land use sector in Annex A would constitute a straightforward way to include peatlands. In Accra, four options for including land use land use change and forestry (LULUCF) post 2012 were outlined. Option 4 would bring the land sector into Annex A, replacing the current way in which cropland, grazing land, and forest management land are dealt with.

Inclusion of the land base in Annex A has several advantages.

- It avoids the need to define activities and specific types of lands. The only distinction that is likely to be required is between managed and unmanaged lands.
- All managed peatlands would automatically be included unless an exception were made, which is considered unlikely.
- It constitutes a clear continuation, albeit a significant expansion to, the sector/source approach of the current Kyoto Protocol.

At present it does not seem that there is sufficient acceptance of inclusion of the land sector in Annex A to expect its near-term adoption. Wetlands International should monitor political acceptance of this option and, to the extent practical, undertake research to elucidate its pros and cons.

B. Sectoral Approaches

A wide variety of approaches to future climate change agreements are under discussion both within UNFCCC fora and in other venues. Among the options under consideration, sectoral approaches may have particular advantages for the land use sector. Sectoral approaches are under discussion in both the Ad Hoc Working Group for Long-term Cooperation Action (AWG-LCA) and in the Ad Hoc Working Group for further Commitments under the Kyoto Protocol (AWG-KP). A number of types of sectoral approach being discussed. Four of these are briefly described below together with the reasons they are being proposed and hurdles to adoption.

REDD is a national-level sectoral approach that operates within non-Annex I nations. A national-level sectoral approach is being proposed for REDD due to its ability to address intra-national leakage. Although peatlands could be included in the CDM through a project-based approach, following the REDD paradigm has a number of advantages as outlined in the discussion of REDD below.

In the case of both Annex-I and non-Annex I countries, utilization of national-level sectoral approaches would facilitate use of Policies and Measures (P&M) approaches[1]. P&M approaches enable mainstreaming of climate objectives with national priorities. Mainstreaming refers to the alignment of climate initiatives with

[1] Examples of P&M approaches are national legislation to reduce or eliminate subsidies that encourage conversion of land to annual crop production and legislation that clarifies lands rights.

goals such as improved economic security, health, income, and education. Initiatives that accomplish both climate and other objectives are more likely to result in robust responses than actions whose sole purpose is to address climate change. P&M approaches have advantages not only in the land sector but in energy and industrial sectors, particularly in the context of developing countries. As a consequence P&M approaches are worth serious consideration.

1. **International sectoral.** Actors in a given sector such as land use, agree to standards. For example, auto manufacturers world-wide might agree on per kilometer CO_2 emission rates. In the case of land use and management, agreements could be based on use of best practices in forestry or agriculture.

Rationale: Reduces competitiveness concerns in internationally traded goods

Hurdle: To date there has been insufficient discussion or analysis of the benefits and drawbacks of an international sectoral approach for LULUCF.

2. Separate targets for LULUCF. Annex I countries set separate targets for Agriculture, Forestry and Other Land Uses (AFOLU)[2] and non-AFOLU sectors. Rules would determine the degree, if any, to which commitments in one sector can be met using achievements from other sectors.

Rationale: Clarifies emission-reduction burden sharing between LULUCF and other sectors. Wetlands International should carefully weigh the pros and cons of separate LULUCF targets. Burden sharing between LULUCF and other sectors will continue to be of critical importance in reaching agreements. By assisting to clarify burden sharing separate targets, foster agreement on inclusion of LULUCF in agreements.

Hurdles:
a) <u>If LULUCF achievements can not be used meet non-LULUCF targets</u>.
An alternate incentive mechanism for improved land management in developing countries will be needed. One option would be to dedicate a specified percent of revenues from auctions of allowances to improved land management in non-Annex I countries.
b) <u>If (some) LULUCF achievements can be used to meet targets in other sectors</u>.
Rules or eligibility criteria need to be established. One option is to allow credits for achievements beyond a specified benchmark or baseline to be used. Reaching agreement on such rules is likely to be challenging.

3. National-level. National-level sectoral approaches include both P&M and tons-based incentives. However, assessment of achievements is made at the national rather than the project level, in contrast to the predominant instrument under the CDM.

Rationales:

- A national-level approach is the normal approach countries take to inducing desired changes and facilitates design of policies tailored to sector realities.

[2] AFOLU has been introduced to replace the term LULUCF. However, it has not been widely adopted and LULUCF therefore generally used in this paper.

- P&M-based sectoral approaches to LULUCF facilitate harmonization of the multiple objectives of the land base.
- P&M approaches could deliver incentives upfront (i.e., prior to achievement of increased stocks or reduced emissions) and incentives are less likely to be distributed on a dollar per ton basis. Dollar-per-ton-of-carbon rewards may be unsuitable to the land sector because they fail to take into account the multiple functions of the land base.

Hurdles:

- Adoption of P&M approaches constitute a relatively significant break from the current tons-based accounting of the Kyoto Protocol.
- Altering existing and designing effective land use and management policies is not easy.
- There is, ultimately, no way to distinguish between (a) achievements (or lack of them) due to a set of policies and (b) changes that occur for other reasons. This same problem emerges in the current tons-based carbon market, where it is addressed through agreement on "additionality" and baselines.

4. Sector-selective: Developing countries select sectors in which to take voluntary, no-lose (and perhaps in time mandatory) commitments. This might allow a country to take a commitment only in peatlands or only in its forests. No lose commitments provide rewards for achievements above a target but no penalty accrues if the target is not met.

Rationale: Enables countries to focus on sectors of most concern, most easily addressed, or where climate and other goals are highly aligned. While developing countries are not likely to accept mandatory commitments in the near future, mandatory commitments in specified sectors might be more palatable than overall commitments, and there is likely to be pressure on at least some developing countries to move in the direction of mandatory commitments.

