

# LULUCF Guide



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## Introduction

The Kyoto Protocol sets out in its treaty a number of Articles related to Land Use, Land Use Change and Forestry (LULUCF) –Articles 3.3, 3.4 and 3.7 as well as the flexible mechanisms: Article 6 (Joint Implementation - JI) and Article 12 (Clean Development Mechanism - CDM). The modalities and provisions for LULUCF were negotiated in the Marrakesh Accords which were adopted in Montreal in 2005, these are now known as Decision 16/CMP.1. These provisions set out how countries can use the LULUCF sector to help meet their Kyoto target.

For the second commitment period, Parties are negotiating changes to targets for Annex I countries as well as changes to the LULUCF modalities and provisions in the decision and Annex of 16/CMP.1. While negotiations are ongoing in the Kyoto Protocol track, the US is left out of these negotiations due to their non-ratification of the Kyoto Protocol, therefore LULUCF issues are also incorporated into the LCA text. The text provides options from reopening the entire decision text for LULUCF or adopting the decisions reached under the Kyoto Protocol. The negotiations on Reducing Emissions from Deforestation and Forest Degradation (REDD+) are also occurring under the LCA negotiations in the UN Framework Convention on Climate Change (UNFCCC) and have links to the LULUCF negotiations as non-Annex I Parties want to ensure that rules for REDD+ are not tougher than for AI Parties.

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# Table of Contents

I.	Glossary .....	3
II.	Forests in the Kyoto Protocol and under the UNFCCC.....	5
III	Forests in the Marrakesh Accords – what are the current rules for “international GHG reporting”for the Climate Change from Forests and Forest management .....	7
IV	Forests in the second commitment period: what changes are being discussed?.....	10
1.	Additional Article 3.4 activities .....	10
2.	Forest Management accounting approaches.....	12
3.	Natural disturbances/Force majeure .....	15
4.	Land based approach .....	16
5.	Clean Development Mechanism and LULUCF.....	17
6.	Others.....	18
V.	What are the problems with Harvested Wood Products .....	18
VI.	Why do different players act in the way they do? .....	20
VII.	Are there different rules for Annex I and non-Annex I countries?.....	22
VIII.	Conclusions and recommendations .....	23
	Annex 1: History of LULUCF negotiations .....	24

# I. Glossary

This glossary is based on definitions from the UNFCCC and its Kyoto Protocol

**Accounting** – refers to the context where units of carbon (or carbon equivalent) deriving from LULUCF activities are used to meet emission obligations or generate credits within a Kyoto-like architecture.

**Accounting Units** - The AAUs, RMUs, ERUs, CERs, tCERs and ICERs are the accounting units of the “assigned amount” of each Annex I Party referred to in the provisions of Article 3 of the Protocol.

**Afforestation** - is the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the human induced promotion of natural seed sources.

**Allometric Equation** – which forester’s use to convert tree trunks into an estimate of its mass.

**ALUFO - Agriculture, Land Use, Forestry and Other land uses** – new IPCC guidelines 2006, which combine agriculture and LULUCF.

**Assigned Amount Units (AAUs)**: Parts of a nation’s Assigned Amount used for international emissions trading Article 17. One AAU is defined as one ton of CO<sub>2</sub> equivalent.

**Certified Emission Reductions (CERs)**: CERs are verified and authenticated units of greenhouse gas reductions from abatement or sequestration projects which are certified under the clean development mechanism Article 12.

**Climate sensitivity** –the global mean warming at equilibrium for a doubling of CO<sub>2</sub> concentration.

**Cropland Management** – is the system of practices on land on which agricultural crops are grown and on land that is set aside or is temporarily not being used from crop production.

**Deforestation** is the direct human-induced conversion of forested land to non-forested land.

**Emission reduction units (ERUs)**: ERUs are generated via JI under Article 6 of the Kyoto Protocol.

**Forest Management** – is a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner.

## Forest

‘Kyoto Forest’ is a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30 per cent with trees with the potential to reach a minimum height of 2-5 metres at maturity in situ. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10-30 per cent or tree height of 2-5 metres are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest.

**Grazing land management** – is the system of practices on land used for livestock production aimed at manipulating the amount and type of vegetation and livestock produced.

**Gross-net accounting** - A gross-net approach is that by which a Party does not include the LU-LUCF sector in its base year (gross) but accounts for net emissions and removals from LULUCF during the commitment period (net).

**Net-Net Accounting** - a Party accounts emissions and removals from LULUCF both in the base year and in the commitment period.

**Full Carbon Accounting** - Full carbon accounting on all lands would consist of a complete accounting of all changes in carbon stocks in all carbon pools on all lands in a given time period.

**Land based Accounting** - is the total carbon stock change in applicable carbon pools on land units subject to Kyoto activities.

**Long-term certified emission reductions (ICERs)** - A long-term certified emission reduction or ICER is a unit issued pursuant to Article 12 of the Kyoto Protocol for an A/R CDM project activity, which expires at the end of the crediting period of the A/R CDM project activity under the CDM for which it was issued. It is equal to one metric tonne of carbon dioxide equivalent.

**Non-permanence** – As a sequestered carbon can be re-emitted in the future due to fire, pest attacks or increased land use needs, the sequestration and subsequent storage is non-permanent.

**Reforestation** - is the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989.

**Removal Unit (RMUs)** – RMUs are issued on the basis of land use, land-use change and forestry (*LULUCF*) activities (often referred to as “sinks”) under Articles 3.3 and 3.4 and is equal to one metric tonne of carbon dioxide equivalent.

**Reporting** – refers to the general reporting and estimation of fluxes of greenhouse gases and/or changes of stocks of carbon without implications for meeting legally binding targets or for emission pathways that meet climate policy goals.

**Reservoir** – means a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored. In other words, a reservoir contains carbon stocks but no flow of carbon is implied.

**Revegetation** – is a direct human-induced activity to increase carbon stocks on sites through the establishment of vegetation that are over a minimum of 0.05 hectares and does not meet the definitions of afforestation and reforestation contained here.

**Silviculture** - Cultivation of forest from seeds, through seedlings, to mature forest.

**Sinks** – means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere. In forests, for example, a sink involves a flow from the atmosphere which increases stocks.

**Source** – means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.

**Small scale afforestation or reforestation project activity** under the Clean Development Mechanism will result in net anthropogenic greenhouse gas removals by sinks of less than 16 kilotonnes of CO<sub>2</sub> per year if the average projected net anthropogenic greenhouse gas removals by sinks for each verification period do not exceed 16 kilotonnes of carbon dioxide equivalent per year. This was increased from 8 kt of CO<sub>2</sub> per year in Decision 9/CMP.3 in Bali 2007.

**Spatial coverage** – the area of land that is covered by the regime i.e. to what degree the land is included from ‘wall-to-wall’.

**Temporary certified emission reductions (tCERs)** - A temporary certified emission reduction or tCER is a unit issued pursuant to Article 12 of the Kyoto Protocol for an A/R CDM project activity under the CDM, which expires at the end of the commitment period following the one during which it was issued. It is equal to one metric tonne of carbon dioxide equivalent.

## II. Forests in the Kyoto Protocol and under the UNFCCC

In 1997, countries adopted targets in the Kyoto Protocol for industrialized countries and rather general articles on LULUCF activities. The main feature of the 1997 Kyoto agreement was that credits from LULUCF projects or activities would serve to offset industrial emissions. Put more simply, the larger the amount of biological carbon sequestration entering the system, the smaller the reductions required from the burning of fossil fuel. This set up a negotiating dynamic where many countries had a tactical interest in rules that maximized LULUCF credits, in order to decrease their need for industrial sector emission reductions. These countries pursued LULUCF accounting rules that were biased towards crediting LULUCF sinks versus debiting LULUCF emissions. In the end, the rules for LULUCF are a series of attempts to reduce the level of gaming in the system. The attempt to steer the rules in the least damaging direction while satisfying the interests of many countries led to a series of complex and somewhat fragmented LULUCF rules.

The Kyoto Protocol's current provisions can be divided between those applying to developed countries with emissions targets, and those applying to projects undertaken in developing countries. The domestic activities relate to Articles, 3.3 – afforestation, reforestation and deforestation (ARD) and 3.4 – additional activities (which has implications for JI). The flexible mechanisms (Art. 6 – Joint Implementation -JI; Art.12 – Clean Development Mechanisms -(CDM; and Art. 17 – Emissions Trading)

### Box 1: Kyoto Protocol LULUCF Articles

**Article 3.3** –Annex I Parties must account for emissions and removals from all afforestation, reforestation and deforestation (ARD)<sup>1</sup> activities. If Parties emissions from LULUCF contribute more emissions than removals (e.g. an increase in deforestation) these will be subtracted from their assigned amounts.

