

Online training course “Review of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol” of the UNFCCC “Training programme for members of expert review teams participating in annual reviews under Article 8 of the Kyoto Protocol”

Support material for non-LULUCF experts

Accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in the second commitment period

Version 2, 2018.07

This material is intended to support experts who are not land use, land-use change and forestry (LULUCF) experts in taking the online training course “Review of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol” of the UNFCCC “Training programme for members of expert review teams participating in annual reviews under Article 8 of the Kyoto Protocol”. It covers the basics of the **accounting requirements** for Parties included in Annex I that are also Parties to the Kyoto Protocol in the **second commitment period** with the aim of facilitating experts’ understanding of what accounting issues on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol the LULUCF experts may face when reviewing the annual submissions of Annex I Parties that are Parties to the Kyoto Protocol during the second commitment period.

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1. Introduction

This material is intended to support experts who are not land use, land-use change and forestry (LULUCF) experts in taking the online training course “Review of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol” of the UNFCCC “Training programme for members of expert review teams participating in annual reviews under Article 8 of the Kyoto Protocol” in the second commitment period of the Kyoto Protocol (CP2), including lead reviewers. It covers the basics of the accounting requirements for Parties included in Annex I that are also Parties to the Kyoto Protocol in CP2 with the aim of facilitating experts’ understanding of what accounting issues on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (KP-LULUCF activities) the LULUCF experts may face when reviewing the annual submissions of Annex I Parties that are Parties to the Kyoto Protocol.

All LULUCF experts must be aware that, in order to take part in an expert review team as a LULUCF expert and conduct technical reviews of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol during the CP2, it is mandatory to complete all lessons of the online training course “Review of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol” of the UNFCCC “Training programme for members of expert review teams participating in annual reviews under Article 8 of the Kyoto Protocol” and to pass the final examination for the LULUCF experts that was prepared specifically for the CP2 as required by decision 5/CMP.11.

Similarly, **all experts who will take part in expert review teams as Lead Reviewers for the first time** of the reviews of the annual submissions of Annex I Parties that are Parties to the Kyoto Protocol must be aware that it is mandatory to study the above-mentioned online training course “Review of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol” of the UNFCCC “Training programme for members of expert review teams participating in annual reviews under Article 8 of the Kyoto Protocol” and to pass the final examination before taking the role of Lead Reviewers.

The information on mandatory training courses for the review experts including the LULUCF experts and Lead Reviewers can be found in Appendix 4 of this document.

2. Reporting and accounting emissions and removals from KP-LULUCF activities

Article 3, paragraph 1, of the Kyoto Protocol states: “Parties included in Annex I shall ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases listed in Annex A do not exceed their assigned amounts...”.

The LULUCF sector is not included in Annex A to the Kyoto Protocol. Therefore, information reported on the LULUCF sector under the Convention is not readily used for accounting under the Kyoto Protocol. Consequently, as required by Article 7, paragraph 1, of the Kyoto Protocol, each Party must report, in its annual inventory submission, information supplementary to that reported for the LULUCF sector in order to account for Article 3, paragraphs 3 and 4, activities. Thus, there are “accounting rules” and “reporting requirements” for KP-LULUCF activities. The Expert Review Team (ERT) shall review whether the accounting is properly implemented based on the reported information on the KP-LULUCF. Both correctness of the reported information and of accounted quantities are the scope of the review of KP-LULUCF activities.

“Accounting” in the context of Kyoto Protocol refers to how information reported by Parties are used to calculate the mitigation impact of human activities.

“Reporting” refers to the submissions by the Parties under the Convention and the Kyoto Protocol of transparent, accurate, consistent, complete, and comparable information as required by the relevant UNFCCC reporting guidelines and IPCC good practice.

Article 3, paragraphs 3 and 4, of the Kyoto Protocol specifically address the accounting for the contribution of-LULUCF activities, namely greenhouse gas (GHG) emissions by sources and removals by sinks resulting from mandatory activities afforestation/reforestation (AR) and deforestation (D) (Article 3, paragraph 3) and forest management (FM) (Article 3, paragraph 4), as well as any voluntarily elected

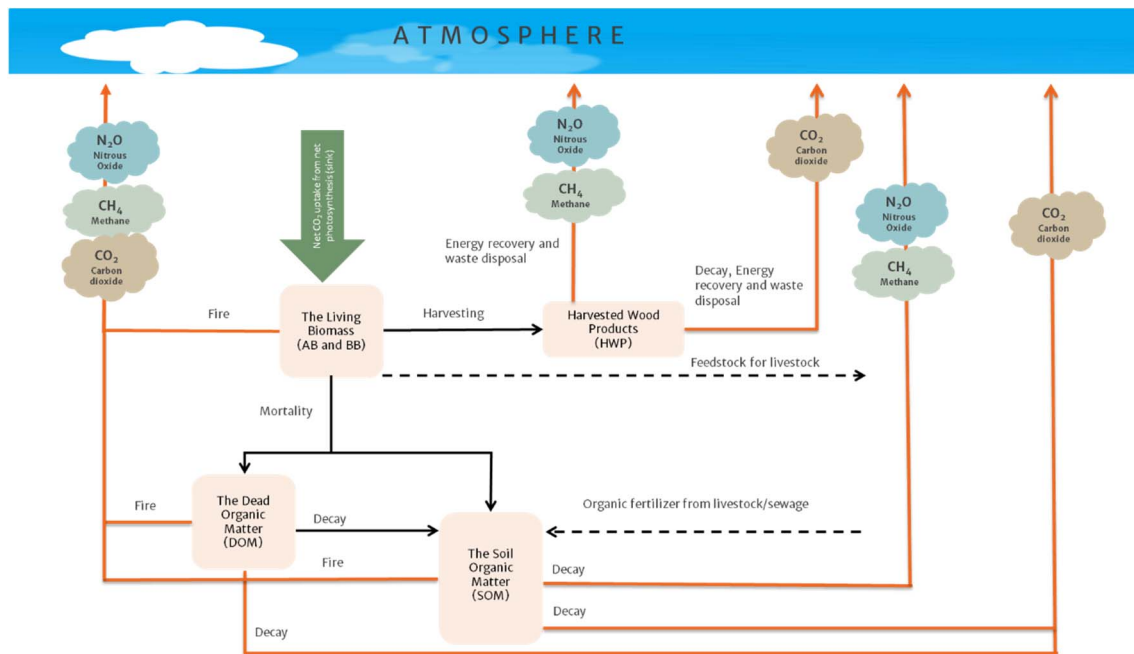
activity such as cropland management (CM), grazing land management (GM), revegetation (RV) and wetland drainage and rewetting (WDR) (Article 3, paragraph 4).

With the aim to calculate compliance of Parties with their commitments under the Kyoto Protocol, net credits from each KP-LULUCF activity are eventually issued as “Removal Unit (RMU)” and net debits requires a cancellation of an equivalent amount of carbon units (AAU, ERU, CER). To account for credits and debits from each KP-LULUCF activity, a number of rules are set as contained in decision 2/CMP.7, which generally require to compare GHG emissions and removals from land subject to the activity during the commitment period with a reference value¹ (base year, zero or reference level).