Hurdle: There is likely to be resistance to even no-lose targets in specified sectors on the grounds that they set the stage for mandatory targets.

C. REDD and peatlands

Discussions are underway to consider including reduced emissions from deforestation (RED) and possibly also reduced emissions from forest degradation (REDD) as eligible activities in the CDM. REDD could be expanded to include conservation and restoration of peatlands, or a similar, peatlands-specific instrument could be established (i.e., peatland restoration and conservation).

Concerns about leakage from avoided deforestation projects, as well as the potential magnitude of reductions that might become available for use by Annex I Parties, contributed to the decision not to include avoided deforestation as eligible in the CDM. Both of these considerations would also be a factor if peatlands were to be included as an option in the CDM. To address concerns about magnitude of credits that might come to the market, limits may be placed on the number of REDD (or peatland) tons that could be used by Annex-I countries (see Financing Options).

Current proposals for a RED or REDD mechanism focus on using a nation-level approach in order to address (take care of) intra-national leakage. It is possible that intra-national leakage is less of a problem in the of case peatlands, and that a project-level approach might be more acceptable to stakeholders in the case of peatlands than it has been in the case of avoided deforestation. Adoption of a project-based approach to peatlands in the CDM, however, would require convincing stakeholders that leakage was significantly less likely to occur in the case of peatland preservation and restoration than is the case for protection of forests.

Project-level approach to peatlands

Benefits:

- Measurement and monitoring burden would be lower
- In line with current CDM approach to a/reforestation
- Allows time for experience with peatland restoration and attendant emission reductions and carbon stock increases to accrue

Hurdles:

- Issues of leakage will be raised and it would have to be demonstrated that this is not an issue in the case of peatlands
- Adoption of a different approach for peatlands than forestlands might complicate agreements.

Although a project-based approach to peatland is an option, inclusion of peatlands in a expanded national-level RED mechanism is also a promising option. Several factors have contributed to reconsideration of including avoided deforestation in the CDM. First, the move to national-level approach resolves the problem of intra-country leakage. Second, the primary source of LULUCF emissions worldwide has been deforestation in non-Annex I countries, and the need to address these significant emissions is recognized. The current very large emissions from peatlands should, similarly, serve to foster their inclusion.

A third factor has been the rise in understanding among non-Annex I countries of their situations and the Kyoto Protocol. Increased understanding led a number of developing countries to exert pressure to find a mechanism to reward RED. Given the large number of non-Annex I countries with forests and the relatively few number with peatlands, it may be more difficult to build a similar non-Annex I country push focused on peatlands. As a consequence it may be more practical to try to expand RED so that it is a general instrument that rewards increases in carbon stocks and reductions in emissions from all land uses.

As discussions on RED proceeded, developing countries which have not, to date, experienced significant deforestation pointed out the need to reward conservation of forests not currently experiencing deforestation or degradation. This can be considered to be a RED approach that incorporates “forward looking” baselines. Countries would use expected deforestation – deforestation that would occur under business as usual (BAU) conditions – as their baseline. Alternatively, some countries would use past emission rates while others used BAU rates. Such an approach could be used to reward both reductions of emissions from disturbed peatlands and maintenance in an undisturbed condition of peatlands likely to convert in the future. This concept -- rewards for both reduced emissions and conservation -- could be used

to cover all opportunities to conserve and build carbon stocks on, and reduce emissions from, land use, i.e, it could be a comprehensive land sector mechanism.

National-level approach with forward-looking baseline option:
Benefits:

- Brings in more countries as interested stakeholders,
- Sets a precedent for rewarding both conservation and emission reductions,
- Reduces move of deforestation (and peatland conversion if peatlands included) to countries not currently affected,
- If peatlands are included, it would encourage both restoration and maintenance of peatlands in developing countries.

Hurdles to inclusion of forward-looking baselines:

- Most attention to date has focused on avoided deforestation due to its contribution to atmospheric CO_2. Convincing enough stakeholders of the need for a more comprehensive mechanism will take time and effort.
- Countries with high deforestation rates may want to capture as much of available incentives as possible and therefore resist widening the potential recipient pool.

Hurdles to inclusion of peatlands

- Inclusion of peatlands unlikely to bring in significantly more stakeholders,
- Issues of measurement of peatland emission reductions and carbon stock increases will be raised, particularly in the context of a market mechanism to provide incentives.

General drawbacks:

- This approach will raise the scarcity (and thus value) of land for food, feed and timber production. Unless per hectare productivity rises in proportion to the forestland protected, land will convert somewhere to meet production needs or prices of food, feed and timber products may rise to unacceptable levels.
- The extent to which improved peatland management in developing countries would result will depend on the available incentives (see Financing Options)

National-level Comprehensive (covers all managed lands) mechanism:
Benefits:

- Significantly widens the countries which would benefit and thus interested parties,
- Rewards increased carbon in agricultural soils, thus assisting in increasing productivity.

Hurdles:

- Convincing many stakeholders of the need for a comprehensive mechanism will take time and effort.
- Issues of ability or practicality of reliably measuring stock increases in soils will be raised.

There has been a lack of clarity in RED and REDD discussions as to whether the intent is for these approaches to be activity or land-based. Simplicity might be significantly advanced by a comprehensive land-based mechanism. Under such an approach, all carbon stock changes as well as emissions from managed (or all) lands would be estimated at the national level.