**Article 3.4** – allows countries to choose if they want to account for additional activities to those in Article 3.3, these include: forest management, cropland management, grazing management and revegetation. A Party must chose the activities to be accounted in the first commitment period in their initial report to the Kyoto Protocol.

**Article 3.7** – provides an exception for countries that had a net source from land use change in the base year 1990. In this case, a net-net approach is taken for ARD, with the effect that any decreases in the magnitude of net source relative to the base year are rewarded.

**Article 6** – allows Annex I Parties to undertake Joint Implementation projects which reduce emission in other Annex I Parties, mostly countries whose economies are in transition.

**Article 7** – sets out reporting provisions including for accounting for LULUCF

**Article 12** – Clean Development Mechanism allows Annex I Parties to undertake LULUCF activities related to Afforestation and Reforestation only in non-Annex I countries and will receive credit for these projects. A proposal to allow avoided deforestation projects was not agreed by Parties.

**Article 17** – Emissions Trading – allows Annex I Parties to purchase and sell emission credits amongst themselves. Countries that reduce or limit emission more than is required by their agreed target will be able to sell their excess emission credits to countries that find it more difficult or more expensive. LULUCF credits such as Removal Units (RMUs) are allowed to be traded.

<sup>1</sup> See glossary for definitions of these terms.

allow countries to use external credits to meet their Kyoto targets. See Box 1 for more information.

For some years, a distinction between LUCF and LULUCF was established to separate issues relating to the Convention (LUCF) and issues relating to the Kyoto Protocol (LULUCF). Today, discussions on sinks are generally referred to as LULUCF and therefore, in the context of the present paper, LULUCF will be used to generally refer to sinks, including all land-use and land-use change related activities that are either sources or sinks of greenhouse gases.

The Marrakech Accords' eight principles to govern LULUCF activities respond to concerns that their use should not undermine the environmental integrity of the Kyoto Protocol (see Box 1). Thus

### **Box 1: The Marrakech Accords' principles governing the treatment of LULUCF:**

- a. That the treatment of these activities be based on sound science;
- b. That consistent methodologies be used over time for the estimation and reporting of these activities;
- c. That the aim stated in Article 3, paragraph 1 of the Kyoto Protocol not be changed by accounting for land use, land-use change and forestry activities;
- d. That the mere presence of carbon stocks be excluded from accounting;
- e. That the implementation of land use, land-use change and forestry activities contributes to the conservation of biodiversity and sustainable use of natural resources;
- f. That accounting for land use, land-use change and forestry does not imply a transfer of commitments to a future commitment period;
- g. That reversal of any removal due to land use, land-use change and forestry activities be accounted for at the appropriate point in time;
- h. That accounting excludes removals resulting from: (i) elevated carbon dioxide concentrations above their pre-industrial level; (ii) indirect nitrogen deposition; and (iii) the dynamic effects of age structure resulting from activities and practices before the reference year.

LULUCF activities should not undermine, for example, the need for sound science and consistent methodologies, and the importance of conserving biodiversity. They also specify that naturally-occurring removals, including removals as a consequence of indirect anthropogenic effects, should be excluded from the system and that any re-release of greenhouse gases (e.g. through forest fires) must be promptly accounted for.<sup>1</sup> Parties have continued to accept these principles for the 2nd commitment period (see para 1 of decision text: FCCC/KP/AWG/2010/CRP.2).

<sup>1</sup> UNFCCC website LULUCF: [http://unfccc.int/methods\\_and\\_science/lulucf/items/3063.php](http://unfccc.int/methods_and_science/lulucf/items/3063.php)

# III. Forests in the Marrakesh Accords – what are the current rules for “international GHG reporting” for the Climate Change from Forests and Forest management

## Forest definition

The Kyoto definition of a forest sets out a minimum area of land between 0.05-1.0 hectares with tree crown cover of more than 10-30 per cent with trees with the potential to reach a minimum height of 2-5 metres at maturity. There have been concerns that the definition of forests does not separate plantations from natural forests. CAN proposed to change the definition of forests to not allow a definition based on canopy cover or area, instead using the existing FAO classifications which split forest into categories, explicitly defining plantations separately. CAN has always supported that forests should be based around a biome-based definitions. However, a technical report on biome-based definitions for forests stated that it would be a complex undertaking which may not necessarily provide benefits in carbon estimates or biodiversity due to changing the forest definition between commitment periods.<sup>2</sup>

## Activities

The table below shows the key elements and accounting rules for each of the Articles related to LULUCF within the Kyoto Protocol.

**Table 1: LULUCF Activities in the Kyoto Protocol**

Article	Elements	Accounting
3.3	<ul style="list-style-type: none"> <li>Afforestation, reforestation and deforestation</li> <li>Debit-credit rule – limits emissions from AR if greater than credits in 1CP</li> <li>To have begun on or after 1 January 1990</li> </ul>	<ul style="list-style-type: none"> <li>Gross-net approach afforestation, reforestation and deforestation</li> <li>Mandatory</li> </ul>
3.4	<ul style="list-style-type: none"> <li>Forest management, cropland management, grazing land management and revegetation</li> <li>Forest management cap in Appendix to Annex 16/CMP.1</li> <li>Forest management offsets ARD by no more than 9Mt of carbon per year of 1CP</li> <li>Forest management to have occurred since 1 January 1990</li> </ul>	<ul style="list-style-type: none"> <li>Gross-net approach for forest management</li> <li>Net-net approach for cropland management, grazing land management, revegetation</li> <li>Voluntary</li> </ul>
3.7	<ul style="list-style-type: none"> <li>Inclusion of deforestation emissions in base year due to higher emissions than removals from LULUCF</li> </ul>	<ul style="list-style-type: none"> <li>Net-net for countries with high land use change emissions (i.e. land use change emissions included in the base year of Parties1)</li> </ul>
12	<ul style="list-style-type: none"> <li>Afforestation and reforestation</li> <li>Up to a limit of 1% of AI base year emissions</li> <li>AR to have occurred since 31 December 1989 or meeting additionality criteria</li> </ul>	<ul style="list-style-type: none"> <li>Temporary gross-net accounting approach (tCERs or ICERs)</li> </ul>

<sup>2</sup> Rakonczay, Zoltan 2002 Biome-specific Forest Definitions, Technical Paper, Report to the UNFCCC Secretariat, FCCC/TP/2002/1

Under the Kyoto Protocol, Parties have to elect as part of their initial report to the Kyoto Protocol<sup>3</sup> which activities they want to voluntarily account for under Article 3.4. Parties also have to elect prior to the start of the commitment period, whether they will issue or cancel RMUs annually or at the end of the commitment period. Criteria for cases where Parties fail to submit information related to the GHG and sinks inventories was undertaken in Montreal 2005 at COP/MOP1. It is interesting to note that eligibility criteria for the flexible mechanisms where Parties fail to submit information related to other sources and sectors (i.e. industrial GHG inventories) was adopted in Marrakesh 2001.

### Reporting and Accounting LULUCF

There are a number of differences between how Parties report LULUCF under the UNFCCC and account for activities under the Kyoto Protocol. These are explained below:

- Reporting refers to the general reporting and estimation of fluxes of greenhouse gases and/or change of stocks of carbon without implications for meeting legally binding targets or for emission pathways that meet climate policy goals.
- Accounting in the LULUCF sector refers to the context where units of carbon (or carbon equivalent) deriving from LULUCF activities are used to meet emission obligations or generate credits. Accounting is referred to determine the rules of the Kyoto Protocol and in particular the rules for LULUCF (Decision 16/CMP.1) determine how the accounting for LULUCF will take place.

As an example, countries report emissions and removals from a number of IPCC categories in their UNFCCC report i.e. Forest land remaining forest land, cropland remaining cropland and grazing land. However, under the Kyoto Protocol, Parties account for activities such as forest management, grazing land management and cropland management. Therefore there will be discrepancies between countries reports under the UNFCCC and accounts under the Kyoto Protocol based on different definitions of these activities. Other differences include:

- Reporting of geographical locations of areas of land that encompass units of land subject to Art. 3.3 and 3.4 activities required
- Disaggregation of activities afforestation, reforestation and deforestation
- Reporting of 5 different pools (Above-ground biomass, Below-ground biomass, litter, dead wood and soil organic carbon).<sup>4</sup>

The Marrakesh Accord rules outline the accounting for LULUCF activities. This means that the change in carbon stock is attributed to the Kyoto activities defined in Articles 3.3 and 3.4. The accounting approaches used within the Kyoto Protocol are different for each of the activities they include:

- Gross Net Accounting: A gross-net approach is that by which a Party does not include the LULUCF sector in its base year (gross) but accounts for net emissions and removals from LULUCF during the commitment period (net). Article 3.3 ARD activities, and 3.4 Forest Management
- Net-Net Accounting: In the net-net approach, a Party accounts emissions and removals from LULUCF both in the base year and in the commitment period. Those activities which use net-net accounting include: Article 3.4 Revegetation, Cropland and Grazing land management.