3. Reporting of carbon pools and associated GHG emissions and removals under KP-LULUCF activities

3.1 Carbon stock changes and associated GHG emissions and removals from carbon pools

KP-LULUCF activities are aimed at accounting the impact of human activities on GHG fluxes from lands. To do so, information on anthropogenic carbon stock changes and associated GHG emissions and removals from carbon pools must be reported for each mandatory and elected KP-LULUCF activity. For the LULUCF sector, carbon stock changes are estimated by considering carbon cycle processes in the following carbon pools: above-ground biomass, below-ground biomass, deadwood and litter (dead organic matter), soil organic matter, and HWP. Emissions and removals due to carbon stock changes in those pools are estimated using the methodologies provided in the 2006 IPCC Guidelines. Carbon stock changes are caused by the interaction of natural processes (e.g. photosynthesis, mortality, wildfires) and human activities (e.g. planting, harvesting, fires) and can cause carbon stock transfers among carbon pools (e.g. from biomass to dead organic matter because of mortality) or an exchange of GHGs with the atmosphere (e.g. from the atmosphere to the biomass pool because of growth or from dead organic matter to the atmosphere because of decay). The figure below depicts all processes and associated carbon stock transfers and GHG emissions and removals.



¹ The reference value is the value used in accounting for comparison with actual GHG emissions and removals to quantify the impact of a mitigation action. It generally corresponds to the counterfactual net GHG flux that would occur in absence of the action.



Source: Sandro Federici, for the FAO online training course on the AFOLU sector of national GHG inventories.

3.2 Decision 16/CMP.1 in conjunction with decision 2/CMP.7 – principles and definitions

Reporting and accounting for KP-LULUCF activities in CP2 are governed by principles (decision 16/CMP.1, para. 1) and definitions (decision 16/CMP.1 - section A and E of the annex- and decision 2/CMP.7- para 1 of the annex).

The forest definition applied in the first commitment period of the Kyoto Protocol (CP1) remains valid for CP2.

In CP2, Parties must continue reporting and accounting the activities that they elected for CP1 (note that Parties reported their elected activities in their report to facilitate the calculation of the assigned amount for CP2);

The hierarchy among elected activities established in CP1 remains valid in CP2 (see also section 4.2 below).

3.3 Articles of the Kyoto Protocol and CMP decisions specific to KP-LULUCF activities in CP2

The following is a list of references to Articles of the Kyoto Protocol, decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and Intergovernmental Panel on Climate Change (IPCC) guidelines specific to KP-LULUCF activities relevant for CP2.

➤ Articles of the Kyoto Protocol

- Article 3, paragraphs 3 and 4
- Article 3, paragraph 7 bis (Doha Amendment)

➤ CMP decisions

Although other Articles of the Kyoto Protocol and CMP decisions that refer generally to accounting under the Kyoto Protocol are relevant to KP-LULUCF activities, specific accounting provisions are the followings:

- Decision 2/CMP.6 (LULUCF)
 - ✓ Forest management reference levels (FMRLs) as contained in Appendix I
- Decision 2/CMP.7 (LULUCF)
 - ✓ Definitions, modalities, rules and guidelines relating to LULUCF activities under the Kyoto Protocol
- Decision 2/CMP.8
 - ✓ Annex I: Report to facilitate the calculation of the assigned amount
 - ✓ Annex II: Information on LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in annual GHG inventories
- Decision 6/CMP.9
 - ✓ Guidance for reporting information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
- Decision 18/CMP.1 in conjunction with decisions 3/CMP.11 and 4/CMP.11

- ✓ Criteria for cases of failure to submit information relating to estimates of GHG emissions by sources and removals by sinks from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

3.4 IPCC Guidelines for reporting information on KP-LULUCF activities relevant for CP2

As established decisions 4/CMP.7 and 6/CMP.9, the **2006 IPCC Guidelines for National Greenhouse Gas Inventories** (2006 IPCC Guidelines), which provide methodological guidance for estimating carbon stock changes and associated GHG emissions and removals from LULUCF activities, as well as other emissions shall be used in conjunction with the **2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol** (Kyoto Protocol Supplement), which provide methodological guidance for reporting supplementary information on anthropogenic GHG emissions and removals to be accounted for LULUCF activities in CP2. In addition, if the WDR activity has been elected the **2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands** (Wetlands Supplement), which provides methodological guidance for reporting on drainage and rewetting of organic soils, shall be used in conjunction with the previous guidance while ensuring consistency of the overall report as well consistency between reporting under the Convention and the Kyoto Protocol.

Decision 6/CMP.9

Guidance for reporting information on activities under Article, paragraphs 3 and 4, of the Kyoto Protocol

8. ... for the purpose of providing information on anthropogenic greenhouse gas emissions by sources and removals by sinks from land use, land-use change and forestry activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and elected activities, if any, under Article 3, paragraph 4, of the Kyoto Protocol in accordance with Article 5, paragraph 2, of the Kyoto Protocol in the CP2, Parties included in Annex I shall apply the 2006 IPCC Guidelines for National GHG Inventories, as implemented through the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, in accordance with decision 4/CMP.7;

9. ... for the purpose of providing information referred to in paragraph 8 above in the CP2, Parties included in Annex I shall apply, as appropriate, the Intergovernmental Panel on Climate Change (IPCC) 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol in a manner consistent with decision 2/CMP.7, and consistent with annex I to decision 24/CP.19, “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories” and this decision;

10. ... the 2013 Supplement to the 2006 IPCC Guidelines for National GHG: Wetlands shall apply for providing information on wetland drainage and rewetting elected activity under Article 3, paragraph 4, of the Kyoto Protocol in accordance with paragraph 11 of the annex to decision 2/CMP.7; the use of the 2013 Supplement to the 2006 IPCC Guidelines for National GHG Inventories: Wetlands is encouraged but not mandatory for any other activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol;

4. Election of KP-LULUCF activities (annex to decision 2/CMP.7)

4.1 Mandatory and elected activities

While mandatory activities (AR, D and FM) must be reported and accounted by all Annex I Parties that are Parties to the Kyoto Protocol, eligible activities (CM, GM, RV, WDR) must be reported and accounted only if elected in the report to facilitate the calculation of the assigned amount for CP1 and/or CP2, already reviewed at the beginning of CPs. Once the decision was confirmed by the review of such reports, this election cannot be changed during CP2. (See also section 2 “Reporting and accounting emissions and removals from KP-LULUCF activities” above and a table under section 5.4 “Specific accounting framework for each KP-LULUCF”.

4.2 Hierarchy of KP-LULUCF activities to avoid double counting

Land may be subject to multiple KP-LULUCF activities concurrently (e.g. a deforested land (D) is subject to cropland management) and/or over time, (e.g. subsequently that deforested land (D) is reforested). In order to avoid double counting, even if land is subject to multiple activities, it must be reported and accounted under one activity only. Consequently, hierarchy is introduced amongst activities in order to univocally assign each land subject to multiple KP-LULUCF activities to one activity so avoiding double counting of such land.

The hierarchy pre-determined in CMP decisions and IPCC Guidelines is the following order: (1) D, (2) AR, (3) FM, (4) elected activities (except for WDR) for which relative hierarchy is to be established by the Party and (5) WDR. Therefore, in case of concurrent use, the land is reported under the activity that is higher in the hierarchical order. (in the previous example, the deforested land subject to cropland management is reported under D only).

Furthermore, the need to ensure permanence of accounted units does not allow Parties to move a land from a gross-net accounting framework (D and AR) to a net-net accounting framework (CM, GM, RV, WDR and FM); thus, a land can only move from a lower hierarchical activity to a higher one (e.g. from FM to D), never in the other direction (e.g. from D to CM).

The following are examples of reporting under KP-LULUCF taking into account the hierarchy among KP-LULUCF activities.

- ✓ Once land is reported under an Article 3, paragraph 3 activity, it will always be reported as such, regardless of any conversion of that land to an Article 3, paragraph 4, activity.
- ✓ Land can shift from AR or FM to D, but not vice versa. In the case forest regrowth occurs on land reported as D, it is good practice to create a subdivision in D to indicate that a net sink is occurring on that land, which explains why a net removal of CO₂ is occurring.
- ✓ Land cannot shift from FM to other elected Article 3, paragraph 4, activities, since such shift implies the loss of forest use. When a land is deforested is reported always under D regardless to the subsequent use.
- ✓ Land can shift between elected activities under Article 3, paragraph 4, only if the new activity is higher in the hierarchical order.