National-level, Comprehensive, Land-based mechanism:
Benefits:
- Avoids need to define what constitutes various activities,
- Avoids need for multiple baselines by land type and activity,
- Avoids continual addition of new land categories to an agreement (e.g., wetlands that are not peatlands, agricultural soils, degrading grasslands, etc.).

Hurdles:
- Convincing many stakeholders of the need for a comprehensive mechanism will take time and effort.
- Would tend to treat all options on a level playing field, rendering it more difficult to prioritize activities if that is desired.
- Countries may consider it easier to start with a limited number of land categories and slowly expand as they gain experience and understanding.

D. Articles 3.4 and 3.4

Carbon stock increases on the land base, as well as most emission reductions do to land use, have been included in the Kyoto Protocol via a human-induced activities approach. This approach was adopted to allow countries to take advantage of opportunities to reduce emissions from LULUCF and build carbon stocks, without unduly compromising commitments that had been set based on "gross" emissions (See Gross emissions). As discussions and research proceeded, and experience was gained, difficulties of the human-induced, activity-based approach became clear.

In Annex I countries, CO_2 emissions and removals due to land use and management are included in the Kyoto Protocol through Articles 3.3 and 3.4. Article 3.3 specifies that emissions due to human-induced afforestation, reforestation, and deforestation (ARD) must be accounted for. Under this provision, Annex I countries include the GHG emissions or carbon stock increases on peatlands that have experienced ARD since 1990. Article 3.4 allows Parties to include, on a voluntary basis, net emission reductions or stock increases due to management of crop and grazing lands and forest management. Any Party that elected to include one or more of these activities would also include emissions from peatlands in these uses.

Human-induced Activity approach
Advantage:
- Met the need to achieve burden sharing between fossil fuel and industrial emission reductions on the one hand and efforts in LULUCF where:
  - Land-based emissions and sinks were not considered during, or included in, target-setting,
  - Targets were set based on historic emissions rather than also forecasting future trends.

Both of these circumstances should be avoided in future negotiations.

Drawbacks:
- Lacks simplicity and transparency,
- Requires defining what:
  - constitutes human-induced ARD

    - counts as a forest,
    - counts as a managed forests and grasslands,
- Requires complex monitoring and reporting, e.g., identifying and maintaining a registry of lands that have undergone deforestation,
- Has failed to result in realizing the potential of the land base to contribute to reaching climate goals.

A mandatory article 3.4

Use of Article 3.4 is voluntary, with the consequence that the only peatland emissions that currently must be included in accounting are emissions due to deforestation in Annex I countries. In Accra, four options for including LULUCF in a post-2012 Kyoto agreement were outlined in The Summary of the Chair. Under the first three options activities under Article 3.4 could become mandatory or remain voluntary. Making activities under Article 3.4 mandatory would be one straightforward way to address encourage both restoration and conservation of peatlands in Annex 1 countries.

Benefits:

- Emissions from peatland soils or increases in their carbon stocks would be included insofar as such soils are in managed grassland, agricultural, or forest uses.
- Provides incentive for better management of peatlands.

Hurdles:

- A number of Parties are likely to resist mandatory inclusion of these activities,
- Restoration of abandoned peatlands would require adding a new activity,
- Need to define what constitutes abandoned, degraded, restored, and converted peatlands, etc.

Land-Based approach in Annex I countries

Option 4 outlined in the Summary of the Chair from Accra eliminates Articles 3.3 and 3.4. The land base becomes a Sector/source for Annex I countries and the activity-based approach is abandoned.

Benefits:

- Simpler and more transparent
- Continues the sector/source approach of the current Protocol,
- Avoids the need to define specific types of lands except possibly to distinguish between managed and unmanaged land,
- Activities do not need to be defined,
- More likely to result in significant improvements in land management,
- All managed (and possibly all) peatlands would be included unless an exception were made which is considered unlikely under this approach.

Hurdles:

- It is doubtful that most stakeholders are ready to adopt this approach.

Wetlands International should monitor political acceptance of this option and, to the extent practical, undertake research to further elucidate its pros and cons.

E. Mandatory inclusion: peatland emissions and stock increases

As discussed above, peatland emissions and stock increases could become mandatory in Annex I country accounting either through making Article 3.4 mandatory or through inclusion of the land sector in Annex A. Inclusion in Annex A would encourage both restoration of peatlands and preservation of intact peatlands. Restoration would reduce emissions whereas drainage would increase emissions, and thus restoration would be encouraged and drainage would tend to be discouraged. The benefits and hurdles to making peatlands mandatory through either Article 3.4 or inclusion in Annex A are provided in Section D. There is little prospect at present of requiring mandatory accounting of emissions in non-Annex I countries.

Within the UNFCCC discussions there seems to be a general consensus to continue with the sector and source category approach of the current Protocol. There is also recognition that additions to Annex A may be in order. In particular, the omission of bunker fuel emissions has led to recognition that the sources and sectors included in Annex A needs to be revisited. Inclusion of the land sector in Annex A provides a straightforward, logical approach to the land base in general and one way to achieve inclusion of emissions from peatlands in particular.

F. Add peatlands to the CDM

Peatlands could be added to the CDM either through a project-based approach or a national-sectoral approach. The project-based approach has several limitations, among them the need to establish credible baselines for each project, a time, cost, and personnel-intensive process.

Under the current CDM the only land management activities eligible for credits are afforestation and reforestation. For these activities, credits are awarded for increases in carbon stocks and either temporary or long term certified emission reductions (tCERs and lCERs) may be issued[3]. In both cases the credits are awarded for increased carbon stocks compared to a baseline. Awarding credits in this manner is only appropriate for situations in which carbon stocks increase at relatively high rates as otherwise, due to the time value of money, it is too difficult to cover the initial investment costs plus interest. Awarding credits for increases in carbon stocks is not likely to prove useful in the case of peatlands due to the low rates of carbon increase. However, if rewards are provided for increases in peatland carbon stocks, they would almost certainly follow the model for afforestation and reforestation as they too would be liable to loss.