Alternative approaches to these have been considered, these include land based accounting or full carbon accounting. The land based accounting is defined in the IPCC's Special Report on LULUCF as "the total carbon stock change in applicable carbon pools on land units subject to Kyoto activities".<sup>5</sup> This means that land areas are identified where their Kyoto activities occur and the total change in carbon stocks during the commitment period are determined. This is only slightly different to a full carbon accounting approach (FCA) where essentially all fluxes of greenhouse gases and stocks of carbon are accounted within a system of legally binding obligations. A FCA system would, in principal,

3 See Initial reports to the Kyoto Protocol: see [http://unfccc.int/national\\_reports/initial\\_reports\\_under\\_the\\_kyoto\\_protocol/items/3765.php](http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php)

4 Anke Herold 2008 Issues and challenges of KP LULUCF tables 13 November 2008, at Technical workshop on LULUCF reporting issues under the Kyoto Protocol JRC, Ispra

5 Watson, R et al 2000 IPCC Special Report on Land Use, Land Use Change and Forestry.



remove the sectoral and activity-based accounting of the present Kyoto Protocol system and replace it with accounting for all fluxes and stock changes on the land surface of Parties. The IPCC Special Report defines full carbon accounting as the “complete accounting in all carbon pools related to a given set of landscape units in a given time period” which would give the net carbon exchange between terrestrial ecosystems and the atmosphere.<sup>6</sup> However, as the Kyoto Protocol mandates direct-human induced activities, Parties moving towards a land based approach want to ensure that only those lands which are managed are included in the accounting system.

The recent 2006 IPCC Guidelines for National Greenhouse Gas Inventories includes a chapter which integrates Agriculture with LULUCF to form Agriculture, Forestry and Other Land Uses known as AFOLU. The intention was to recognise the processes underlying greenhouse gas emissions and removals and the different forms of carbon stocks that can occur across land types.<sup>7</sup> The approach was adopted to improve consistency and completeness in estimating and reporting emissions and removals. However, even though this has led Parties to call for more comprehensive accounting, the IPCC guidelines are not policy prescriptive and guidelines are adopted by Parties who determine how they are used (for example methodologies on Harvested Wood Products are included in the guidelines but Parties negotiate on whether to include them in the accounting system or not).<sup>8</sup>

The Kyoto Protocol has established accounting units to identify where activity reductions are taking place. Each unit has a unique, traceable serial number which is recorded in an accounting database. For the LULUCF sector there are a number of units that are distinguished. These are identified below:

- Assigned Amount Units (AAUs) - issued on the basis of the assigned amount that each Annex I Party has agreed not to exceed in the first commitment period
- Carbon removals and emissions reductions achieved as a result of LULUCF activities (under Art. 3.3 and 3.4) are called Removal Units (RMUs). While AAUs are allowed to be banked into subsequent commitment periods, RMUs have to be used within the commitment period that they are generated.
- Emission Reduction Units (ERUs) are generated for Joint Implementation projects under Article 6, however, any ERUs created from LULUCF activities are converted to RMUs. Only those Article 3.4 activities which have been elected by Parties are allowed to generate ERUs.
- Certified Emission Reductions (CERs) are the credits issued for Clean Development Mechanism projects. Credits from Afforestation and Reforestation projects in the CDM are issued with temporary or long-term CERs (tCERs or ICERs). These have to be replaced after the expiry of the AR project in recognition of the lack of permanence of these projects.

### IPCC's Good Practice Guidance for LULUCF

The IPCC provides guidance for Parties to prepare national greenhouse gas inventories. These include:

- Revised 1996 IPCC National Greenhouse Gas Inventory (NGGI) Guidelines
- 2000 *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*
- 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG LULUCF)
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Now Agriculture, Forestry and Other Land Use (AFOLU)

Currently all (both developed and developing) Parties are using the Revised 1996 NGGI Guidelines for their UNFCCC and KP inventories. However, there are now SBSTA discussions within the UNFCCC on using the 2006 IPCC Guidelines.<sup>9</sup>

6 Watson, R et al 2000 IPCC Special Report on Land Use, Land Use Change and Forestry section 2.3.2.5.

7 IPCC 2006 Guidelines for National Greenhouse Gas Inventories, page 1.4)

8 ENB IPCC-25 Highlights: Thursday, 27 April 2006 (Mauritius, 2006)

9 UNFCCC Secretariat Use of the 2006 IPCC guidelines for national greenhouse gas inventors and revision of the UNFCCC reporting guidelines for Annex I parties to the Convention [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/reporting\\_requirements/items/5333.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/reporting_requirements/items/5333.php)

## IV. Forests in the second commitment period: what changes are being discussed?

Even though negotiations on the second commitment period started at COP/MOP1 in Montreal, discussion on the LULUCF rules didn't really start until March 2008. Parties started discussing the rules established in the Annex of Decision 16/CMP.1 as some were specifically for the first commitment period, however this was also a time for new ideas to be proposed. A number of Parties made proposals in the submissions to the AWG-KP and this has led to new text for LULUCF being developed (see Annex 1 - history of AWG-KP negotiations).

The main areas where Parties have proposed changes to the LULUCF rules and procedures are in the following areas which will be addressed in detail below:

- Additional Article 3.4 activities
- Forest Management accounting approaches
- Natural disturbances or Force Majeure
- Land based accounting approaches
- Clean Development Mechanism and LULUCF
- Harvested Wood Products (to be addressed in section IV)
- Others include debit-credit rule and length of accounting period

### 1. Additional Article 3.4 activities

Parties have proposed more additional activities for inclusion in Article 3.4 (found in A: Definitions page 13-14). These include:

- Forest biomass decline or degradation
- Devegetation
- Wetland management
- Land flexibility

#### Forest biomass decline (or degradation)

Forest degradation is a reduction in forest biomass through either non-sustainable harvest or land-use practices. Degradation can result in substantial reductions of forest carbon stocks from selective logging, fire and other anthropogenic disturbances and fuelwood collection.<sup>10</sup> Similarly to devegetation with areas that involve the degradation of forested or vegetated land (e.g. which do not meet the definition of a conversion to non-forest land i.e. deforestation), these are not reported and a source of emissions is omitted from the accounting system. If degradation was included in the accounting, it would remove the imbalance in accounting particularly for those countries that had elected forest management.

Tuvalu proposed to include forest biomass decline which is defined as a: "human-induced activity leading to a decrease in carbon stocks and/or greenhouse gas emissions on forested land remaining forested land. It includes losses of carbon stocks or emissions from both living and non living biomass and includes both above-ground and below-ground biomass" to address the issue of not accounting for degradation.<sup>11</sup> However, this definition has not been included in the latest version of the text.

<sup>10</sup> Asner, G.P., D.E. Knapp, E.N. Broadbent, P.J.C. Oliveira, M. Keller, and J.N. Silva, 2005: Selective Logging in the Brazilian Amazon. *Science*, 310(5747), pp. 480-482.

<sup>11</sup> Tuvalu 2009 Tuvalu submission on definitions, modalities, rules and guidelines for the treatment of land use, land-use change and forestry (LULUCF) in the second commitment period (AWG-KP) 20 March 2009 FCCC/KP/AWG/2009/MISC.5/Add.1

Degradation could be included if there was a change in the definition of forests (remove plantations and increase the canopy cover e.g. to 40% rather than 10-30%) or as forest biomass decline, through inclusion as an action if forest management is elected, or an increase in the forest definition or included in the definition of deforestation. This is an issue that links to the REDD discussion as forest degradation is currently an option under REDD+. The IPCC attempted in 2003 to develop a definition for degradation but found that it was complex and there could be a number of likely definitions.<sup>12</sup>

### Devegetation

Parties can account for revegetation under Article 3.4. For example, three countries have elected revegetation: Iceland, Japan and Romania. However, they do not have to account for any re-emissions due to 'devegetation' and this is therefore unbalanced or asymmetric accounting. Either both should be accounted for or none. If revegetation is elected, then devegetation should also be elected.

### Wetlands

The conversion of wetlands is a significant source of greenhouse emissions. Natural peat-forming wetlands store small amounts of CO<sub>2</sub>, but naturally emit small amounts of N<sub>2</sub>O and large quantities of CH<sub>4</sub>. When wetlands are converted and subsequently managed, large quantities of CO<sub>2</sub> and N<sub>2</sub>O are released, while the emissions from methane drop substantially.<sup>13</sup>

The uncertainty in the potential emission reduction from wetland restoration is large when all gases are considered. A report from Wetlands International<sup>14</sup> found that substantial greenhouse gas emissions from peatland drainage can largely be avoided through peatland rewetting and restoration. There is, however, doubt to whether emission reductions from peatland can be correctly quantified and transparently reported. The impact of including wetlands is not known for most Annex I Parties as only 15 reported in the category of wetland remaining wetland category and 18 in the category Lands converted to wetlands in 2009.