4.3 Once in, always in, onset of activities

Once a land area is reported under any KP-LULUCF activity, it must be reported forever, it cannot shift from any KP-LULUCF activities to land not subject to any KP-LULUCF activities. Consequently, the total area of land reported and accounted under the Kyoto Protocol cannot decrease over time, it may only increase.

For instance, an area of CM (elected activity) at year 1 is converted to GM (elected activity, although lower in the hierarchy than CM) at year 2 and subsequently abandoned at year 3 (no any KP-LULUCF activities ongoing). That area must continue to be reported under CM at year 2 (because GM is lower in the hierarchy) and at year 3 (because it cannot be omitted from the reporting). However, at each year the IPCC methodological guidance to be applied for estimating GHG fluxes are those for the actual use of the land, regardless the activity under which the land is reported.

The same considerations apply if the land is converted to a non-elected activity. For instance, the area of CM (elected activity) at year 1 is converted to GM (non-elected activity) at year 2. Consequently, the land is kept under CM reporting although IPCC methodological guidance for grassland is applied to estimate GHG fluxes occurring on the land at year.

5. Accounting rules

5.1 Annual accounting and commitment period accounting

For KP-LULUCF activities, the Party shall identify whether, **for each activity** under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, it intends to account annually or for the entire commitment period (CP) in the report to facilitate the calculation of the assigned amount. This selection cannot then be changed. (This is one of the elements to be included in the report to facilitate the calculation of the assigned amount as per paragraph 1(h) of annex I to decision 2/CMP.8.)

Regardless of its choice of accounting, the Party shall report information on emissions and removals from KP-LULUCF activities in each annual inventory submission, in accordance with annex II to decision 2/CMP.8, and complete the accounting table with all required information (even though no units are issued) in accordance to decision 6/CMP.9.

For activities that a Party has chosen to account for annually, it issues or cancels units for that activity on an annual basis, following the annual GHG inventory review and compliance procedures for each year during the CP, including any procedure for adjustments, if applicable. Conversely, for activities for which a Party has chosen CP accounting, the Party issues or cancels units for the entire CP following the GHG inventory review and compliance procedures for the last year of the CP.

When accounting for any KP-LULUCF activity, the total emissions and removals that have occurred since the beginning of the CP or the onset of the activity (whichever came first) are accounted, regardless of the accounting option selected (i.e. annually or only once at the end of the CP as set in paragraph 23 of Annex to decision 2/CMP.7. This means that, for an activity that is accounted annually, the quantities accounted in a year may be recalculated in any following years and the issuance of credits or cancellation of debits be adjusted accordingly (e.g. in case the recalculated amount of units to be issued for a certain year is lower than that previously issued for that year, an amount of units equivalent to such difference is to be cancelled in the national registry; in case the recalculated amount of units to be issued for a certain year is higher than that previously issued for that year, an additional amount of units equivalent to such difference is to be issued to the national registry).

For example, in the 2016 annual submission, the accounting quantity is based on the emissions and removals for the years 2013 and 2014, as compared with the reference value (i.e. base year, zero or reference level).

Because the accounting quantity is calculated on the basis of cumulative emissions and removals, using the most recent inventory data, any recalculations of emissions and removals for previous years will be reflected retrospectively and automatically adjusted with the accounting quantity for the currently reported year.

A Party can issue or cancel units only after its GHG inventory has been reviewed and the quantity of units to be added to or subtracted from its assigned amount (the accounting quantity) has been fixed in the review report including any procedure for adjustments, if applicable. Following the review and compliance procedures, the accounting quantity will be recorded in the compilation and accounting database and provided to the international transaction log. The Party can then issue or cancel units to account for the activity.

5.2 Accounting approaches for activities under Article 3, paragraphs 3 and 4

There are two main accounting approaches for KP-LULUCF activities: gross-net accounting, net-net accounting, including through the use of a reference level. The approach using the reference level allows further flexibility in establishing the reference value.

Gross-net accounting (for AR and D)

Credit or debit from each KP-LULUCF activity is accounted on the basis of the total net removal or net emission during the CP only.

Net-net accounting (for CM, GM, RV and WDR):

Credit or debit from each KP-LULUCF activity is accounted on the basis of the total net removal or net emission during the CP minus the net removal or net emission in the base year multiplied by the duration in years of the CP.

Net-net accounting with a reference level (for FM):

Credit or debit is accounted on the basis of the total net removal or net emission during the CP minus the reference level multiplied by the duration in years of the CP.

5.3 Specific accounting framework for each KP-LULUCF activity

The following is a summary of the accounting framework in CP2 for each KP-LULUCF activity.

KP-LULUCF activity	M*	V**	Reference value in accounting	Constraints on accounting
AR	O		Zero (0): which means that all emissions or removals occurring during the CP are either debited or credited.	None
D	O			
FM	O		Reference level may be 0, a base year or 'business as usual' projection: which means that only emissions below or removals above the reference level during the CP are credited, while emissions above or removals below are debited.	Cap equivalent to 3.5% of net national total GHG emissions without LULUCF for the base year multiplied by eight
CM GM RV WDR		O	Base year: which means that only emissions below or removals above the base year level during the CP are credited, while emissions above or removals below the base year level are debited.	None
Additional provisions for forest land				
Harvested wood products (HWP)	O		For D events, instantaneous oxidation only. For post-D events, for AR and FM either instantaneous oxidation or production approach. For FM with projected reference level production approach only. Production approach i.e. HWP from domestic wood only.	
Natural disturbances (ND)		O	Background level and margins to be calculated to exclude from accounting emissions and subsequent removals from ND.	
Carbon equivalent forest		O	Deforested area of forest plantations remains under FM (instead of being shifted under D) when equivalent areas are	

			afforested and reported under FM (instead of under AR).
Conversion of natural forest to forest plantation	O		Must be reported and accounted for under FM.
* M = mandatory ** V = voluntary Note: Each activity among CM, GM and/or RV that the Party had elected in CP1 is mandatory for CP2.			

6. Reporting and accounting for carbon pools under KP-LULUCF activities

Reporting and accounting rules for carbon pools for activities under Article 3, paragraphs 3 and 4, are slightly different from the reporting rules applied under the Convention. Under the Kyoto Protocol:

- A Party shall account for changes in each carbon pool separately: *above-ground biomass, below-ground biomass, litter, deadwood, soil organic carbon* and HWP;
- With the exception of HWP, and consequently of biomass, a Party may choose not to account for a given pool in a CP if transparent and verifiable information is provided to demonstrate that the pool is not a source;
- HWP may be accounted on the basis of *instantaneous oxidation* when not included in a 'business as usual' reference level for FM; for the latter, *the production approach* must be applied. See also Section 10 of the HWP and Appendix 1.

In addition, a carbon pool can be excluded from the reporting (reported as not estimated "NE") if the insignificance threshold as per paragraph 37(b) of the annex to decision 24/CP.19² is applied.