An incentive system designed to improve peatland management in developing countries will almost certainly need to follow approaches being discussed for reducing emissions from deforestation and rewarding forest conservation. Current discussions focus on providing incentives for emission rates lower than historical rates and, hopefully, also for emissions lower than expected (i.e., forest and peatland conservation). At present there is no mechanism in the CDM to reward forest conservation or reduced emissions from forests.

[3] tCERs expire at the end of the commitment period following the one in which they are issued and lCERs expire at the end of the project's life, which can be up to 60 years.

RED discussions include a search for acceptable mechanisms to reward emission reductions. Challenges include finding a mechanism that can accommodate reversals in emission reductions and the fact that historical rates may provide little guidance in to future rates. While reaching agreement on a mechanism to reward RED may be difficult, there is considerable momentum behind finding a way to do so, and any mechanism that would be acceptable for RED is very likely to work for peatlands. One option for both RED and peatlands is to move to a P&M approach

Assuming the approach taken relies on baselines, rewards based on forward-looking baselines would be useful in prevention of drainage of currently intact as well as restoration of drained peatlands. Use of forward-looking baselines is also important for peatlands for the same reasons as it is important in the case of forestland: if only emission reductions are rewarded, peatland drainage is more likely to move to other locations. For the same reason (i.e., prevention of movement of drainage from one location to another) a national-level approach to rewarding peatland emission reductions is preferable to a project-level approach.

G. Gross-net versus net-net Accounting

Parties elected to adopt a "Gross-net accounting" approach in the Kyoto Protocol. Under this approach, emissions from the sectors and sources listed in Annex A to the Protocol constitute a nation's "gross" emissions. Targets for 2008-2012 were established based on these emissions as of 1990 for most countries. However, when Annex I nations calculate their emissions during the commitment period (i.e., to establish whether commitments have been met) net emissions to, and removals from, the atmosphere due to ARD must be included. Nations have the option of also including emission reductions or stock increases due to management of crop and grasslands, revegetation, and, to a limited extent (i.e., capped amount) from forest management. This approach -- setting a target based on emissions in a past year without including land-based emissions and removals, while partially including such emissions in commitment period accounting is known as Gross-net Accounting.

Gross-net accounting was adopted due to very late decisions as to whether and how to include the land use sector. By the time decisions were reached, targets had already been set based on gross emissions. To preserve the burden sharing represented by these targets, given the extremely different positions countries are in regarding opportunities to reduce emissions from or increase stocks on the land base, there was strong reason to limit the extent to which countries would be allowed to do so. Another factor contributing to the decision to limit the use of the land base was that many nations had little information about the trajectories of emission and removals from their land sector. This meant that most nations were uncertain about the extent to which their land base would contribute to, or impede, reaching targets. The way use of the land base was limited was to include only human-induced ARD as mandatory, with the option of including a limited amount of forest management plus revegetation, and agricultural and grazing lands management, these latter on a comparative basis[4].

Burden sharing includes: (a) acceptable effort among Annex I countries; (b) acceptable balance between achievements in LULUCF and energy-use and other

[4] Net decreases in emissions, or increases in stocks, compared to the emissions or stock increases in a base year could be used.

sectors in Annex I countries; and (c) an appropriate balance in effort between developed and developing countries. The activity-based approach and restrictions on the use of forest management served to preserve burden sharing among Annex I nations as well as an appropriate balance between efforts in LULUCF versus other sectors in Annex I countries. The restriction to afforestation and refforestation projects in the CDM was, similarly, partly to insure an appropriate balance between effort in Annex I versus developing countries and partly to maintain the energy-versus LULUCF burden.

Gross-net Accounting

Benefits:

- Enabled partial use of the land base under the circumstances that obtained during the Kyoto Protocol negotiations.

Drawbacks:

- Led to an extremely complex system,
- Led to the need to limit the use of land-based achievements.

Although most Parties use Gross-net accounting, the Protocol, Article 3.7, allows use of net-net accounting for countries with net emissions from their land base in 1990. Under net-net accounting, emissions or stock in the commitment period are compared to what they were during a base year or period. The difference (whether positive or negative) are then included in calculating whether commitments have been met. Currently only Australia uses this approach, however, a net-net approach could be used for all Parties. For net-net accounting to function under conditions of large variations between Parties -- emissions and stocks can be large or small, growing or diminishing -- land-based profiles need to be understood not only during the past time, but also their expected profile during the commitment period. With his information in hand, the land base' contribution can be incorporated in targets.

It is recognized that forecasts of emissions and carbon stocks are liable to large uncertainties, but the same is true in the case of emissions from combustion of fossil fuel and industrial sources. These uncertainties in regard to the future present problems for target setting for both LULUCF and other sectors for a fundamental reason: the cost, difficulty, and feasibility of achieving a target depend not on past emissions but on emission trajectories. However, the complications and uncertainties of LULUCF projections constitute one ground for setting separate targets for LULUCF, as well as for considering use of a different type of commitment for the land sector.

Net-net accounting

Benefits:

- All emissions and removals due to the land base -- at least on managed lands -- are likely to be included, thus likely to:
    - Move away from the activity-based approach,
    - Encourage more significant use of the land base and more widespread management improvement.
- Land sector addressed more analogously to other sectors (i.e., entire sector's emissions included).

Hurdles:

- Need to have a reasonable reliable projections,
- Difficulties in reaching agreement on BAU projections.