Wetland management has been proposed as a new Article 3.4 activity as a system of practices for "rewetting and draining on land". It is essential that both emissions and removals are accounted for. Drained organic soils and soils which are under threat of degradation may be included under cropland management, grazing land and forest management in the accounting, depending on the election of Parties.<sup>15</sup> However, more work may be needed on the methodological guidance for Parties.

### Land flexibility (Planted production forests and equivalent forests)

New Zealand have proposed that any forest planted before 1 January 1990 will not be considered deforestation if an 'equivalent' forest is established elsewhere on non-forest land that would have qualified for afforestation or reforestation (paragraph 3bis). They propose that this equivalent forest should be accounted under forest management if elected, that is, both the emissions and the removals from the planted production forest and the equivalent forest will be accounted under forest management. New Zealand have stated that reporting of the specific areas of equivalent forest would be done in the National Inventory Report.

### Key issues to be considered:

- There may be difficulties in ensuring transparency in identifying and tracking lands that were defined under the planted production forest and equivalent forest?
- New Zealand have proposed this rule, due to the situation of their pre-1990 forests (due to be harvested in the second commitment period), however the implications which would allow all Annex I countries to offset their emissions through planting an equivalent forest may be much greater.

12 IPCC 2003 Definitions and Methodological Options to Inventory Emissions from Direct Human-induced Degradation of Forests and Devegetation of Other Vegetation Types, Japan

13 WBGU 1998 The accounting of biological sinks and sources under the Kyoto Protocol: A step forwards or backwards for environmental protection, Germany. [http://www.wbgu.de/wbgu\\_sn1998\\_engl.pdf](http://www.wbgu.de/wbgu_sn1998_engl.pdf)

14 Wetlands International (2009) Peatlands in National Inventory Submissions 2009: An analysis of 10 European countries.

15 UNFCCC (2008) Analysis of possible means to reach emission reduction targets and of relevant methodological issues, Technical paper, FCCC/TP/2008/2, <http://unfccc.int/resource/docs/2008/tp/02.pdf>

## 2. Forest Management accounting approaches

Forest Management in the Marrakesh Accords is defined as “a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner”.

Under the first commitment period of the Kyoto Protocol, the accounting rules for forest management allows Parties to voluntarily elect forest management as an additional activity under Article 3.4 of the Kyoto Protocol. Parties are allowed to use forest management up to a cap agreed by Parties in the Marrakesh Accords (known as Appendix Z).<sup>16</sup> Caps on forest management were introduced to ensure that the level of removals from the system would not overwhelm the industrial emission reductions needed to take place in the first commitment period. They were also a pragmatic means of accounting for direct human induced removals as opposed to all removals due to direct and indirect effects of climate change and variability. A number of Parties have proposed new options for dealing with forest management with the underlying aim to provide more of an incentive to elect forest management than the current cap. The proposed options include:

- **Option 1:** Keep current cap negotiated under the Kyoto Protocol e.g. 15% of forest management or the 3% of base year emissions whichever is less.
- **Option 2:** Discount factors to be applied to all carbon credits and debits e.g. 85%
- **Option 3:** BAR – credits and debits are determined relative to a reference level (calculated as an average of net emissions/removals from a reference period e.g. 2001-2005). Some formulations also implement a “band” of around 5% around this reference level such that values during the commitment period that fall within this band result in no credits or debits. Specifically, the options that exist for a bar include:
  - BAR including a band from 0 to BAR;
  - BAR including band from  $BAR - X\% \cdot BAR$  to  $BAR + X\% \cdot BAR$ ; and
  - BAR only; no band – pure net-net compared with BAR level.
- **Option 4:** Net-net accounting
  - where forest management in the commitment period is assessed against forest management in the base year 1990
  - where forest management in the commitment period is assessed against forest management in the previous commitment period
- **Option 5:** Projected reference level – where a reference level is set for the future, i.e. 2013-2020, based on historical emissions and removals and taking into account business-as-usual forest management.

The current text includes all the options above except for net-net accounting against a 1990 base year. There is also an option to limit the emissions and removals from forest management included in the text on projected reference levels. The table below gives an example of the different impacts of the different options for accounting LULUCF. The data used to compile this is from National Inventory Submissions and in submissions prepared by Parties.<sup>17</sup>

<sup>16</sup> For the first commitment period only, additions to and subtractions from the assigned amount of a Party resulting from forest management under Article 3, paragraph 4, after the application of paragraph 10 above and resulting from forest management project activities undertaken under Article 6, shall not exceed the value inscribed in the appendix below, times five.

<sup>17</sup> To determine the level of credits/debits Parties would get, the following data provided by Parties to the UNFCCC has been used:  
 KP activities constructed from LULUCF Convention categories provided in the national inventory submissions (CRF2009)  
 Informal submissions of historical KP activities to the KP - [http://unfccc.int/meetings/ad\\_hoc\\_working\\_groups/kp/items/4907.php](http://unfccc.int/meetings/ad_hoc_working_groups/kp/items/4907.php)  
 Informal submissions of projected KP activities to the KP - [http://unfccc.int/meetings/ad\\_hoc\\_working\\_groups/kp/items/4907.php](http://unfccc.int/meetings/ad_hoc_working_groups/kp/items/4907.php)  
 Informal submissions of forest management (levels in 1990, forecasted levels in 2008-2012 and 2013-2020, and proposed reference level) - [http://unfccc.int/files/kyoto\\_protocol/application/pdf/summarytable.pdf](http://unfccc.int/files/kyoto_protocol/application/pdf/summarytable.pdf)  
 For a given Party's set of data, any gaps in the data record were linearly interpolated from provided data points. For calculating the trend from historical data, a linear regression on historical values was made. In cases where the data covered three years or less, the data was not used, since it could not provide a meaningful mean and trend. Not all Annex I Parties have provided informal submissions to the AWG-KP (i.e. Monaco and Liechtenstein), nor have all Annex I Parties provided reference levels (i.e. Belarus, Croatia, Iceland, Liechtenstein, Monaco, Turkey, Ukraine and the United States as the latter are a non-Kyoto Party) so this analysis does not provide a complete picture.

**Table2: LULUCF Accounting options aggregate Annex I debits/credits and as a percentage relative to 1990 emissions.**

LULUCF Accounting Options credits (-) and debits (+)	LULUCF accounting over 2013-2020 (MtCO <sub>2</sub> eq/yr)	LULUCF accounting relative to 1990 emissions excl. LULUCF (%)
Continuation of current KP LULUCF rules – with cap on mandatory forest management	-340	-1.8%
Discount factor on forest management 85% + KP rules for other LULUCF activities	-320	-1.7%
Net-net accounting for forest management against 1990 base year + KP rules for other activities	-460	-2.5%
Net-net accounting for forest management against 1st CP as base period + KP rules for other activities	-110	-0.6%
Bar for forest management with a +/- 5% band against 2001–2005 base period + KP rules for activities	60	0.3%
Land based approach	-830	-4.4%

Source: PRIMAP, 2010

In December 2009, Annex I Parties provided information to the UNFCCC on proposed forest management reference levels. Prior to this many Parties' positions on LULUCF accounting were found in the submissions they had prepared to the AWG-KP. Most Annex I Parties provided reference levels based on projections: 2013–2020.<sup>18</sup> Only four countries provided alternative reference levels for forest management:

- Japan – current rules gross-net accounting
- Norway – net-net accounting compared to 1990
- Switzerland – reference level set at average 2001–2005
- Russian Federation – gross-net accounting with no artificial cap.

Since then, Switzerland has updated their reference level consistent with a projected reference level and the EU has updated 14 of their member states reference levels. Those countries who have chosen a projected reference level The new reference levels can be found in the latest version of the text: FCCC/KP/AWG/2010/CRP.2.

The table below shows a picture of the possible credits or debits for aggregate Annex I as a result of using reference levels for forest management for those that provided data (a number of Annex I countries have not provided data). If the forest management projections for 2013–2020 provided by countries along with their reference levels are used, then the majority of countries who selected a projected reference level have no debits or credits from forest management i.e. zero because their reference level equals their projections. As an aggregate for Annex I countries the resulting LULUCF accounting for Annex I in aggregate is roughly 340 MtCO<sub>2</sub>eq in credits. However if we use the PRIMAP composite dataset (this is the same as used to estimate accounting in Table 2), the resulting LULUCF accounting for Annex I in aggregate is much larger, roughly 850 MtCO<sub>2</sub>eq in credits. As an exercise of what could happen if projected references levels were adopted, based on historical data we also project purely statistical levels of forest management i.e. the average and the linear trend. The credits and debits of these options are also shown in Table 3 below in both MtCO<sub>2</sub>/eq/yr and relative to 1990 emissions. Figure 1 shows the aggregate Annex I historical emissions/removals from forest management, the projected reference levels and the average and linear trend to see what would happen based on different assumptions.