7. Key category analysis for KP-LULUCF activities

Key categories are also identified for KP-LULUCF activities. In the LULUCF sector under the convention as well as for KP-LULUCF activities, "key categories" are identified not only at category level but also at level of subcategories (i.e. those contributing up to more than 60% of the total absolute GHG flux from/to the category) and carbon pools (i.e. those that contributes more than 25-30% to total absolute carbon stock changes). For KP-LULUCF, the following additional provisions apply (see section 2.3.6 of the Kyoto Protocol Supplement):

- KP-LULUCF categories are key categories if they overlap a land-use category that is key under the Convention;
- If an activity occurs in more than one land category of the inventory under the Convention (under the agriculture and LULUCF sectors), the total emissions and removals from the activity are summed and the activity is considered key if the sum is greater than the smallest category that is identified as key in the inventory under the Convention (including LULUCF);
- If, when using quantitative methods, a category is not identified as key for the present year but its emissions are anticipated to increase strongly in the future, it is good practice to identify it as key;
- If the sum of emissions and removals from an activity under the Kyoto Protocol exceeds that for the associated category under the Convention, it is good practice to identify the activity as key if it exceeds the smallest category that is identified as key in the inventory under the Convention (including LULUCF).

² Annex to decision 24/CP.19 "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories".

8. Afforestation/reforestation and deforestation under Article 3, paragraph 3

The minimum spatial unit to be applied for identification of areas subject to afforestation/reforestation and deforestation is the same between AR and D and must not be smaller than 1 ha (annex to decision 2/CMP.7).

Same reporting and accounting rules are applied for AR and D; these are:

- The reference value to be used in the accounting is 0 (zero) (see also the table in section 5.4);
- A Party must report cumulated area of land subject to AR and D activities since 1 January 1990, and report and account for emissions and removals occurring during the CP on such area;
- AR and D must be identified as permanent changes in the use of land, and need to be distinguished from temporary loss of forest cover. A Party must report information on how it distinguishes permanent changes from temporary forest cover changes;
- AR and D are direct human-induced activities. Therefore, any land converted to or from forest through natural processes may be excluded from accounting under AR and D activities.

9. Forest management under Article 3, paragraph 4

9.1 Definition of forest management

The forest definition applied by a Party should be consistent with that applied for historically reporting to the Food and Agriculture Organization of the United Nations (FAO). In case of inconsistency, the Party must provide an explanation. Further, the forest definition chosen by a Party is expected to include all land with tree coverage above the selected threshold. If not, the Party should clarify which treed land has been excluded and the impact that such exclusion has on the KP-LULUCF reporting and accounting. A Party has to report also its definitions of natural and of planted forests to ensure that any conversion from natural forest to planted forest is properly reported and accounted for under FM.

FM includes all land subject to FM practices since 1990 that is not reported under AR or D. "Since 1990" may be interpreted narrowly, which means land that has been affected by specific FM practices since 1990 (minus any deforested area), or broadly, which means all land that was subject to FM in 1990 plus, if any, any unmanaged forest that was subsequently subject to FM after 1990 (minus any deforested area).

The definitions of managed forest and of FM may or may not coincide since FM practices may be a subset of the managed forest concept. It is good practice to report information on how the FM definition is applied (i.e. which management practices are included).

9.2 Accounting of forest management

For each year accounted, all cumulated emissions and removals occurring from the start of the CP up to the accounting year from FM land (i.e. cumulated land subject to FM since 1990 that is still under FM in the accounting year) minus the FMRL, as established in decision 2/CMP.7 and as modified according to any technical corrections, multiplied by the number of years since the beginning of the CP, are accounted. The resulting quantity is subject to a cap on accounted credits, which means that Parties are allowed to credit up to the equivalent of 3.5 per cent of the base-year national total emissions excluding LULUCF multiplied by eight years for the entire CP2. No CAP is applied to debits.

9.3 Forest management reference level

Parties have calculated their FMRL values, which, after review, have been inscribed in the appendix to the annex to decision 2/CMP.7 and cannot be subject to any annual review or changed. The FMRL values were calculated by either projecting emissions and removals expected under a 'business as usual' scenario using historical data, or simply by using a historical level. This has materialized into three approaches applied to defining the FMRL, as indicated in the common reporting format (CRF) table 4(KP-I)B.1.1:

- ‘Business as usual’ projections: The FMRL is the projection of GHG emissions and removals that would occur in absence of any further change in policies and measure from the year 2010 onward;
- Base year: The FMRL is the historical value of GHG emissions and removals that occurred in a historical year (e.g. 1990);
- Zero at 1 January 2013: The FMRL is zero under the application of a sustainable forest management.

TABLE 4(KP-DB).1.1. SUPPLEMENTARY BACKGROUND FOR LAND USE, LAND-USE CHANGE AND FORESTRY ACTIVITIES UNDER THE KYOTO PROTOCOL		
Article 3.4 activities: Forest management		Inventory 20XX
Additional information: Forest management reference level (FMRL) and technical correction		Submission 20XX vX
Approach applied for FMRL⁽¹⁾	Value inscribed in the Appendix to the annex to decision 2/CMP.7⁽²⁾	Technical correction⁽³⁾
	(kt CO₂e/yr)	
Business-as-usual projection		
Base year		
Zero at 1 January 2013		
Documentation box		
Parties should provide detailed explanation on the land use, land-use change and forestry sector in the relevant annex of the NIR: Supplementary information on LULUCF activities under the Kyoto Protocol. Use this documentation box to provide references to relevant sections of the NIR if any additional details are needed to understand the content of this table.		
Documentation box		
Documentation box		
Documentation box		

9.4 Technical correction to the forest management reference level

9.4.1 Reasons for technical corrections

In order to ensure methodological consistency between the FMRL and the estimates of actual GHG emissions and removals, the FMRL may be subject to a technical correction to remove any methodological differences (inconsistencies) between the calculation of the FMRL value included in decision 2/CMP.7 and the actual GHG estimates in:

- carbon pools, included the treatment of HWP, and GHG sources,
 - Note that, since the rules for accounting for HWP were decided after the FMRLs were calculated, it is very likely that a technical correction will be needed to ensure consistency in the treatment of HWP;
- any methodological element (equations, parameters, data and ancillary information) that a Party uses to estimate GHG emissions and removals from forest land;
- treatment of emissions and removals associated with natural disturbances (ND),
 - Note that, since the rules for accounting for ND were decided after the FMRLs were calculated, any Party that selects to apply the ND provisions is very likely to have to apply a technical correction.

A technical correction must not be applied in the case of changes to the policy assumptions embedded in the construction of the FMRL.

9.4.2 Reporting technical corrections

All information on calculating the technical correction including the reasons and the method, data and

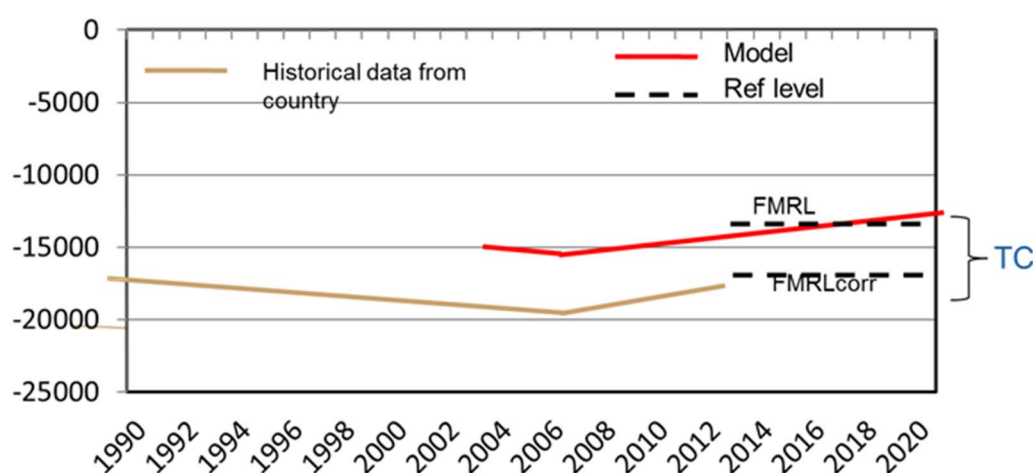
ancillary information used must be reported in the national inventory report (NIR). Further, in the case of a projected FMRL, it is good practice to provide the following information in the NIR:

- The main factors, such as reduced harvesting rate or increased net increment rate, responsible for a higher (or lower) sink (i.e. net removal) during the CP, compared with the FMRL, and how those factors are consistent with the accounting quantity (AQ) ($AQ = FM - FMRL$). A demonstration that the AQ can be explained as deviations in policy assumptions compared with the assumptions included in the calculation of the FMRL, rather than as differences in the factors/parameters, including increments, used in the calculation of the FMRL and in the actual GHG emissions and removals (see page 2.97 of the Kyoto Protocol Supplement);
- Demonstration that the model used to calculate the FMRL can reproduce the data for FM (or forest land remaining forest land) for the historical period reported in the FMRL submission (i.e. period not affected by deviations from policy assumptions under ‘business as usual’) (see page 2.95 of the Kyoto Protocol Supplement).