H. Baselines and Additionality

Reaching agreement on appropriate baselines, or how to set them, is one of the most challenging issues for stakeholders concerned with land use and management. Baselines are used to measure "additionality". Ultimately selection of baselines (and consequently what qualifies as "additional") is determined by political agreement, although scientific evidence plays a role in reaching agreement.

Additionality is a requirement imposed on emission reductions or carbon stock increases achieved by entities not covered by a cap. Additionality means that achievements are in addition to what would happen in the normal course of business (BAU, and baselines are intended to portray these conditions. "Additionality" is important because if achievements by uncapped entities are not beyond BAU, and credits based on these achievements are used by capped entities to meet commitments, the commitments will be compromised. That is, the commitment will achieve less than intended.

Since emissions in developing countries are not capped, all emission reductions or stock increases that can receive credit under the CDM must be "additional". Currently all baselines used in the CDM are "forward looking" baselines. That is, achievements are measured against an estimate of what emissions or carbon stocks would be in the future under BAU conditions. BAU baselines are, however, subject to considerable uncertainty, and there is no way to determine, even at some future point of time, whether or not a BAU baseline was "correct". As there is no scientific way to determine the BAU pathway, there is no scientific way to establish additionality.

Some stakeholders have advocated use of "backward looking" baselines for REDD. "Backward looking" baselines is used here to indicate that achievements would be measured against a baseline established using historical trends. Recent REDD discussions have focused attention on problems that arise if targets are based on historical trends. A promising approach to baselines has been proposed by The Terrestrial Carbon Group. This approach assumes that the land use trajectory in all developing countries is to convert all ecosystems from their natural state to lands used by man over some time period, except for lands defined as unsuited to conversion (e.g., very steep mountains or otherwise inaccessible areas) or protected by law or similar instruments.

This approach, while perhaps seeming "alarmist", has a number of attractive features. Although the method would utilize a baseline that diverges from what is currently happening, or even what is expected to happen in the foreseeable future in some countries, it would constitute a simple, transparent approach and:

- Provides a level playing field between developing countries which have already experienced land conversion and those that have not,
- Uses one mechanism to reward both reductions in emissions and conservation of stocks,

- Encompasses a straightforward way to address permanence,[5]
- Provides equity between developing countries and developed countries,[6]
- Avoids the needs to revise baselines every few years and use different baselines for different country situations, land types, or activities.

A caution in regard to this approach is that as yet there has not been sufficient consideration by diverse stakeholders for the pros and cons to be well understood.

I. Sources and Gasses to be covered

If peatlands are included in a climate agreement, it will probably be advisable for all gases (methane, nitrous oxide and carbon dioxide) to be covered in order to preserve environmental integrity. This will present a challenge to inclusion of peatlands insofar as the current ability to measure methane emissions is limited. However, methane emissions from rice cultivation are currently included in Annex A, and these emissions are also subject to large uncertainties. Moreover, inclusion will speed up the process of achieving better methane emission estimates.

J. Financing options

Currently the primary financing mechanism for land management in developing countries is the CDM. There is widespread support to continue use of emission trading in general and the CDM in particular. However, to date the CDM has failed to bring a number of desirable project types to the market -- with the land-based projects has been particularly noticeable -- and also failed to achieve satisfactory geographic distribution. Since peatlands would compete with other project options both within and outside of the CDM, Wetlands International should consider pursuing additional incentive mechanisms to ensure significant improvement in peatland management.

At carbon prices which would drive significant land management improvement, other options, such as carbon capture and sequestration (CCS), which will likely be of considerable interest to large emitters, may be cost-competitive. The EU Commission document "Addressing the challenges of deforestation and forest degradation to tackle climate change and biodiversity" mentions € 40 per tonne of CO_2 as a price resulting in significant potential for afforestation and reduced deforestation.[7] The European Commission's CO_2 Capture and Storage Projects booklet points out that CCS would cost between € 20 and € 50 per tonne.

Although CCS is not currently an eligible project category in the CDM, there is pressure to include it. While there active resistance, many of the arguments presented against inclusion of CCS are identical to arguments that were, at the time of the Kyoto Protocol negotiations, used against avoided deforestation. Just as in the case of avoided deforestation, as CCS is better understood, resistance may change to support. Furthermore, even if CCS is not included in the CDM, large point source emitters,

[5] Once credits are sold, the land is moved into a "protected lands" category

[6] Most developed countries have already converted virtually all of their natural ecosystems into human-used ones, with exceptions similar to those proposed in the Terrestrial Carbon Group proposal

[7] EC, 2008, Addressing the challenges of deforestation and forest degradation to tackle climate change and biodiversity loss, Communication from the Commission, COM(2008) 645/3

particularly electricity generators in Annex I countries, will be more inclined, at similar prices, to install CCS technologies in their own operations than buy credits from abroad.

In this context, a word of caution regarding current estimates of the costs of REDD credits may be warranted. Current models that provide cost/supply curves for avoided deforestation have access to only extremely limited, if any, "on the ground" data on opportunity costs for land in most developing countries. Estimates of future land costs – and therefore of the costs of REDD – in these countries must be considered speculative. In particular, there is no way to determine the future impact on land prices of the combination of:

- Escalating food demands as developing country incomes rise,
- Production of biomass for biofuels. Nations are pursuing biofuels to enhance energy security and rural income as well as for climate mitigation. Production of biomass for biofuels, at least until algae-based fuels become an option, will put pressure on land values,
- Adoption of REDD in whatever form,
- Growing demand for land for other uses, e.g., urban and related development.

