Ministry of Environment, Waters and Forests

Romania's

Report to facilitate the calculation of the assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol for the second commitment period and to demonstrate its capacity to account for its emissions and assigned amounts, in accordance with Annex I to Decision 2/CMP. 8

June 2016

1. Introduction

Under Annex I-Section A to Decision 1/CMP. 8, Doha amendment to the Kyoto Protocol, Romania has a quantified emission limitation and reduction commitment associated to the second commitment period of the Kyoto Protocol, 2013-2020.

Through Article 2 in Decision 2/CMP. 8, the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol decided that each Party with a quantified emission limitation and reduction commitment inscribed in the third column of Annex B of the Kyoto Protocol, as contained in Annex I to Decision 1/CMP. 8, shall submit to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat, by 15 April 2015, a report to facilitate the calculation of its assigned amount pursuant to Article 2, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol for the second commitment period and to demonstrate its capacity to account for its emissions and assigned amount.

Based on Annex I to Decision 2/CMP. 8, the report to facilitate the calculation of the assigned amount contains data and information on:

- complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs) not controlled by the Montreal Protocol;

- the identification of its selected base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in accordance with Article 3, paragraph 8, of the Kyoto Protocol;

- the agreement under Article 4 of the Kyoto Protocol for the second commitment period, where the Party has reached such an agreement to fulfil its commitments under Article 3 of the Kyoto Protocol jointly with other Parties;

- the calculation of its assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol;

- the calculation of its commitment period reserve in accordance with Decision 11/CMP. 1 or any subsequent revision;

- the identification of its selection of single minimum values for tree crown cover, land area and tree height for use in accounting for its activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol;

- the identification of its election of activities under Article 3, paragraph 4, of the Kyoto Protocol for inclusion in its accounting for the second commitment period;

- the identification of 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;

- the forest management reference level as inscribed in the Appendix to the Annex to Decision 2/CMP. 7;

- information on how emissions from harvested wood products, originating from forests prior to the start of the second commitment period have been calculated in the reference level in accordance with Decision 2/CMP. 7, Annex, paragraph 16;

- an indication of whether it indents to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation under Article 3, paragraph 3, of the Kyoto Protocol and/or forest management under Article 3, paragraph 4, of the Kyoto Protocol during the second commitment period in accordance with Decision 2/CMP. 7, Annex, paragraph 33;

- a description of its national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol;

- a description of its national registry.

This report also includes the information in line with the Decision the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol took on its eleventh session, held in Paris, December 2015, more specific

- Decision 2/CMP.11: Clarification of the text in section G (Article 3, paragraph 7 ter) of the Doha Amendment to the Kyoto Protocol; and

- Decision 3/CMP.11: Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part I: implications related to accounting and reporting and other related issues.

2. Complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs) not controlled by the Montreal Protocol

The complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol are submitted in conjunction with the 2016 annual GHG Inventory submission.

3. **The identification of its selected base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in accordance with Article 3, paragraph 8, of the Kyoto Protocol**

In line with the Romania's Initial Report associated to the first commitment period under the Kyoto Protocol, Romania is using 1989 as a base year, for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

In accordance with Article 3, paragraph 8bis, of the Kyoto Protocol, Romania selected 2000 as base year for nitrogen trifluoride.

4. **The agreement under Article 4 of the Kyoto Protocol for the second commitment period, where the Party has reached such an agreement to fulfil its commitments under Article 3 of the Kyoto Protocol jointly with other Parties**

The Kyoto Protocol, under Article 4, provides the option for Parties to fulfil their commitments under Article 3 jointly.

For the second commitment period, upon adoption of the Doha amendment to the Kyoto Protocol, the European Union, its Member States and Iceland stated that the European Union and its 28 Member States again intend to fulfil their reduction targets under the second commitment period jointly (declaration made in footnotes 4, 6 and 8 to Annex B of the Doha Amendment).

The European Union ratification decision (Council Decision (EU) 2015/1339 of 13 July 2015) sets out the terms of the joint fulfilment between the Union and its Member States and Iceland.

The emission level for Romania cover the emissions from sectors and gases listed in Annex A to the Kyoto Protocol not covered by Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC.1

This includes all emissions from sources and removals by sinks covered by Article 3(3) and (4) of the Protocol as well as all emissions of nitrogen trifluoride (NF_3) under the Kyoto Protocol.