Under the provisions of KP-LULUCF, the technical correction is quantified as a net value of emissions/removals that is added to the original FMRL at the time of accounting to ensure that the accounted emissions/removals do not include the impact of methodological inconsistencies:

$$\text{Technical correction} = \text{FMRL}_{\text{corr}} - \text{FMRL}$$

where $\text{FMRL}_{\text{corr}}$ is the newly recalculated value according to the methodological changes that occurred.



Source: Giacomo Grassi, presentation on FMRL calculation and technical correction. The brown line is the historical time series for FM, the red line the projected time series calculated for establishing the FMRL. Both the FMRL and the $\text{FMRL}_{\text{corr}}$ are in $\text{ktons CO}_2 \text{ eq yr}^{-1}$ (i.e. an annual net flux averaged across the entire commitment period)

Although a Party needs to report information on technical correction each year, a technical correction will be applied in an accounting year only.

9.4.3 Adjustment of the technical correction

In accounting years, the technical correction may be subject to an adjustment if there is evidence that its emissions have been overestimated and/or its removals underestimated.

In practice, an adjustment may be made to the technical correction only in the case that the historical data (i.e. pre-2010 data) on FM or FL-FL used to establish the FMRL have been recalculated and the inconsistency arising from such recalculation has not been included in the technical correction of the FMRL.

9.5 Natural disturbances provision

9.5.1 What is the natural disturbances?

Recognizing that, within a country, disturbances can occur anthropogenically and/or naturally, ND is defined in annex II to decision 2/CMP.7 as non-anthropogenic events or non-anthropogenic circumstances that cause significant emissions in forests and are beyond the control of, and not materially influenced by, a Party, which may include wildfires, insect and disease infestations, extreme weather events and/or geological disturbances, beyond the control of, and not materially influenced by, a Party, a Party, and exclude harvesting and prescribed burning.

For example, in a country that does not use fire as a management practice and has an advanced national fire management system for fire prevention, fire monitoring and fire suppression on all land including forest land, all emissions from wildfires are considered not materially influenced by the country's land-use and management practices.

9.5.2 Reporting requirement

The ND provision is applicable to land reported under FM and to land reported under AR separately. It is voluntarily applied by Parties that elected such provision, and it was reported in their initial report for CP2:

- The intention to apply the NC provision;
- The type of disturbance it applies to;
- The calculated background level of emissions historically associated with ND;
- An associated margin for the identification of the occurrence of ND.

The ND is based on the neutral impact on accounting from its application over time, i.e. emissions and removals excluded from accounting balance out across time. This concept has been formulated on the expectation that the applied provision does not lead to net credits or net debits.

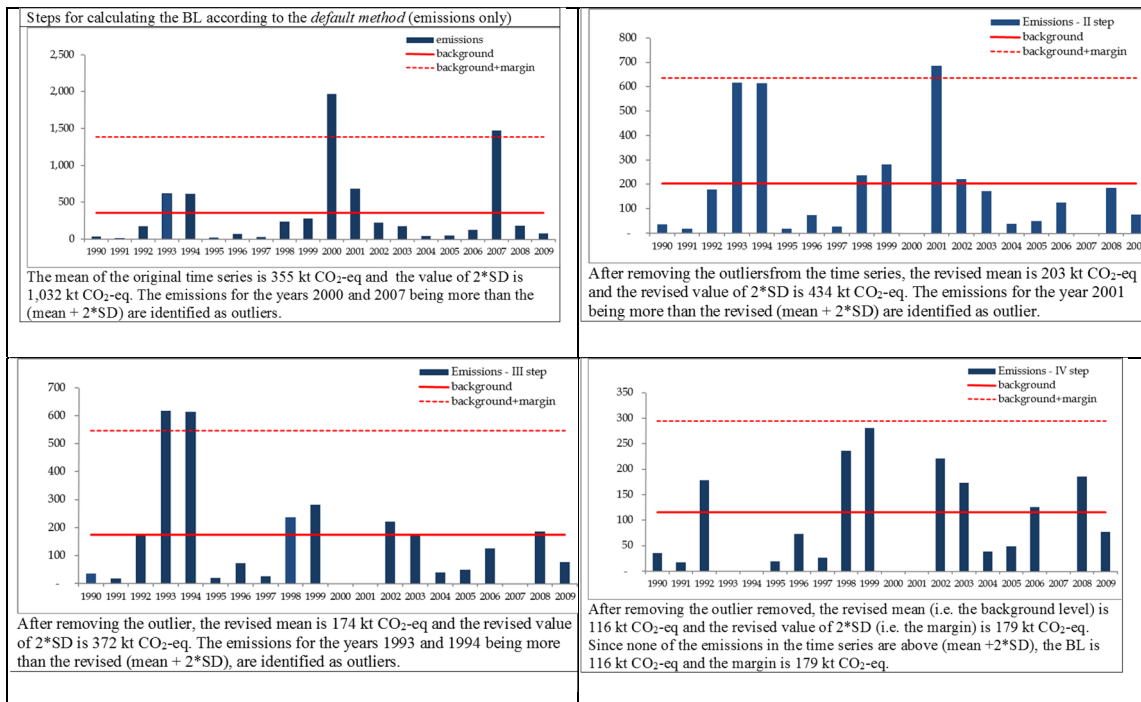
9.5.3 Method/approach for identifying the natural disturbances

To identify ND, the methodology looks for statistical outliers that fall outside the 95 per cent confidence interval of the variability of the historical time series of the annual GHG emissions from disturbances (e.g. wildfires). An outlier value in this approach is considered as the signal of a disturbance event that is too unlikely to have been generated by anthropogenic causes alone.

In practice, first a historical time series of annual emissions from disturbances is constructed starting from 1990 (i.e. the base year of the national GHG inventory of the Party). Then, using an iterative process, outliers (if any) are removed from the time series that are larger than the mean plus twice³ the standard deviation. The resulting time series, as well as its mean (referred to as the background level of anthropogenic emissions associated with disturbances) and twice its standard deviation (referred to as the margin), excludes the outliers found.

Note that emissions from salvage logging are not to be included in the calculation of emissions from disturbances, nor those caused by prescribed burning neither those from disturbances that are followed by a land-use conversion, since they are considered to be entirely caused by land management practices.

³ This is an approximation of Student's t value for data series with number of data ≥ 30 , and corresponds to a 95% confidence interval.



Consequently, NDs are identified as occurring in years when the total emissions from NDs are larger than the background level plus the margin. In such cases, the fraction of emissions that exceeds the background level is excluded from the accounting since considered exclusively caused by ND, and an amount of subsequent CO₂ removals equivalent to that of CO₂ emissions excluded will also be excluded to ensure the neutral impact of the provision on the accounting.