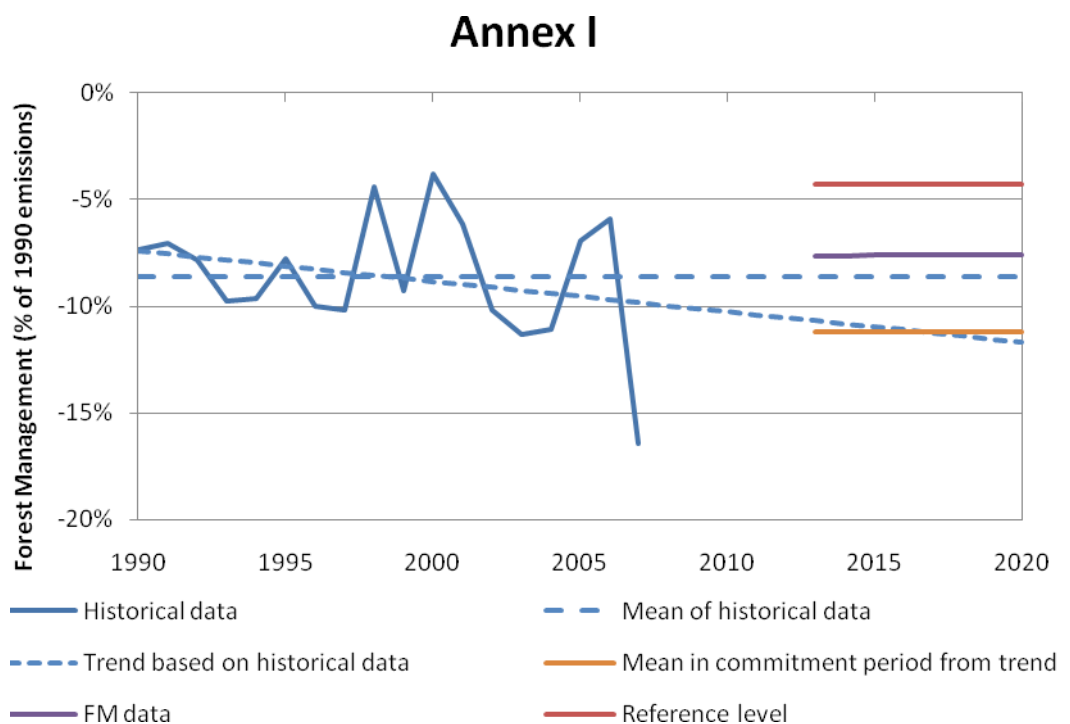
<sup>18</sup> Summary of Annex I proposed forest management reference levels can be found here: [http://unfccc.int/files/kyoto\\_protocol/application/pdf/summarytable.pdf](http://unfccc.int/files/kyoto_protocol/application/pdf/summarytable.pdf)

**Table 3: Projected forest management reference levels. Aggregate Annex I debits/credits and as a percentage relative to 1990 emissions.**

Forest management accounting* if forest management in the commitment period is equal to:	Forest management accounting (credits(-)/debits(+)) over 2013-2020 (MtCO <sub>2</sub> eq/yr)	Forest management accounting (credits (-)/debits(+)) relative to 1990 emissions excl. LULUCF (%)
Forest management reference level provided by Parties from December 2009 – May 2010 (Projected reference levels which equals forecast gives zero credits)	-340	-1.8%
Party projections submitted informally through the KP up to November 2009 where available or otherwise historical trend (same data as used in Table 2)	-850	-4.5%
Average Party's historical emissions/ removals based on both CRF2009 and submissions	-650	-3.5%
Linear trend of Party's historical emissions/ removals based on both CRF2009 and submissions	-940	-5.0%

\*for those countries that did not submit reference levels we continued to account for FM using the current KP rules . Source: PRIMAP, 2010

**Figure 1: Aggregate Annex I reference levels with historical emissions; average and linear trend.**



Source: PRIMAP, 2010

Key issues for consideration:

- Whether the levels proposed by Parties reflect the desired level of mitigation. If a level in the direction of higher emissions is proposed for the reference level, then a Party receives a larger credit (or lower debit) for the same level of action in the commitment period, which would then increase the level of allowed emissions.
- What is the data behind these reference levels – is business as usual forest management merely being rewarded?
- Do these reference levels contain all LULUCF sources, for example what happens if soils turn into a source? Currently soils do not have to be accounted if they are a sink, but if they turn into a source, how will they be included?
- How are force majeure events included or excluded from projected reference levels? Currently some Parties remove all natural disturbances (as is the case with Canada) and others exclude only major force majeure events (as do some EU countries and Switzerland). There is no consistent approach used here by all Parties
- How are Harvested Wood Products included or excluded from projected reference levels?
- Australia has proposed setting and agreeing reference levels by 2011, what are the impacts of not agreeing the LULUCF rules on the Annex B targets for the second commitment period and how will it be ensured that there is no gap between commitment periods?

### 3. Natural disturbances/Force majeure

Due to the potential large emissions from natural disturbances, Parties are trying to address ways to exclude these extraordinary emissions or force majeure events from the accounting system. Because of the unique characteristic of forests – non-permanence – sinks can turn into source and vice versa. This is not only due to human interventions but also climate change itself which is having a devastating impact on the land use carbon pools – not only above ground biomass, but below ground such as soils. Including the LULUCF sector in a legally-binding accounting system raises a number of questions around compliance risk and a countries ability to meet its emission reduction commitment.

To a certain extent, methods already exist to average out natural disturbances. A five year commitment period allows Parties to average out their natural disturbances over these five years. However because the inter-annual variability of forests is so high, the compliance risk still exists even between these subsequent commitment periods.

Force majeure has been defined in the text as: “for the purposes of this decision, extraordinary events or circumstances, defined as those events or circumstances whose occurrence or severity was beyond the control of, and not materially influenced by, a Party [and whose associated total annual greenhouse gas emissions by sources and removals by sinks are a minimum of [X per cent][Y to 5 per cent] of the total national emissions included in the base year].”<sup>19</sup>

There are two options for addressing force majeure in the negotiating text: to delete the section or to allow Parties to select a minimum range (or threshold) from which carbon stocks on land can be excluded or carried over to subsequent commitment periods. A key question also relates to when the land re-enters the accounting system and if this is based on CO<sub>2</sub> emissions alone or the entire greenhouse gas emissions. If Parties are allowed to exclude all GHG in the definition of a force majeure event, it seems questionable as to why they would not wait for the land to come back to its GHG and carbon stocks prior to the event.

Furthermore, as mentioned previously some Parties have excluded natural disturbances in setting their projected reference levels. Figure 2 below shows an example of this for Canada. The green lines are Canada’s emissions/removals from forest land remaining forest land (Convention reporting used as a proxy for Kyoto forest management activity). The black line above are the emissions from natural disturbance events and the red line below shows historical emissions/removals without natural disturbances. Canada has set their reference level based on their historical emissions/removals without natural disturbances. The sink forecasted by Canada for the years 2013-2020 is much smaller than the trend of forest management emissions/removals excluding emissions from natural disturbances would suggest.

<sup>19</sup> See page 28 of Consideration of further commitments for Annex I Parties under the Kyoto Protocol Draft proposal by the Chair FCCC/KP/AWG/2010/CRP.2

Figure 2. Forest management data submitted by Canada to UNFCCC in September and November 2009, respectively. Source: PRIMAP

### Box 2. Proposals from Parties to address natural disturbances:

**Carry-over system:** Instead of exempting emissions from natural disturbances from their accounting, Parties could average out over several accounting years and/or commitment period. This may decrease the willingness to accept ambitious commitments in later periods, however it could include obligation on countries to reduce emissions through other means such as deeper target. In this way you can close the accounting system – but not in a temporal way. Combined with an expert review and decision by the COP/MOP this would ensure proper scrutiny by Parties as well as implying a risk to bring a natural disturbance event into the COP/MOP decision process.

**Temporary exclusion from the accounting of areas subjected to natural disturbances:** Land areas affected by natural disturbances would be temporarily excluded from accounting, excluding both emissions and subsequent removals. A variation of the proposal suggested is to allow Parties to choose whether to include or exclude in their accounts emissions and subsequent removals on lands subject to a major natural disturbance event. (Proposal by Tuvalu)

**Force majeure with a threshold limit** (Proposal by EU). If there is a threshold level by which emissions are not included, then Parties can only account for sinks after the level from before the natural disturbance event has recovered. This would give an incentive not to lose the stock exists.