[1]Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC covers emissions of greenhouse gases listed in Annex A to the Kyoto Protocol that are covered by the EU Emissions Trading System (EU ETS)

In Annex I to this decision, point 3 (Respective emission levels allocated to the members to the agreement) it is specified that:

a) The assigned amounts of the members shall be equal to their respective emission levels;
b) The emission level of Romania (before application of Article 3(7bis)) in terms of tonnes of carbon dioxide equivalent for the second commitment period of the Kyoto Protocol are 656,059,490.

In Annex I to this decision, point 2 (Joint fulfilment of the commitments under Article 3 of the Kyoto Protocol for the second commitment period of the Kyoto Protocol) is it clarified that: if land use, land-use change and forestry (LULUCF) constituted a net source of greenhouse gas emissions in 1990 for any Member State or Iceland, the relevant member shall, pursuant to Article 3(7bis) of the Kyoto Protocol, include in its emissions base year or period the aggregate anthropogenic carbon dioxide equivalent emissions by sources minus removals by sinks in the base year or period from land use, land-use change and forestry for the purpose of calculating the joint assigned amount of the members determined in accordance with Article 3 (7bis), (8) and (8bis) of the Kyoto Protocol. This is not the case for Romania. More information on this is provided below under the chapter on the calculation of the assigned amount.

5. The calculation of its assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol

A. Emission level allocated to Romania

Pursuant to Annex I to Decision 3/CMP.11, section I, B para 2 those Parties that have reached an agreement in accordance with Article 4 to fulfil their commitments under Article 3 jointly shall use the respective emission level allocated to each of the Parties in that agreement instead of the percentage inscribed for it in the third column of Annex B.
This emission level is for Romania 656,059,490 tonnes of carbon dioxide equivalent (as presented below in section C).

B. All emissions by sources minus removals by sinks reported in relation to the LULUCF

The provision presented in the last paragraph in the previous chapter is not applicable to Romania as the LULUCF does not represent a net source of greenhouse gas emissions in the base year.

C. Total Assigned Amount

The emission level allocated to Romania is 656,059,490 tonnes of carbon dioxide equivalent.

6. The calculation of its commitment period reserve in accordance with Decision 11/CMP. 1 or any subsequent revision

The commitment period reserve equals the lower of either 90% of a Party's assigned amount pursuant to Article 3(7bis), (8) and (8bis) or 100% of its most recently reviewed inventory, multiplied by 8.
For the purposes of the joint fulfilment, the commitment period reserve applies to the EU, its Member States and Iceland individually.

The calculations of the commitment period reserve for Romania are follows.

Method 1: 90 % of assigned amount results in:
0.90 * 656,059,490 = 590,453,541 tonnes of carbon dioxide equivalent

Method 2: 100% of most recently reviewed inventory, taken the 2016 submission as the most recently reviewed inventory, multiplied by 8 results in:
109,759,640 * 8 = 878,077,120 tonnes of carbon dioxide equivalent

The commitment period reserve consequently amount to 590,453,541 tonnes of carbon dioxide equivalent.

7. The identification of its selection of single minimum values for tree crown cover, land area and tree height for use in accounting for its activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Romania continue to use the single minimum values for tree crown cover, land area and tree height presented in the Romania's Initial Report associated to the first commitment period under the Kyoto Protocol, in accounting for afforestation/reforestation, deforestation, forest management and revegetation activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

As a summary, the forest in Romania is characterized by the following elements:
• minimum value for area: 0.25 hectares;
• minimum value for tree crown cover: 10%;
• minimum value for tree height: 5 m;
• minimum value for width: 20 m.

Starting with 2015, Romania implements a new land assessment system built around National Forest Inventory (NFI) grid. It captures all land use categories over entire country, including land use and change back to 1970 (based on various sources available in various moments in time: maps, aerial photography, satellites images). This system rigorously implements forest parameters for land classification and area estimation.

This definition is consistent with the information reported by Romania to the Food and Agriculture Organization of the United Nations (FAO).

8. The identification of its election of activities under Article 3, paragraph 4, of the Kyoto Protocol for inclusion in its accounting for the second commitment period

Romania did not elect any additional activity under Article 3 paragraph 4 of the Kyoto Protocol to be included in its accounting for the second commitment period.