Further, to ensure that an equivalent number of subsequent removals will actually occur on the disturbed land,⁴ the Party has to demonstrate that the land use has not changed and that the land is intended to be rehabilitated to its pre-disturbance state.

Finally, for AR land the level of GHG emissions is largely dependent on the amount of the area reported under the activity (i.e. starting at 0 and likely continuously increasing thereafter), which determines a trend in emissions from ND over time. To remove such artefact on the trend, the background level is to be calculated as a density value (i.e. t CO₂eq emissions per ha) and then multiplied by the actual area under AR when applied during CP2.

A technical correction to the FMRL is to be applied to integrate the background level into the FMRL, and thereafter if at any time the background level is recalculated.

9.6 Carbon equivalent forest (paragraphs 37–39 of decision 2/CMP.7)

Deforested area of forest plantations remains under FM (instead of under D) when equivalent areas are afforested and reported under FM (instead of under AR).

Under the condition that a newly planted forest (forest plantation) is expected to achieve an equivalent carbon stock to another forest plantation that was harvested but will not be replanted, the newly planted forest (afforested) and the harvested forest (deforested) can both be reported under FM instead of under AR and D, respectively. This is based on the expectation that the net impact on atmospheric CO₂ concentration over time of both processes (i.e. deforestation and afforestation) becomes zero.

A Party can make a decision on reporting on carbon equivalent forest at any time during the CP. If so, the Party must report information to demonstrate that:

⁴ This means that the carbon stocks are expected to return to their pre-disturbance level.

- the new plantation will have, at the time of the normal harvesting cycle of the cleared plantation, at least an equal volume of carbon stock to that of the cleared plantation before it was finally harvested;
- the cleared plantation was not AR land or over 30 years old in 1990;
- the new plantation was not established on deforested land;
- the area of the newly planted forest is at least equivalent in size to the area of that forest cleared, or if the newly planted forest has a lower productivity than the cleared one, an area larger than that cleared has been planted (note that plantation and clearing needs not to be synchronous and the clearing does not necessarily need to have been occurred before the plantation).

10. HWP

HWP is the sixth carbon pool of forest land. Its reporting and accounting is therefore limited to land classified as forest land under FM, land under AR, and land under D if the land has been reforested after a previous D event. Note that HWP originating from a D event is excluded from the accounting and reported as instantaneously oxidized.

According to decision 2/CMP.7, the following wood stocks are excluded from HWP accounting and reported as instantaneously oxidized:

- All roundwood (industrial and fuelwood) imported into and exported from the country;
- HWP built with imported wood, as well as imported HWP;
- HWP discarded at solid waste disposal sites;
- HWP used for energy (i.e. fuelwood);
- HWP from wood originating from a D event at the time of land-use change (although information on the harvested quantities has to be reported in the information item of CRF table 4(KP-I)C);
- HWP from wood originating from non-forest land (although information on the harvested quantities has to be reported in the information item of CRF table 4(KP-I)C).

Instantaneous oxidation

All carbon transfers to HWP pool are estimated as immediate emissions to the atmosphere.

Production Approach

Changes in carbon stocks in the forest pool (and other wood producing lands) of the reporting country and the wood products pool containing products made from wood harvested in the reporting country.

HWP under AR ~~and D~~, and under FM, if the FMRL is not a projected value, **may be** reported as instantaneously oxidized and excluded from the accounting.

HWP from FM, if the FMRL is a projected value, must be accounted for by applying the default methodology referred to in decision 2/CMP.7 (production approach).

In case the Party has difficulty separating HWP originating from wood harvested on land subject to AR and D activities from that originating from wood harvested on land subject to FM activities, the Party may report altogether the HWP under FM since such accounting would conservatively account for HWP originating from wood harvested on land subject to AR and D activities (i.e. it would result in less credits or more debits compared with the accounting for AR and D activities).

11. Cropland management and Grazing land management

CM and GM follow the same reporting and accounting rules:

- All land subject to the two activities may be reported together under one of the activities according to the hierarchical order assigned (e.g. assuming that both have been elected and that CM is higher in the hierarchical order, all land subject to CM or GM would be reported under CM). However, methods applied to estimate emissions and removals associated with

those activities must be consistent with the actual use of the land (i.e. methods for cropland applied for land actually under CM and methods for grassland applied for land actually under GM);

- The activities are voluntary, so, if each of them is reported, each of them should have been elected in the initial report and a hierarchical level should have been assigned to each;
- The reference value to be used in the accounting is the sum of all emissions and removals from land subject to CM or GM in the base year. This means that the reference value and actual emissions and removals during CP2 might be estimated on the basis of different areas. This is quite likely for most Parties since agricultural area is decreasing as a consequence of the intensification of agricultural practices and the expansion of settlements⁵. Note that, to exclude from the reference value calculation the impact of inter-annual variability, an average value (e.g. of the five years around the base year) can be used instead of the single base-year value;
- Emissions and removals to be accounted are the cumulated emissions and removals from CM or GM land that occurred from the start of the CP to the accounting year (i.e. cumulated land subject to CM or GM since the base year that is still under CM or GM in the accounting year) minus the reference value multiplied by the number of years since the beginning of the CP;
- Double counting of emissions already reported under the agriculture sector must be avoided (see section 14).

12. Revegetation

For RV the following reporting and accounting rules apply:

- The activity is voluntary, so, if reported, it should have been elected in the initial report and a hierarchical level should have been assigned to it;
- The area subject to the activity since the base year can be calculated either narrowly, which means land affected by specific practices since the base year, or broadly, which means all land subject to RV activity in the base year plus any additional land subject to the activity thereafter minus the area transferred to other activities, if any;
- The reference value to be used in the accounting is the sum of all emissions and removals from land subject to RV in the base year. This means that the reference value and actual emissions and removals during CP2 might be estimated on the basis of different areas;
- Emissions and removals to be accounted are the cumulated emissions and removals from RV land that occurred from the start of the CP to the accounting year (i.e. cumulated land subject to RV since the base year that is under RV in the accounting year) minus the reference value multiplied by the number of years since the beginning of the CP.

13. Wetland drainage and rewetting

For WDR the following reporting and accounting rules apply:

- The activity is voluntary, so, if reported, it should have been elected in the initial report and by default it is the lowest in the hierarchy of all activities;
- The area subject to the activity since 1990 can be calculated either narrowly, which means land affected by specific practices since 1990, or broadly, which means all land subject to WDR activity in 1990 plus any additional land subject to the activity thereafter minus the area transferred to other activities, if any;

⁵ Note that during the commitment period methods for settlements must be applied to estimate emissions from the land converted to settlements, but emissions and removals must be accounted under the CM or GM in such a case.

- The reference value to be used in the accounting is the sum of all emissions and removals from land subject to WDR in 1990. This means that the reference value may be estimated on an area that is different from the one for which actual emissions and removals during CP2 are estimated.
- Emissions and removals to be accounted are the cumulated emissions and removals from WDR land that occurred from the start of the CP to the accounting year (i.e. cumulated land subject to WDR since 1990 that is still under WDR in the accounting year) minus the reference value multiplied by the number of years since the beginning of the CP.

14. Treatment of emissions under agriculture and KP-LULUCF

Some sources of emissions in the agriculture, forestry and other land use sector are relevant to both the agriculture sector and KP-LULUCF activities in terms of reporting. As indicated in paragraph 1 of annex II to decision 2/CMP.8, estimated emissions from activities under Article 3, paragraphs 3 and 4, shall be clearly distinguished from anthropogenic emissions from the sources listed in Annex A to the Kyoto Protocol (under the agriculture sector). The table below provides an overview of how/under which categories such emissions relevant to both the agriculture sector and KP-LULUCF activities are to be reported. It should be noted that under KP-LULUCF the emissions are often below the significance threshold.