**Discount factor** (Proposal by Switzerland). Discount factor would need to be applied symmetrically to both accounting of emissions and removals. The benefits of this proposal are that there is a symmetrical discounting with no need to carry-over emissions into the next commitment period or waiting for a time-out. The negatives may be that it discounts both the debits as well as the credits.

### Key issues for consideration:

- Whether the definition for ‘force majeure’ is accurate to describe an extreme natural disturbance event?
- Whether the review process to not allow Parties not to account for emissions is adequate?
- Removing emissions from the accounting system requires that future commitment periods will continue to exclude them and increases the complexities in accounting the LULUCF sector.
- No sink should be counted until the whole stocks, at the national level, recovers to the GHG level and carbon stock prior to the event.

## 4. Land based approach

Proposals have been made by some Parties to adopt a land based approach to LULUCF which accounts for all the reporting categories within the Convention. A land based approach would replace the activity based accounting of the current Kyoto Protocol system and would include the IPCC reporting categories: forest lands, croplands, grazing lands, wetlands, settlements and other lands indirectly by covering the whole LULUCF sector.

Proposals by some Parties to move towards a net-net accounting system (Australia, Norway and Switzerland<sup>20</sup>) are being raised as an option to move towards a land based approach by the third commitment period. There is also a paragraph in the decision text (para 5 and 6) which sets up a SBSTA work programme to explore ways to move towards a more comprehensive approach by COP/MOP8 in 2012.

<sup>20</sup> Australia 2009 Text to be included in the Draft conclusions proposed by the Chair. (FCCC/KP/AWG/2009/L.3) 24 April 2009, FCCC/KP/AWG/2009/MISC.11; Norway 2009 Contact group on scale of emission reductions by Annex I, Bangkok AWG-KP10, 7 October 2009; and Switzerland 2009 Submission on Possible Options for Consideration Relating to Land-Use, Land-use Change and Forestry, 16 February 2009, FCCC/KP/AWG/2009/MISC.5



A net-net accounting system may increase the incentive to reduce emissions and increase removals as all changes are included. However, the risk is for Parties where natural disturbances can cause large fluctuations. The net-net approach is not suitable to factor our large annual fluctuations caused by natural disturbances. It can be used to factor out indirect and non-anthropogenic effects when the natural and indirect human-induced effects are the same in the base year and in the commitment period. However, under a changing environment caused by climate change this approach may have limitations.

For some countries moving to a land based approach is very difficult. For example: Canada have stated that they cannot fully quantify land use and land use change at the national scale and considerable improvements in scientific understanding are still needed to assess the anthropogenic impacts of some land types (e.g., wetlands, settlements).<sup>21</sup> The EU have also stated that whilst reporting methods exist under the UNFCCC, significant further effort will be necessary to improve the practices and methods to increase the uncertainties. They also recognised that the compliance risk for some Parties is likely to substantially increase.<sup>22</sup>

Currently CAN supports a move to more “fuller accounting” however, there are some groups which support a land based approach and others that do not.

Key issues to consider:

- Does a land based approach, due to issues of major uncertainties, lead to a significant reduction in the transparency of commitments.
- Does a land based approach diminish the verifiability and the implementability of the legally binding commitments?

## 5. Clean Development Mechanism and LULUCF

The purpose of CDM (Article 12) was to generate investment in developing countries, especially from the private sector, to enhance the transfer of environmentally friendly technologies and thus promote their sustainable development. However, even though some NGOs argued against the inclusion of sinks projects – afforestation and reforestation were included as forestry projects in the CDM.<sup>23</sup> There was a strong push by some Parties to include ‘avoided deforestation’ in the CDM, however, there were many problems. These had to do with the project-based activities being intrinsically subject to leakage, baseline uncertainties (what would deforestation have been in the absence of projects) and the effect of reducing investments in reducing emissions in industrial sectors, without a corresponding unambiguous benefit to overall greenhouse gas reductions. For these and other reasons, avoided deforestation was not included in the Kyoto Protocol or the CDM and hence from the carbon market.

NGOs believe that the CDM is inherently limited because it does not reduce developed countries greenhouse emissions – but merely inflates the assigned amount of a Party. The use of CDM sinks activities is limited – up to 1 per cent of the Party’s emissions in its base year for each of the five years of the commitment period.

Some Parties such as New Zealand<sup>24</sup> have actively pushed for changes in the CDM rules including raising the limit of CDM activities, including additional CDM activities and revising the liability for AR projects to address non-permanence.

21 Canada 2009 Canadian experience and perspective on Article 3.4 activities presentation at the Annex I sink experts informal workshop March 13, 2009, Dublin, Ireland, <http://www.coford.ie/iopen24/pub/workshop-Canada1.pdf>

22 EU Commission (2009) Towards a comprehensive climate change agreement in Copenhagen - Extensive background information and analysis, Part 1, [http://ec.europa.eu/environment/climat/pdf/future\\_action/part1.pdf](http://ec.europa.eu/environment/climat/pdf/future_action/part1.pdf)

23 The modalities and procedures of CDM projects which relate to A/R in the first commitment period are found in decision FCCC/CP/2003/6/Add.2.

24 New Zealand 2009 A Submission to the Ad-Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) Land Use, Land Use Change and Forestry 15 February 2009 FCCC/KP/AWG/2009/MISC.5

Currently the decision text (para 8 and 9) agrees to discuss this in future sessions of the COP/MOP and requests SBSTA to develop and recommend modalities and provisions for alternative approaches to address non-permanence for example by who takes liability for reversals (currently it is Annex I parties) insurance, buffers and credit reserves.

## 6. Others

### Debit Credit Rule

The debit-credit rule (paragraph 4 of the Annex to Decision 16/CMP.1, was proposed by New Zealand during the Marrakesh Accords negotiations. This rule ensures that the lowest accountable emissions and removals will be zero for this unit of land. The rule states: *“For the first commitment period, debits resulting from harvesting during the first commitment period following afforestation and reforestation since 1990 shall not be greater than credits accounted for on that unit of land.”*

This rule provides no incentive for countries to reduce emissions from harvesting, but allows Parties to fix the accounting rules, with their own unique problems.

In such a case the lowest accountable emissions and removals will be zero for this unit of land.

### Length of Accounting period

Proposals have been made calling for longer commitment periods to provide greater flexibility to account for LULUCF and to manage the growth harvest of the forestry sector. Whilst extending the Kyoto commitment periods may be beneficial for the LULUCF sector, it would fundamentally change the policy context of the Kyoto Protocol and have impacts for other sectors. An extension beyond five years in each commitment period would:

- Weaken the political accountability for compliance with agreements as the commitment period would extend beyond the normal political cycle of most Governments in the Annex I group;
- Weaken and damage the ability to improve emission reduction pathways incrementally over time as the science and political context determines; and
- Would not necessarily resolve the LULUCF variability.

The repercussions of extending the commitment periods whereby Parties do not comply with emission reduction targets could be detrimental to the climate system, therefore no change to the length of the commitment periods is recommended. Currently the reference levels being discussed include the option for an 8 year commitment period even though this has not been agreed by all Parties. This is evident in the setting of reference levels of 2013–2020 rather than 2013–2017.

## V. What are the problems with Harvested Wood Products

A number of countries have proposed including Harvested Wood Products (HWP) in the second commitment period LULUCF accounting rules. Currently, there are only three Annex I countries who report data on HWP, therefore it has been difficult to quantify the effects of this extra sink potential on the Annex I Parties. The current proposal in the non-paper looks at accounting based on two approaches by Parties:

**Option 1:** Delete the HWP section

**Option 2:** Continuing using the current IPCC default approach or if a Party choose allow for voluntarily accounting under the production approach (see below description).

Harvested Wood Products were excluded from the Kyoto accounting in the first commitment period for a range of reasons as the assumption was made that carbon stock decreases are released to the atmosphere. The issue is that considerable stocks of carbon transition to various wood product “pools,”

some of which may have long residence times (e.g. construction materials). Material deposited in large landfills may have residence times well over 100 years, however CO<sub>2</sub> in paper products is returned to the atmosphere in as little as three years. An additional problem was reported in coded terms in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories where it was found that “The approaches that have been identified are mutually exclusive in the sense that a global or regional estimate of annual HWP Contribution would only be correct if all the different countries provided estimates using the same approach.”<sup>25</sup> A number of Parties are advocating that post-2012 accounting for commitments include wood product pools as the IPCC’s 2006 GPG have outlined a number of accounting methods.