Forest management and revegetation activities accounted in the first commitment period under the Kyoto Protocol continues to be accounted during the second commitment period; National Forest Inventory based national system shall be able to identify land use and activities based on statistical sampling combined with additional spatial information.

9. The identification of 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

Romania selects accounting of activities under Article 3.3 and 3.4 (forest management and revegetation) of the Kyoto Protocol, for the entire commitment period and intends to report at the end of the commitment period.

10. The forest management reference level as inscribed in the Appendix to the Annex to Decision 2/CMP. 7

Forest management reference level (FMRL) in the Report of the technical assessment of the forest management reference level submission of Romania submitted in 2011 (http://unfccc.int/resource/docs/2011/tar/rou01.pdf) is -15.444 Gg CO_2 equivalent (assuming instantaneous oxidation) and -15.793 Gg CO_2 equivalent (applying first-order decay function for Harvested Wood Products-HWP), recalculated in comparison to the Submission of information on forest management reference levels by Romania (http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_romania_2011.pdf).

A technical correction is necessary, in order to ensure methodological consistency and use of updated forestry data for the estimation of emissions and removals of forestland, for ensuring a consistent FMRL and for the estimation of Forest Management (FM) accounted amount.

The information requested through the Annex I to Decision 2/CMP.8 para 1 (i) footnote 1 is included in the Annex.

11. Information on how emissions from harvested wood products, originating from forests prior to the start of the second commitment period have been calculated in the reference level in accordance with Decision 2/CMP. 7, Annex, paragraph 16

Emissions from harvested wood products originating from forests prior to the start of the second commitment period have been calculated in the FMRL using the stock change approach defined in the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories-IPCC 2006 (data used were associated with years starting with 1900).

12. An indication of whether it indents to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation under Article 3, paragraph 3, of the Kyoto Protocol and/or forest management under Article 3, paragraph 4, of the Kyoto Protocol during the second commitment period in accordance with Decision 2/CMP. 7, Annex, paragraph 33

Two types of disturbances are quantitatively relevant for forest sink in Romania: forest wildfires and windfalls. Such events associated in the past with extreme intensity, for which reason Romania intends to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation under Article 3, paragraph 3, of the Kyoto Protocol (AR) and for forest management under Article 3, paragraph 4, of the Kyoto Protocol, during the second commitment period.

Assumption in the FMRL is that affected trees following disturbance were fully subject to salvage logging, consistent between national GHG inventory and FM estimates (i.e. fully included in the annual wood harvest). This assumption is now slightly revised, as resulted from a survey that 10-20 % of areas/standing volume may not be actually harvested (e.g. because of inaccessibility and scattered small areas) and 100% in case of afforestation reforestation because of low wood dimensions.

1) background level. Values (Gg CO_2/yr) for the background levels for FM and AR are shown in the following table:

Parameter	FM value	AR value
Background level	220	0.20
Margin	106	0.22
Background level plus margin	431	0.64
Background group for windstorms/ wildfires/ excluded	1970-2009/ 1990-2009/ 1970-2009/1979-1983	-/ 1990-2009/ 1990, 1992, 2000, 2002

2) information how background level was estimated

Forest Management activity

GHG emissions from forest wildfire. Cumulative net emission from these sources is negligible, representing less than 1 % (~5 Gg CO_2/year, reported by national GHG inventory) of annual net CO_2 removals. Associated GHG emissions are calculated using Equation 2.27 and default factors (combustion factor, emission factors for CH_4, N_2O) from IPCC 2006. Activity data is the annual area of the event (following annual survey and report by Forest Authority). Combustible amount is given by average standing biomass of forests in Romania, including nationally average dead wood and litter pools (total of 96.4 t C/ha, from NFI 2010). Calibration period covers 1990 - 2009. Forest area changes of +5% from 1970 to 2009 was taken into account in the margin estimation. Background level and margin estimates include emissions of CO_2, CH_4 and N_2O.