Summary table on reporting non-CO₂ gases and CO₂ not relevant to carbon stock change between the agriculture sector and KP-LULUCF activities

Source categories	Annex A	KP-LULUCF	
	Agriculture	Agriculture-relevant activities (CM, GM, other*)	Non-agriculture relevant activities
Nitrogen fertilization	N ₂ O emissions		N ₂ O emissions Report under the KP-LULUCF activity under which the land is reported, either 1) actual emissions, or 2) as included elsewhere (IE) and include all N ₂ O emissions from fertilization under agriculture sector, when separate estimation is not possible. Consistency in the allocation between reference year and CP-year reporting must be ensured.
Drained and rewetted organic soils	N ₂ O emissions from cultivation of histosols. limited to drained soils (rewetting is out of scope)	CO ₂ emissions from drainage of organic soils Report under the KP-LULUCF activity under which the land is reported When the Wetlands Supplement is applied, CH ₄ emissions from drainage, as well as CO ₂ removals and CH ₄ associated with rewetting, are reported under the KP-LULUCF activity under which the land is reported.	

Nitrogen mineralization/immobilization	N ₂ O emissions in agricultural land (i.e. cropland and managed grassland except for land conversion to cropland)	N ₂ O emissions from land converted to cropland only	N ₂ O emissions Report under the KP-LULUCF activity under which the land is reported
Biomass burning	Non-CO ₂ emissions from agricultural residue burning and prescribed burning of savannahs	CO ₂ emissions from burning of perennial biomass, DOM** and SOM (if any), and non-CO ₂ emissions from burning of any C stocks, except from agricultural residue burning and prescribed burning of savannahs	CO ₂ emissions from burning of perennial biomass, DOM** and SOM (if any), and non-CO ₂ emissions from burning of any C stocks. Report under the KP-LULUCF activity under which the land is reported
Liming	CO ₂ emissions		
Urea application	CO ₂ emissions		
<p>* In case D, R or WDR activity includes agricultural land. ** It may also be reported as a C stock change in the biomass and DOM pools. DOM = dead organic matter, SOM = soli organic matter</p>			

15. Consistency between reporting under the Convention and under the Kyoto Protocol

The emissions and removals reported for LULUCF categories under the Convention may differ from those reported under the corresponding KP-LULUCF activities, despite that they cover the same sources of emissions and sinks of removals. The following are some of the reasons for such differences:

- “Since 1990” versus “within 20 years”:
 - ✓ The base year for KP-LULUCF activities is generally 1990, and areas to be reported under each activity are those subject to the activity at any point in time since the base year. Any land subject to any activity remains forever under such activity (once in, always in) unless a new activity with higher hierarchical order takes subsequently place on that land. Consequently, in each inventory year, e.g. AR and D activity reporting is based on the cumulated area of land conversion that has occurred since 1990, while the corresponding land conversion categories (land converted to forest land and forest land converted to non-forest uses) under the Convention cumulate the areas converted within the past 20 years only;
- “Direct human induced” versus “anthropogenic”:
 - ✓ AR and D are defined as land-use changes directly induced by human activities. Therefore, Parties may exclude land-use changes from/to forest land caused by non-direct human-induced activities of AR and D under the Kyoto Protocol, while the corresponding LULUCF of land-use change categories include all changes occurred on managed land;
- Definition of FM:
 - ✓ Some managed forest land included under the Convention may be excluded from FM if it does not match the definition of FM (e.g. managed forest has not subject to specific FM practice since 1990 under the narrow approach) under KP-LULUCF;
- Hierarchical order among KP-LULUCF activities:
 - ✓ A land converted under the Convention is always transferred under the corresponding remaining category of the final land use after 20 years, while a land converted under the KP-LULUCF is transferred according to the hierarchical order among activities. For instance,

when a forest land is directly converted to cropland, it is reported under cropland (land converted to cropland) under the Convention, while it is reported under D instead of CM under KP-LULUCF.

However, the amount of GHG emissions and removals estimated for each single hectare of land under the Convention and under the KP must be identical, since same methods and data are used, although as discussed above land may be aggregated differently under the Convention and the Kyoto Protocol reporting.

16. Area reported under the Convention and under KP-LULUCF

CRF table NIR-2 is a land transition matrix for KP-LULUCF activities. Parties shall report areas and changes in areas between the previous and current inventory years using this land transition matrix for all Article 3, paragraphs 3 and 4, activities. The area of the country that has never been subject to any activity under Article 3, paragraph 3 or 4, is included under “other”. Thus, the sum of the areas reported under Article 3, paragraphs 3 and 4, activities plus “other” is equal to the national total area and it must be identical to that reported in CRF table 4.1 under the Convention. This is for the entire time series of CRF table NIR-2.

17. KP-LULUCF activities under the Kyoto Protocol mechanisms

For CP2, eligible LULUCF activities under Article 6 of the Kyoto Protocol (joint implementation) may include AR, FM, CM, GM, RV and WDR. Under Article 12 (clean development mechanism), eligible activities for CP2 are limited to AR.

For CP2, additions to the assigned amount of a Party resulting from FM shall not exceed 3.5 per cent of the national total emissions (without LULUCF) in the base year multiplied by eight, as per paragraph 13 of the annex to decision 2/CMP.7 (see also section 11.1 above). The FM cap of 3.5 per cent is applied including the emissions and removals from FM projects implemented under Article 6 within a country.

The total addition to a Party’s assigned amount resulting from eligible LULUCF project activities under Article 12 shall not exceed 1 per cent of the base-year emissions of that Party multiplied by eight⁶.

18. Requirements for Parties without second commitment period targets

Some Parties included in Annex I that are also Parties to the Kyoto Protocol do not have quantified emission limitation and reduction commitments for CP2 (such as Japan, New Zealand and Russia)⁷. Such Parties shall provide KP-LULUCF information in the annual inventory submission like other Parties included in Annex I that are also Parties to the Kyoto Protocol. The following paragraphs from relevant decisions describe the requirements of Parties.

Requirement for all Parties included in Annex I that are also Parties to the Kyoto Protocol

- Decision 2/CMP.8, paragraph 4
 - ✓ Each Party included in Annex I has to (shall) report information on KP-LULUCF for CP2 in its annual GHG inventory in accordance with Article 5, paragraph 2, of the Kyoto Protocol, starting with the annual inventory for the first year of the second commitment period.

Special conditions for Parties without CP2 target

- Decision 6/CMP.9, paragraph 2

⁶ In reality, this rule may not apply due to quite limited number of AR projects have been taking place.

⁷ *Japan, New Zealand and Russia*: no emission reduction commitment for CP2. *Turkey*: no emission reduction commitment for CP2 and not yet submitted the initial report for CP2 as of June, 2018. Special circumstances according to decision 26/CP.7 for Turkey. *Belarus*: not yet submitted the initial report for CP2.

- ✓ Parties included in Annex I without a quantified emission limitation or reduction commitment for CP2 will neither issue nor cancel removal units from their KP-LULUCF activities during CP2.
- Decision 3/CMP.11, paragraph 8
 - ✓ Parties included in Annex I without a quantified emission limitation or reduction commitment for CP2 have to (shall) provide information on which voluntary activities under Article 3, paragraph 4, of the Kyoto Protocol they will include in their reporting, at the latest in their 2016 annual inventory submission.