There is even less information on the costs of preservation of intact and rewetting drained peatlands. In addition, uncertainties in measurements of emissions and stock increases due to rewetting and early stages of drainage will result in discounting of the value of peatland credits. For these reasons, the competitiveness of peatland management in the CDM market is highly uncertain.

A number of stakeholders have pointed out that unless targets are sufficiently stringent, there will not be enough demand for credits from the CDM in general, and land-based credits in particular, to achieve significant improvements in land management in developing countries. Stringent targets in annex I countries may not, however, be feasible for political reasons. Nevertheless, regardless of the stringency of targets, key Annex I countries may put in place mechanisms to support CCS or other "at home" reductions. The United States is moving along this path. Bills in Congress that propose a domestic cap include considerable support for CCS. With considerable domestic incentives, large, stationary sources of CO_2 will tend to spend funds to install CCS, particularly because following early incentives, mandatory emission rates could be expected.

All these considerations suggest that Wetlands International would be well advised not to rely exclusively on the CDM for improved management of peatlands. In considering support mechanisms, key concerns are predictability, duration, and adequacy of support. The options below should be evaluated on these criteria.

- Dedicated funds through commitments by individual Annex I countries,
- Dedication of a percent of auctioned allowances under a climate agreement in which allocations are auctioned rather than distributed free,
- Payments for alterations in current, or adoption of new, P&Ms,
- Moving to a consumer responsibility for emissions of imported goods,
- Agreements on Technology transfer and capacity building.

CDM as Financing Mechanism

Pros:

- Already exists,
- Considerable support for its continuation and expansion.

Cons:

- Uncertainty that it will deliver sufficient, reliable funding,
- Limits on use of credits likely in order to address burden-sharing concerns,
- The market will discount credits due to measurement uncertainties.

Other Instruments as Financing Mechanisms

Pros:

- Potential to provide more certainty and stability than the CDM market,
- Potential to provide upfront, rather than post-project success, financing,
- A consumer responsibility approach could align the peatland community with the considerably stronger biofuel community.

Cons:

- Provision of sufficient funds or incentives will be a departure from, or considerable expansion of, the current Protocol approach,
- Implementation of a credible, fair consumer responsibility approach is challenging.

III. Key LULUCF options and sound peatland management

In accordance with the UNFCCC, the Kyoto Protocol differentiates between responsibilities of Annex I (developed) and non-Annex I (developing) countries. Because future agreements are likely to maintain this differentiation, the primary options for inclusion of LULUCF are different for Annex I countries and non-Annex I countries. Annex I countries will most likely continue to undertake emission commitments whereas non-Annex I countries will participate on a voluntary basis. Consequently, incentives play a much larger role in non-Annex I country options.

A. Annex I countries

The primary options for encouraging better peatland management through Annex agreements:

1. Tons-based:
    a. Activity-based approach,
    b. Land-based approach,
    c. Voluntary inclusion of specified activities,
    d. Mandatory inclusion specified
    e. One integrated commitment.
2. Separate agreement for the land sector:
    a. P&Ms approach,
    b. Land-based approach.

As suggested by the pros and cons in preceding sections, a P&M approach is most likely to result in sound land management. Sound land management requires integrating the multiple objectives for land use, whereas exclusive focus on carbon

content fails to do this. A P&M approach is a significant departure from the current climate agreement structure and would also entail moving to a separate approach for the land sector.

A land-based approach is likely to result in a more transparent, simpler accounting and reporting system than the current activity-based approach. It would also foster, fuller inclusion of the land sector in commitments. Under a land-based approach the only distinction that might be required is between managed and unmanaged lands. Carbon stock changes across a nation would be reported for all managed (or all) lands. This avoids the need to determine to identify lands which have undergone human-induced deforestation or reforestation, and automatically takes degradation into account. Its primary drawback is that it represents a significant departure from the current approach and it may be some time before a land-based approach becomes politically viable.

Mandatory inclusion of management activities is relatively likely to result in better management across peatlands. Its current political viability is difficult to assess. However, to address abandoned peatlands an additional activity category would be required. Inclusion of peatlands in the current voluntary approach may or may not drive significant improvement in peatland management. However, as long as there is a single integrated, tons-based target, the extent to which sound peatland management will be fostered depends on the stringency of targets and the costs and ease of implementation of alternative options to meet commitments.

A separate target for LULUCF can improve the probability that management of lands, including peatlands, will improve. It could also alleviate concerns about burden sharing between reductions in fossil fuel combustion and industrial sectors versus efforts in LULUCF. Setting a separate target is a departure from the current approach but given the prominence of discussions or sectoral approaches in general it might be politically viable. Adoption of a sectoral approach would facilitate a move to a P&M or land-based approach.

B. Non-Annex I countries

As stated previously, there is widespread support to continue to use, and expand, the market-based mechanism, including the CDM. However, recognition of the limitations of the current CDM has led to consideration of additions or changes. In the land sector, consideration is being given to adding at least avoided deforestation to eligible project types. More broadly, there are discussions of moving to a "sectoral" or programmatic CDM sectors as a means to improve the carbon profile across an entire sector or sub-sector rather than just in individual projects.

The primary alternatives through which sound management of peatlands could be encouraged in developing countries are:

1. Continue with project-based CDM,
2. Use national-level approach to land sector,
    a. Tons-based,
    b. P&M based,
3. Adopt additional incentive mechanisms.

It is possible that peatland conservation and restoration could be included in a project-based approach but this would require satisfying stakeholders that intra-national leakage was not a major issue in the case of peatlands. It will also require case-specific baselines. To date the project-based approach has not resulted in widespread improvement in land management, and it can be doubted it would do so in the future.