Harvested Wood Products should continue to be excluded in the second commitment period of the Kyoto Protocol. No workable, consistent and comprehensive approach to this pool has been adopted, other than assuming that all carbon removed from the landscape is promptly emitted. Accounting for additions to the pool of wood products without accounting for emissions from the entire pool is unacceptable and could incentivize increased harvesting and thus encourage unsustainable logging. HWP should not be included in the second commitment period.

### Box 3. Description of proposals to account for Harvested Wood Products

Current IPCC default approach: only the net changes in forest carbon stocks is account for. Emissions from harvests are treated as though they are 100% released as CO<sub>2</sub> to the atmosphere in the year and country of harvest. Carbon storage in wood products is not considered.

**Production approach:** This would estimate the net changes in carbon stocks in the forest(s) and in the wood-products pool due to harvesting, and attribute both to the producing country. Stock changes would be accounted for when, but not where, they occurred. A variant of the production approach is the so-called simple-decay approach, which uses emission factors to account for the decomposition of carbon in HWPs.

**Stock-change approach:** This would estimate the net changes in carbon stocks in the forest(s) and in the wood-products pool. However, changes in carbon stock in forests would be accounted for in the country where the wood was produced, while changes in the products pool would be accounted for in the country where the products were used. These stock changes would be accounted for within national boundaries, where and when they occurred.

**Atmospheric flow approach:** This would account for the net emissions or removals of carbon to and from the atmosphere within national boundaries, where and when emissions and removals occurred. Removals of carbon from the atmosphere due to forest growth would be accounted for in the producing country, and emissions of carbon to the atmosphere from oxidation of wood products would be accounted for in the consuming country.

Source: UNFCCC Analysis of possible means to reach emission reduction targets and of relevant methodological issues Technical paper 6 August 2008 FCCC/TP/2008/2

<sup>25</sup> [http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4\\_Volume4/V4\\_12\\_Ch12\\_HWP.pdf](http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_12_Ch12_HWP.pdf)

**Key issues to consider:**

- Do countries have accurate data for imports and exports of HWPs?
- In the stock-change approach, imports from unsustainable HWPs could result in credits for a Party.
- In the production and simple-decay approaches, exported HWPs would result in credits based on rough assumptions and from activities that the Party would have no influence over. The period of accounting and reporting can have an effect on the calculation of emissions or removals; for example, if only recent years are considered, emissions from the existing HWP pool may be underestimated.
- The atmospheric-flow approach may require modifying the reporting requirements for forests as emissions would be accounted by the consuming country, therefore emissions would need to be tracked.
- Could increase unsustainable practices in the harvesting and use of wood, depending on the approach followed and may increase displacement of emissions.
- Are HWP included or excluded in setting reference levels and what are the implications for this?

## VI. Why do different players act in the way they do?

LULUCF has always been a controversial issue in the negotiations for the Kyoto Protocol and its implementation.<sup>26</sup> The issues have revolved around the scale of LULUCF credits relative to commitments and how countries meet their targets i.e. forest or non-forest countries. Negotiations in the second commitment period continue to point towards a bias in accounting for sinks rather than sources. Furthermore, with the interest in HWP and excluding emissions from force majeure events it appears that Parties not only want to account more for sinks, but they don't want to account for some emissions. Parties have continued to develop "fixes" for their particular issues and have even staked their 2020 target on these fixes.<sup>27</sup>

**Table 4: Parties positions on key LULUCF issues:**

Annex I Party	Position on LU-LUCF accounting for 2nd commitment period	Force majeure	HWP	Information provided to the AWG-KP on LULUCF options – Dec 2009 – August 2010
Australia	Net-net accounting of all KP activities included in the calculation of the AAs	Revise to allow Parties to choose whether to symmetrically include or exclude from their accounts emissions and subsequent removals on lands subject to a major natural disturbance event <sup>2</sup> .	Australia supports New Zealand's proposal that the approach only be applied to wood products harvested from 1 January 2013 from lands that are covered by a given Party in a post-2012 outcome.	FM - Forecast 2013-2020
Belarus	Include wetlands. Supports inclusion of wetland restoration and conservation on a voluntary basis.		Yes	Not available

<sup>26</sup> Forner, C 2004 LULUCF and climate change, a field for battles? [http://www.joanneum.at/carboinvent/post2012\\_/Bird/Forner\\_2004.pdf](http://www.joanneum.at/carboinvent/post2012_/Bird/Forner_2004.pdf) and Jung, M 2004 The History of Sinks – An Analysis of Negotiating Positions in the Climate Regime HWWA Discussion paper.

<sup>27</sup> New Zealand have stated their 20% reduction target by 2020 is conditional on LULUCF and Russian Federation has stated their range of emission reductions is based on the conditions that LULUCF will contribute to the target.

Annex I Party	Position on LU-LUCF accounting for 2nd commitment period	Force majeure	HWP	Information provided to the AWG-KP on LULUCF options – Dec 2009 – August 2010
Canada	Net-net accounting with forward looking baseline	Exclude emissions	Yes	FM - Forecast 2013-2020
Croatia	No position			Not available
EU27	Current rules with FM BAR option Bar set at average of 2001-2005 net emissions with a proportional 5% band	Force majeure exclusion	Yes	FM - Forecast 2013-2020
Iceland	Include wetlands Gross-net accounting			Not available
Japan	Current Gross-net accounting rules		Yes	FM - Gross-net approach
New Zealand	Current rules with FM option. Keep debit-credit rules, equivalent forest (deforestation does not occur a debit if trees planted elsewhere)Forward looking baselines	Force majeure exclusion	Yes	FM - Forecast 2013-2020
Norway	Net-net accounting (Land based approach in third commitment period)		Yes	FM - Forecast 2013-2020
Russian Federation	Current rules with no cap; also like BAR to zero  Remove plantations from forest definition.			FM - Gross-net approach no caps
Switzerland	Forest management calculated with net-net accounting, using the first commitment period as a base period	Discount factor on all KP activities to address natural disturbances	Yes	FM - Average 2001-2005 (Dec 2009)  FM - Forecast 2013-2020 (August 2010)
Ukraine	Gross-net accounting			Not available
USA	Land based approach			Not available

## VII. Are there different rules for Annex I and non-Annex I countries?

With the discussion on reducing emissions from deforestation and forest degradation (REDD) focused on both policy and methodological issues, Parties have often said that the rules for REDD in non-Annex I countries should not be tougher than those set in Decision 16/CMP.1 for Annex I countries. One of the major differences between Annex I and non-Annex I is that actions on REDD should be voluntary.

REDD, now called REDD+, refers to policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

While definitions for deforestation are included in Decision 16/CMP.1, definitions for forest degradation; conservation, sustainable management of forests and enhancement of forest carbon stocks are yet to be defined. Furthermore, do the current definitions of forests apply to non-Annex I countries or will Parties attempt to make a new definition?

### Baselines or reference levels

The setting of targets and baselines must ensure that the commitments require real deforestation emission reductions and do not provide incentives to increase the rates of deforestation before the system starts. All national forests and forest-related ecosystems in the country should be included, as well as both government and privately owned land. Establishing credible baselines for reduced deforestation is likely to be difficult because of poor monitoring and data in many countries. Adopting a conservative approach to establishing country-specific baselines, below which emissions reduction credits are issued, is key. The baseline chosen should require that the country make an appropriate amount of effort to reduce its own emissions before it starts to receive any credit for its efforts. However, mechanisms must be put in place to reduce the risk of exceeding, at some point in the future, an internationally agreed upon baseline.

There are two approaches to establishing a baseline: reference baselines based on historical deforestation rates and reference baselines based on projections. However, agreeing on what an acceptable rate of deforestation would be for any one country and how historical baselines could ensure appropriate involvement by countries with low rates of deforestation will be difficult. Neither approach is ideal, although a well established historical baseline is by far preferred for the first post 2012 period on the basis that we can be sure that emission reductions are real. Projected baselines should not be supported in the first post 2012 period as they are essentially aimed at a system of generating “avoided” deforestation credits: reductions from historical levels produce an unambiguous benefit. This also links in to whether Annex I countries are allowed to use projected reference levels to account for forest management, if this is the case, then using projected baselines for non-Annex I countries will likely follow.

### Monitoring, Reporting and Verification

Any arrangement must ensure that there is rigorous, solid and reliable monitoring and verification procedures. At present adequate monitoring, reporting and verification of tropical deforestation is not being done. Whatever system is adopted, consistent monitoring systems that meet a set of international standards agreed to by Parties will need to be established in developing nations to ensure the integrity of emission reductions from deforestation. Monitoring, reporting and verification requirements will need to increase in stringency if options to move to a carbon market are considered.