For *windfalls* annual estimates of standing volume affected are available for a historical period starting 1970 to 2009. The event shows an exceptional occurrence, i.e. blown down volume of at least 4 mil. m^3 every 7-10 years (which is some 20-25% of regular annual wood harvest from forests). Maximum windfall volume was in 1995 of some 10 mil. m3 blown down.
Estimation of CO_2 emission associated to background level assumed:
a) 90% of affected area are resinous species, 10% are broadleaved;
b) 10% affected area/standing volume of small (< 2mil. m^3) and 20% of large windfalls are not harvested (remained untouched in the forests), because of inaccessibility or lack of capacity/resources to collect entire wood;
c) rest the affected volume is harvested (and associated removals or emissions subject to instantaneous oxidation in 5A1 and FM estimates). Traditionally, “salvage logging” from

disturbance events receive highest priority to harvesting, which ensures rather constant cut across time.
d) affected volume is transferred to the Dead Organic Matter (DOM) pool in the calendar year of the event;
e) decay of DOM occurs following decomposition function with half-time of 5 years. CO_2 emission associated to disturbance event occurs over following next 10 years, e.g. at the end of 10th year some 88% (or 91% in 12th year) of original biomass/carbon is lost and assumed emitted to atmosphere.
Nevertheless, there is still a methodological inconsistency because natural disturbance background level is estimated under a decomposition model (i.e. Tier 3 like, although linked to relevant climate and forest type strata), while assuming "no change" under Tier 1 for reporting DOM in national GHG inventory and FM.

Afforestation/reforestation activity
For afforestation/reforestation *forest fires* are only relevant. A background level was established assuming the same share of burnt area as AR to FM total area (i.e. 0.042%). Because of the size of trees in young plantations entire living biomass is assumed completely affected by fires, along with litter and dead wood pools (total of 12.4t C/ha, as estimated from an afforestation project monitored for emissions reduction transaction purpose).

3) expectation of net credits or debits

Salvage logging always follow disturbances, although there is doubt that entire volume affected is harvested. Exclusion from accounting of disturbance related emissions will be first supported by in-depth analysis of the rate of salvage logging, then by effort to monitor the concerned areas.

Technical correction of the FMRL would consider actual changes in DOM caused by disturbances (especially windblown affected standing volume), and possibly changes in the Soil Organic Matter (SOM) pool. DOM and SOM changes were not considered in the original submission of FMRL (assumed as "no change"). Ex-post of assessment of recent exceptional events (salvage logging, and regeneration rate of largest disturbance in 2002 affected area) is needed to establish it has or is necessary to be excluded from FMRL.

4) information how the margin is established, if needed

Frequency distributions for CO_2/CO_2 equivalent emission estimates from disturbance events are not normal, which means a larger number of disturbances are classified as extreme when the normal distribution assumption is used (since it underestimates the 97.5% bound). This is more relevant for AR where there is no baseline, and inclusion/exclusion of high emissions is sensitive to 97.5% value. In any case, distribution type is not relevant for FM when exclusion occurs for FMRL too.

Margin value was nevertheless estimated as the value corresponding to 97.5% on normal distribution of area-specific emissions for each of FM and AR time series of emissions from disturbances (following 2013 IPCC Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol-KP supplement 2013 guidance).

13. A description of its national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol

Romania had a QELRC in the first commitment period under the Kyoto Protocol; a complete description of the national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol is not included in the current report.
The description of the national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol, has been provided in the Romania's Initial Report under the Kyoto Protocol, report related to the first commitment period. Updated descriptions have been provided in subsequent National GHG Inventory submissions, the most recent being the 2016 submission.

14. A description of its national registry

Romania had a QELRC in the first commitment period under the Kyoto Protocol; a complete description of the national registry is not included in the current report.
The description of the national registry has been provided in the Romania's Initial Report under the Kyoto Protocol, report related to the first commitment period. Updated descriptions have been provided in subsequent National GHG Inventory submissions, the most recent being the 2016 submission.

15. The calculation of the difference between the assigned amount for the second commitment period and average annual emissions for the first three years of the preceding commitment period multiplied by eight

In line with the terms of the joint fulfilment of the European Union, its Member States and Iceland under Article 3 of the Kyoto Protocol, Article 3(7ter) is applied to the joint assigned amount of the second commitment period; therefore, the provision is not applicable for Romania, individually.

ANNEX A Submission of information on forest management reference levels by Romania and the technical assessment report

This Annex holds the information as requested by Annex I to Decision 2/CMP.8 para 1 (i) footnote 1

A.1: "Submission of information on forest management reference levels by Romania" of 10 March 2011, which is published at https://unfccc.int/bodies/awg-kp/items/5896.php

A.2: The "Report of the technical assessment of the forest management reference level submission of the Romania submitted in 2011", FCCC/TAR/2011/ROU, 20 October 2011 and published at http://unfccc.int/resource/docs/2011/tar/rou01.pdf