19. Article 3, paragraph 7, of the Kyoto Protocol

There is a special accounting rule for D activity (i.e. the sum of all land-use change categories from forest land to a non-forest land use) described in Article 3, paragraph 7, of the Kyoto Protocol. This rule refers to that Parties included in Annex I whose LULUCF sector was a net source in 1990 shall add the net emissions from D in 1990 to their national total emissions for the base year or period for the purpose of calculating the assigned amount. This issue is only relevant to the review of the assigned amount for CP2.

Appendix 1 Differences between CP1 and CP2 in the accounting of KP-LULUCF

The table below shows key differences between CP1 and CP2 in the accounting of KP-LULUCF activities.

Content	Treatment in CP1	Treatment in CP2
Election of FM	Voluntary	Mandatory (para. 7 of the annex to decision 2/CMP.7)
Accounting approach for FM	Gross-net accounting with cap	Reference level and technical correction with cap
FM cap	Symmetrical on debits and credits and calculated country by country (adopted in decision 16/CMP.1)	On credits only and for all Parties corresponding to 3.5% of the base-year emissions
Offset of debits from AR and D by FM credits	Debits resulting from AR and D activities can be offset by credits from FM activity beyond the FM cap	None
Limitation on debits when AR land is harvested	Debits resulting from harvesting of AR land during the CP cannot be larger than credits accounted for on the same land	No limitation
Carbon equivalent forest plantations under FM instead of D and AR activities	None	Parties are allowed to report pairs of deforestation and afforestation of forest plantations under FM instead of D and AR respectively, when within the pair AR lands are expected to reach, within the management cycle of D lands, a total of carbon stocks equivalent to that D lands had when were cleared. (paras. 37–39 of the annex to decision 2/CMP.7)
Treatment of HWP	All carbon transfers to HWP pool are estimated as immediate emissions to the atmosphere (instantaneous oxidation); HWP not included in the carbon pools must be accounted for	Reporting and accounting of carbon stock changes in the HWP pool (and consequently the above-ground biomass pool) for AR, D and FM activities are mandatory. A methodology provided in decision 2/CMP.7 shall be applied for FM when FMRL is projected, and may be used for all other FMRLs (not based on projection) and for ARD activities (paras. 16 and 26–32 of the annex to decision 2/CMP.7)
Treatment of ND	All emissions from ND on land under AR and FM must be estimated and accounted	Provision to allow Parties to exclude, from accounting, emissions and subsequent removals associated with ND from FM and/or AR land, which can be voluntarily applied by Parties (paras. 33–36 of the annex to decision 2/CMP.7)

Appendix 2 Overview of KP-LULUCF CRF tables

- NIR tables: general information on KP-LULUCF
 - **NIR 1:** coverage of pools and gases
 - **NIR 1.1:** thresholds selected for the forest definition
 - **NIR 2:** land transition matrix for KP-LULUCF activities
 - **NIR 2.1:** total area of natural forest subject to conversion to planted forest since the beginning of the CP
 - **NIR 3:** key categories
- **4(KP) Recalculations:** recalculations for KP-LULUCF since the previous submission
- **4(KP):** summary table of the total of individual GHG emissions/removals
- Background tables for CO₂: annual carbon stock changes in each pool and net CO₂ emissions/removals for each activity
 - **4(KP-I)A.1:** AR
 - **4(KP-I)A.2:** D
 - **4(KP-I)B.1:** FM
 - **4(KP-I)B.2:** CM
 - **4(KP-I)B.3:** GM
 - **4(KP-I)B.4:** RV
 - **4(KP-I)B.5:** WDR
 - **4(KP-I)C:** HWP from wood harvested on land subject to each activity: AR, D and FM
- Information tables: additional information for accounting
 - **4(KP-I)A.1.1:** emissions and removals associated with ND under AR
 - **4(KP-I)A.2.1:** areas reported under D that would otherwise be reported as subject to FM or any elected activity
 - **4(KP-I)B.1.1:** FMRL value and any technical correction under FM
 - **4(KP-I)B.1.2:** information on carbon equivalent forest under FM
 - **4(KP-I)B.1.3:** emissions and removals associated with ND under FM
- Background tables for non-CO₂: annual GHG emissions/removals from each source/sink
 - **4(KP-II)1:** direct and indirect N₂O emissions from nitrogen fertilization (although all such emissions may be reported under agriculture if information available doesn't allow to distinguish between the fraction applied to agricultural land and that applied to other land categories)
 - **4(KP-II)2:** CH₄ and N₂O emissions from drained and rewetted organic soils
 - **4(KP-II)3:** N₂O emissions from nitrogen mineralization/immobilization due to soil organic carbon loss/gain associated with land-use conversions and management change in mineral soils
 - **4(KP-II)4:** GHG emissions from burning (biomass, dead organic matter and peatlands)
- **Accounting table:** time series of annual net emissions/removals, expressed in kt CO₂ eq, as well as accounting quantities for AR, D, FM and elected activities

Appendix 3 Issues that might trigger an adjustment

If a Party's GHG estimates resulted in an overestimation of accounted net credits under a KP-LULUCF activity, this will trigger an adjustment procedure of GHG estimates with the aim to remove the bias in the accounting quantities. An adjustment for a KP-LULUCF activity is only implemented for the year(s) of accounting; otherwise, the issues are treated as GHG inventory problems and not treated as issues of the implementation of the Kyoto Protocol.

The table below shows whether an adjustment could be triggered in different scenarios.

Issue		Trigger of adjustment	
		In a year subject to accounting	In a year not subject to accounting
In a year of the CP (for all accounting approaches)	Overestimation of removals	Yes	No
	Underestimation of removals	No	
	Overestimation of emissions	No	
	Underestimation of emissions	Yes	
In base year or FMRL (for net-net accounting to base year and FMRL only)	Overestimation of removals	No	
	Underestimation of removals	Yes	
	Overestimation of emissions	Yes	
	Underestimation of emissions	No	

The following examples explain why underestimation of removals and overestimation of emissions for base year or FMRL will increase the amount of credits and trigger an adjustment for net-net accounting (for the purpose of simplification, "multiplied by eight years" is not mentioned for net-net accounting).

Example A: (net removals in 1990)

- Annual average of removals during CP2 = -10
- Accurate estimation of removals in 1990 = 2
- Net-net accounting = $-10 - (-2) = -8$

If removals in 1990 are underestimated as -1, then

- Net-net accounting = $-10 - (-1) = -9 > \text{overestimation of credit} > \text{trigger of adjustment}$

Example B: (net emissions in 1990)

- Annual average of removals during CP2 = -10
- Accurate estimation of emissions in 1990 = 2
- Net-net accounting = $-10 - (2) = -12$

If emissions in 1990 are overestimated as 3, then

- Net-net accounting = $-10 - (3) = -13 > \text{overestimation of credit} > \text{trigger of adjustment}$

Appendix 4 Required training courses for the review experts during the second commitment period of the Kyoto Protocol

Decision 5/CMP.11⁸ requires review experts to complete on-line training courses of the UNFCCC “Training programme for members of expert review teams participating in annual reviews under Article 8 of the Kyoto Protocol” and to pass the final examinations, before taking part in the annual reviews during the second commitment period. Mandatory training courses are different depend on the experience of the experts and roles in the expert review team. Mandatory requirements to study the courses and to pass the final examinations are marked in the table below.

Roles and experiences Course titles	Experienced reviewers			New expert		
	New Lead Reviewer	LULUCF expert	New reviewer to the subject	Non-LULUCF expert	LULUCF expert	Generalist
National systems	0			0	0	0
Application of adjustments	0			0	0	0
Modalities for the accounting of assigned amounts under Article 7, paragraph 4				0	0	0
Review of national registries and information on assigned amounts	0		0			0
Review of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol	0	0			0	

⁸ As contained in FCCC/KP/CMP/2015/8/Add.1.