### Accounting

Some Parties have suggested that whatever methodological approach is selected it should ensure that only the carbon losses (known as gross emissions) from deforestation are taken into account in the

estimation of emissions and not any potential carbon gains (known as net emissions) resulting from subsequent land uses. However, with the expansion to REDD+ it looks to become more like an Annex I LULUCF approach where both emissions and removals are accounted which means that the incentives to reduce emissions from deforestation (which was the main aim of the agenda initially) may be reduced. Furthermore, similar to discussions to move Annex I to a more comprehensive accounting approach, the same idea has been raised for non-Annex I countries.<sup>28</sup>

## VIII. Conclusions and recommendations

It is clear that some incremental improvements to the Kyoto LULUCF accounting rules are required to remove the “fixes” from the previous commitment period which have biased LULUCF sinks and not sources. It is important to understand the scale of likely credits from LULUCF activities; how much of this is additional to what would otherwise have happened and to quantify the effects of these factors in setting reduction targets for industrial emissions. Failure to do so could lead to emission reduction targets being set so that it is not feasible to meet stringent climate protection goals.

For example the following should be addressed:

- Extend reforestation definition to second commitment period
- Include forest degradation as an Article 3.4 activity
- Require accounting of revegetation and devegetation or none
- Ensure there is a cap on forest management so that the scale does not overwhelm reduction efforts in other industrial sectors
- Delete the debit-credit rule
- Delete second sentence of Article 3.7 which allows countries to add their emissions from land use change (deforestation) to the base year

It is important to reduce the complexity of the negotiations and place the focus on working out problems which were recognised but not resolved in the Marrakech Accords. Experience should be built over a decadal time frame which should provide a better basis for more far reaching changes should they be felt necessary.

<sup>28</sup> In Bali in 2007, the United States of America introduced language in the final text on the decision allowing land use to be brought in. The implications of the inclusion of land use within text on reducing emissions from deforestation could include all types of land use and not just those on reducing emissions from deforestation.

## Annex 1: History of LULUCF negotiations

All LULUCF submissions related to the negotiations for the 2nd commitment period of the Kyoto Protocol can be found here: [http://unfccc.int/meetings/ad\\_hoc\\_working\\_groups/kp/items/4907.php](http://unfccc.int/meetings/ad_hoc_working_groups/kp/items/4907.php)

Session	Purpose	
<b>2008</b>		
AWG-KP 5 part 1, 31 March-4 April 2008 Bangkok, Thailand	An <i>in-session workshop</i> on the means to reach emission reduction targets took place: LULUCF was a thematic theme discussed.	Report of the fifth session <i>FCCC/KP/AWG/2008/2</i> Documentation: <i>FCCC/KP/AWG/2008/CRP.1</i> LULUCF presentations: <a href="http://unfccc.int/kyoto_protocol/items/4336.php">http://unfccc.int/kyoto_protocol/items/4336.php</a>
AWG-KP 5 part 2, 2-12 June 2008 Bonn, Germany	The objective of this session was to consider the means that may be available to Annex I Parties to reach their emission targets and relevant methodological issues.	Report of the resumed fifth session <i>FCCC/KP/AWG/2008/3</i> Round table on the means to reach emission reduction targets <a href="http://unfccc.int/kyoto_protocol/items/4373.php">http://unfccc.int/kyoto_protocol/items/4373.php</a> Draft conclusions proposed by the Chair: <i>FCCC/KP/AWG/2008/L.5</i>
AWG-KP 6 part 1, 21-27 August 2008 Accra, Ghana	In this session, the Group considered proposals on the means to reach their emission targets and on relevant methodological issues, identifying options which were compiled in Annexes.	Report of the sixth session <i>FCCC/KP/AWG/2008/5</i> Draft conclusions proposed by the Chair: <i>FCCC/KP/AWG/2008/L.11</i>
AWG-KP 6 part 2 1-10 December 2008 Poznań, Poland	The main intention in Poznań was for the AWG-KP to hold comprehensive strategic discussions on all elements of the work programme.	Report of the resumed sixth session <i>FCCC/KP/AWG/2008/8</i> Draft conclusions proposed by the Chair <i>FCCC/KP/AWG/2008/L.11</i>
<b>2009</b>		
AWG-KP 7 29 March - 8 April 2009 Bonn, Germany	The seventh session of the AWG-KP was preceded by a number of preparatory events, including: In-depth consultations on: Land use, land-use change and forestry and emissions trading and the project-based mechanisms  To adopt conclusions on consideration of the scale of emission reductions to be achieved by Annex I Parties in Aggregate.	Report of the seventh session <i>FCCC/KP/AWG/2009/5</i> Draft conclusions proposed by the Chair: <i>FCCC/KP/AWG/2009/L.3</i>
AWG-KP 8 1 June – 12 June 2009 Bonn, Germany	To adopt conclusions on the matter of: consideration of the contribution of Annex I Parties, individually or jointly, consistent with Article 4 of the Kyoto Protocol, to the scale of emission reductions to be achieved by Annex I Parties in aggregate (referred to in paragraph 49 (b) of the report to the Poznan AWG-KP session see below); and consider issues relating to means, potential consequences and common metrics, as well as any draft decisions or draft amendments	Report of the eighth session <i>FCCC/AWG/KP/2009/9</i> Documentation to facilitate negotiations among Parties. Note by the Chair. Addendum. Land use, land-use change and forestry. <i>FCCC/KP/AWG/2010/6/Add.2</i>
Inter-session informal consultation 10 - 14 August 2009 Bonn, Germany	Substantive discussions will take place in informal settings, negotiating issues similar to those addressed at the eighth session of the AWG-KP. These discussions will be based upon documentation to facilitate negotiations among Parties, building upon the work of the AWG-KP at its eighth session.	Documentation to facilitate negotiations among Parties, Note by the Chair 1 July 2009 <i>FCCC/KP/AWG/2009/10/Add.3</i>



AWG-KP 9 part 1 28 September - 9 October, Bangkok, Thailand	This session will seek to consider issues relating to rules and modalities of possible improvements relating to items 3, 4 and 5 of its agenda for the sixth session, as well as any draft decisions or draft amendments The AWG-KP agreed to continue its deliberations on the scale of emission reductions to be achieved by Annex I Parties in aggregate as a key focus of its eighth session.	Documentation to facilitate negotiations among Parties, Note by the Chair 28 August 2009 FCCC/KP/AWG/2009/10/Add.3/Rev.1
AWG-KP 9 part 2 2 - 6 November 2009, Barcelona, Spain	As Bangkok session	Report of the ninth session <a href="#">FCCC/KP/AWG/2009/14</a> Documentation to facilitate negotiations among Parties, Note by the Chair 19 October 2009 FCCC/KP/AWG/2009/10/Add.3/Rev.2
AWG-KP 10 7 - 18 December 2009, Copenhagen, Denmark	To continue consideration relating to items 3,4 and 5 of its agenda for the sixth session. Further consideration of a draft text on the consideration of further commitments by Annex I Parties and any draft decisions or draft amendments. The main objective of the session will be to produce substantive results of the work on the consideration of commitments for subsequent periods for Annex I Parties under Article 3, paragraph 9, of the Kyoto Protocol, and to forward them to the CMP for further action.	Report of the tenth session <a href="#">FCCC/KP/FCCC/KP/AWG/2009/10/Rev.3</a> Documentation to facilitate negotiations among Parties Note by the Chair Annex II <a href="#">FCCC/KP/WG/2009/10/Add.3/Rev.3</a>
AWG-KP 11 9-11 April 2010 Bonn, Germany	This session will consider: how to conclude work on all outstanding issues by CMP 6; whether there is a need for any technical work to support the work of the AWG-KP in 2010; modalities for advancing the work; and the appropriate number of sessions for 2010.	
AWG-KP 12 1-11 June 2010 Bonn, Germany	Continue negotiations	Documentation to facilitate negotiations among Parties Note by the Chair – 29 April 2010 <a href="#">FCCC/KP/AWG/2010/6/Add.2</a>
AWG-KP 13 2-6 Aug. 2010 Bonn, Germany	Continue negotiations Pre-session workshop on Forest management accounting 30 July 2010	Draft proposal by the Chair Chapter II: Draft decision -/CMPX Land use, land-use change and forestry <a href="#">FCCC/KP/AWG/2010/CRP.2</a> Workshop presentations <a href="http://unfccc.int/meetings/ad_hoc_working_groups/kp/items/4907.php">http://unfccc.int/meetings/ad_hoc_working_groups/kp/items/4907.php</a>

Source: Scenario notes by the AWG-KP Chair and [http://unfccc.int/kyoto\\_protocol/items/4944.php](http://unfccc.int/kyoto_protocol/items/4944.php)

1. This affects five Parties for the first commitment period of the Kyoto Protocol: Australia, Ireland, the Netherlands, Portugal and the United Kingdom.
2. Misc 5



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