A national-level, tons-based mechanism devoted to peatlands might, depending on available incentives, improve peatland management. However, as discussed previously, this runs the risk of intensifying other problems, including the management of remaining agricultural lands. Inclusion of peatlands in a comprehensive, tons-based mechanism that covers all land-sector options is more likely to result in sound management of the land base in its entirety, and use of P&M approaches may be even more useful. Since voluntary, no-lose targets will almost certainly be adopted, if agricultural production is threatened by achievement of a peatland or REDD tons-based target, one option will be to fail to meet the target.

Reliance on the CDM market mechanism may result in only limited improvement in sound peatland management due to competition with other investment options. Other incentive mechanisms might be more reliable but the extent to which they will result in sound management will depend on the level of the incentives and on how they are structured. Incentives directly addressing drivers of peatland degradation, including support for appropriate policy or practices changes, might be prove as, or more effective, than the carbon market.

IV. Peatlands in the IPCC Guidelines

IPCC methods for peatlands are structured in two main categories. The first category addresses peatlands that are cleared and drained for peat production. The second addresses peatlands converted to other land-uses, e.g. forest, cropland, grassland.

In the first category, emissions from peat extracted and used off-site (peat extracted and used) are distinguished from on-site emissions (drained, exposed peat). Emissions from off-site use of peat for energy purposes are reported under the Energy Sector while the off-site emissions from non-energy use, as horticultural-use, are reported in the agriculture forestry and other land uses (AFOLU) sector. On-site emissions include emissions from biomass clearing and from the mineralization of the soil organic matter due to drainage.

In the second category, emissions are reported in the sections pertaining to the land-use category to which the peatland area is converted. Emissions and removals include changes in biomass stock and emissions from the drained soil.

In both categories, default emissions factors for drained peat soils are provided which represent CO_2 and N_2O emissions released per year from different types of peatlands, e.g. tropical, boreal. The default emission factors are based on a very limited number of studies developed in the boreal region. The uncertainty is very high, and sound data for the tropical environment are missing. In addition, data on emissions released during the drainage process are not available. A period of 2-5 years is needed to drain a peat soil before starting peat extraction. During that period the GHG emissions are

significantly different from emissions of lands already undergoing peat extraction or exhausted and abandoned. Emission factors for rewetting of previously drained wetlands or wetland restoration are also lacking because restoration is a recent practice, developed mainly after 1990. Another important gap is the lack of methods to account for CH_4 emissions in undisturbed peatlands due to their high uncertainty and variability.

The knowledge gaps should be addressed as expeditiously as possible. High uncertainties and lack of relevant estimation methods will support resistance to inclusion of peatlands in market mechanisms and in Annex-I country commitments. Signals that peatlands will be included in national accounting are likely to be the most effective.

An attempt to consider peatland soil emissions as fossil fuel emissions is likely to be encounter severe difficulties. There is currently no fossil fuel sector and there has been no discussion to date of moving from the current sector/source approach. Fossil fuel emissions are currently included in the energy sector under fuel combustion and in the industrial sector under industry-specific production processes. Emissions from peat soils, except in the case of fires, would not qualify as combustion in the ordinary use of that term.

A more relevant question might be whether use of peat for heat and power should count as use of a renewable or non-renewable fuel. Although this is a legitimate question, drawing a line between what biomass is renewable and what is not renewable will be challenging. Some trees have life spans of many hundreds of years so use of wood from long-lived species for heat and power might also be considered "non-renewable" in time frames relevant to current climate agreements. A simpler path to inclusion of peatland carbon losses of all types in Annex I countries is likely to be mandatory inclusion of managed lands, whether under an activity or land-based approach.

V. Particular features of an agreement

Climate agreements need to be sufficiently general to apply across multiple situations and it is probably inadvisable, in general, to seek adoption of particular features that would make an agreement specifically suitable for peatlands. However, due to the early stage of understanding of emissions and removals, a staged approach to peatland inclusion is warranted.

The current early stage in understanding peatland emissions renders a focus on P&Ms more appropriate than tons-based approaches, an approach that has advantages across all lands. Insofar as tons-based approaches continue to be utilized, incorporation of peatlands into agreements when a specified reliability of emission estimates has been achieved might be an option. If this option is pursued, peatland emission estimates should not be held to higher levels of certainty than emissions from agricultural lands, including, e.g., nitrous oxide emissions from use of fertilizer, CH_4 emissions from livestock and rice cultivation, and emissions from residue burning.

As is the case for forests, agreements which cover only managed peatlands are likely to be more suitable than ones that cover all lands, at the present time. Due to the

expensive and difficulty of collecting emission data, inclusion of remote peatlands is probably unwarranted in current Annex I accounting or in non-Annex I countries. Since these are, presumably, unmanaged peatlands, it is likely that a position of exclusion of unmanaged lands will have merit.

Exclusion of unmanaged peatlands also has merit because it would be inappropriate to hold nations responsible for emissions from peatlands in northern latitudes where effects of global warming can be expected to result in thawing and drying of unmanaged peatlands within the next decade or two. Not only are these emissions clearly the responsibility of all nations that contribute to global warming, there is, currently, no known means by which such emissions could be addressed.

VI. Pros and cons of inclusion of peatlands

As Wetlands International participates in climate discussions, it should bear in mind that the fundamental reason to include emissions and reductions from the land base in climate change agreements is:

- The atmosphere, and therefore the climate, responds to emissions and reductions from the entire land base just as it does to emissions from fossil fuel combustion and industrial processes.

Climate change agreements do not exclude or limit classes of fossil fuel or industrial emissions due to expected increases, nor because they may be difficult to address. Peatlands should, therefore, be included regardless of whether or not they offer inexpensive opportunities to address emissions. Whereas it may currently be impractical to include unmanaged lands, ultimately emissions from the entire land base should be included in instruments adopted to address climate change. The current state of understanding of emissions may suggest that either a P&Ms approach should be used to address peatlands or a staged approach adopted. If it is known that peatlands will be included, experience has shown that better emission measurement methodologies will be forthcoming.

VII. Factors influencing positions of countries

Country positions on inclusion of peatlands in climate change agreements will, to some extent, be impacted by general positions on LULUCF. Positions on inclusion of LULUCF are, however, quite complex and are influenced by a number of considerations. Positions can stem from economic considerations, ideological positions, or personal views of individual members of government. Economic considerations alone can lead to very different positions. Some countries may favor an agreement that enables reductions to be made as inexpensively as possible while others may hold that it is critical to drive carbon prices up as rapidly as possible to stimulate technological innovation and change. Even a position favoring inexpensive reductions can lead to opposing positions. One country might hold that a market is the best way to bring the least expensive reductions to the fore while another may believe that P&M approaches will prove more cost-efficient. Ideological positions that influence positions range from beliefs about the utility or appropriateness of market approaches for the land base, to views on national or sub-national group

heritages, to views regarding which emissions are appropriate for inclusion in a climate agreement.

General LULUCF issues that are likely to influence positions on peatlands include whether or not to:

- Include LULUCF as a sector/source
- Set separate targets for LULUCF. If so, should commitments be linked, totally independent, or partially linked.
- Adopt sectoral approaches
- Use P&M approaches
- Use the CDM or other incentive mechanisms for developing countries
- Use forward or historically-based baselines

Positions on these issues interact in complex ways. For example, a country might favor of inclusion of peatlands if separate targets were set and a P&M approach was adopted, but against inclusion if a market approach is the incentive mechanism and one overall commitment that includes all sectors is used.

During the Kyoto Protocol negotiations, Annex I countries with substantial forest resources, e.g., the United States, Norway, New Zealand, Australia, and the Russian Federation, favored broad inclusion of LULUCF in climate negotiations. Other countries and stakeholders were against inclusion, some because they believe that the purpose of a climate agreement was to address emissions from the combustion of fossil fuels and industrial operations.

A number of stakeholders that tended to be against inclusion of LULUCF during the Kyoto Protocol negotiations have modified or significantly altered their positions in recent years. These include the EU, a number of environmental organizations, and Brazil. However, the exact manner in which these stakeholders will favor inclusion is far from clear, either in the context of Annex I commitment or in the context of developing countries. Brazil has traditionally been leery of market mechanisms for what appear to be a mix of practical and ideological reasons; and while the EU has stated that it should take a lead role in addressing deforestation, it is not clear how this will translate into positions within a climate agreement. The United States, which has continuously favored a broad inclusion of LULUCF both in Annex I commitments and in market mechanism has been outspoken about its interest in the use of policy approaches to address REDD in developing countries, presumably in addition to, or to accompany, use of a market. For example, the United States is clearly interested in issues enforcement of logging statues.

Perhaps more significantly, a number of developing nations that did not significantly impact negotiations on LULUCF issues at the time of the Kyoto Protocol negotiation will be active in upcoming talks. There are significant differences between the land-base situations in these countries. Due to these differences it is reasonable to expect that one or more mechanisms will be developed to address not only deforestation but also conservation and degradation in developing countries. If so, other things being equal, it should not be difficult to address the same range of situations for peatland soils, i.e., both preservation of intact and restoration of degraded ones.

However, things may well not "be equal" because biofuel issues will enter into the negotiations either directly or, perhaps more likely, indirectly. Even if no Party suggests a special "rule" for biofuels, the problem of emissions due to production of the biomass for use as a transportation fuel will be in the minds of a number of stakeholders. The concern about biofuel-caused emissions may incline some Parties, e.g., European ones, to favor inclusion of peatlands in whatever instrument(s) are adopted for developing countries. Developing countries which produce the biomass, however, are likely to be extremely sensitive to any instrument that might negatively impact their ability to produce biomass for food, fuel, and feed for export.

Finally, although it has not yet emerged to darken the REDD discussions, the life-cycle analyses of biomass will, sooner or later be applied to REDD. REDD life-cycle analysis will point out that, for example, forest preservation is likely to result in reduced use of biofuels, increased use of steel and cement, and increased fertilizer use. All of these are forms of leakage and reduce the benefits of REDD just as emissions due to production of biomass reduce benefits of biofuels. A life-cycle analysis of REDD will almost certainly decrease the value of REDD credits and, assuming preservation of peatlands has fewer leakage impacts, could render peatland-based credits more attractive.

Most importantly, regardless of positions at the time of the Kyoto Protocol, Annex I countries are likely to be more open to mandatory inclusion of land sector emissions and stock increases if LULUCF trajectories are taken into consideration during the negotiations of commitments. Taking land sector trajectories into consideration during the target setting process is vital to fuller inclusion of the land base if the current single-target approach is continued.

A. List of Abbreviations

AFOLU	Agriculture Forestry and Other Land Uses
ARD	Afforestation Reforestation and Deforestation
AWG-KP	Ad Hoc Working Group – Kyoto Protocol
AWG-LCA Action	Ad Hoc Working Group – Long Term Cooperative
BAU	Business as Usual
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CO_2	Carbon Dioxide
EU-ETS	European Emissions Trading Scheme
GHG	Greenhouse Gas
LULUCF	Land Use Land Use Change and Forestry
P & M	Policies and Measures
RED	Reduced Emissions from Deforestation
REDD	Reduced Emissions for Deforestation and Degradation
UNFCCC	United Nations Framework Convention on Climate Change