MINISTRY
OF NATIONAL DEVELOPMENT

Hungary's Second Initial Report under the Kyoto Protocol

2016

Contents

Introduction 3

(1) Hungary's emissions and removals of greenhouse gases (base year – 2014)..... 6

(2) Selection of base year for HFCs, PFCs, SF6 and NF3 8

(3) Agreement under Article 4 of the Kyoto Protocol 8

(4) Calculation of Hungary's assigned amount 11

(5) The calculation of Hungary's commitment period reserve 12

(6) Difference between the assigned amount for the second commitment period and the average emissions for the first three years of the preceding commitment period..... 12

(7) Application of paragraphs 23 – 26 of decision 1/CMP.8 13

(8) Application and calculation pursuant to paragraph 13 in the annex of decision 2/CMP.7 . 14

(9) The identification of Hungary's selection of single minimum values for use in accounting for its activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol 14

(10) 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 15

(11) 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 15

(12) The forest management reference level, any technical corrections as contained in the inventory report for the first year of the second commitment period and references to those sections in the national inventory report where such information is reported consistent with the requirements of decision 2/CMP.7, annex, paragraph 14..... 15

(13) 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 18

(14) An indication of whether Hungary intends to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation under Article 3.3 and forest management under Article 3.4 of the Kyoto Protocol during the second commitment period 21

(15) A description of national system in accordance with Article 5.1 of the Kyoto Protocol.... 21

Introduction

This report explains the modalities for the accounting of the Hungarian assigned amount under Article 3(7bis), (8) and (8bis) of the Kyoto Protocol for the second commitment period and pursuant to Decision 2/CMP.8 in FCCC/KP/CMP/2012/13/Add.1 taking into account also Council Decision (EU) 2015/1339 which sets out the terms of the joint fulfilment and the respective emission levels for the European Union, its Member States and Iceland (Annex I to that Decision).

To facilitate the calculation of the assigned amount for the second commitment period and demonstrate its capacity to account for its emissions and assigned amount, the complete time series of the national inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for all years from the base year to 2014 is included . In accordance with decision 2/CMP.8 in FCCC/KP/CMP/2012/13/Add.1, the Report to facilitate the calculation of the assigned amount shall contain the following information:

(a) Complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol recalculated in accordance with decision 4/CMP.7 for all years from 1990, or another approved base year or period under Article 3, paragraph 5, of the Kyoto Protocol, to the most recent year available, and prepared in accordance with Article 5, paragraph 2, of the Kyoto Protocol, and any relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and the Conference of the Parties (COP). If the report is submitted at the same time as the submission of the Party's annual GHG inventories, only one inventory submission should be provided and both reports should be submitted in conjunction;

(b) The identification of its selected base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in accordance with Article 3, paragraph 8, of the Kyoto Protocol, if the Party included in Annex I did not have a quantified emission limitation and reduction target in the first commitment period, and the identification of its selected base year for nitrogen trifluoride in accordance with Article 3, paragraph 8bis, of the Kyoto Protocol, for all Parties included in Annex I with a quantified emission limitation and reduction target for the second commitment period;

(c) 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;

(d) The calculation of assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol; on the basis of its inventory, which is due by 15 April 2015;

(e) The calculation of its commitment period reserve in accordance with decision 11/CMP.1 or any subsequent revision thereof related to the calculation of the commitment period reserve;

(f) 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, if the Party included in Annex I did not select a definition of forest for the first commitment period, together with a justification of the consistency of those values with the information that has been historically reported to the Food and Agriculture Organization of the United Nations or other international bodies, and in the case of difference, an explanation of why and how such values were chosen, in accordance with decisions 16/CMP.1 and 2/CMP.7. If the Party included in Annex I selected its forest definition for the first commitment period, the definition for the second commitment period shall be the same;

(g) 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, in addition to those activities under Article 3, paragraph 4, of the Kyoto Protocol that were elected in the first commitment period, together with information on how its national system under Article 5, paragraph 1, of the Kyoto Protocol will identify land areas associated with all additional elected activities and how the Party ensures that land that was accounted for under activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in the first commitment period continues to be accounted for in subsequent commitment periods, in accordance with decisions 16/CMP.1 and 2/CMP.7;

(h) 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;

(i) The forest management reference level as inscribed in the appendix to the annex to decision 2/CMP.7, any technical corrections as contained in the inventory report for the first year of the second commitment period and references to those sections in the national inventory report where such information is reported consistent with the requirements of decision 2/CMP.7, annex, paragraph 14;

(j) 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;

(k) An indication of whether it 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 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, and any relevant supplementary methodological guidance developed by the Intergovernmental Panel on Climate Change and adopted by the CMP and the COP, including:

(i) Country-specific information on the background level of emissions associated with annual natural disturbances that have been included in its forest management reference level;
(ii) Information on how the background level(s) 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 have been estimated, and information on how it avoids the expectation of net credits or net debits during the commitment period, including information on how a margin is established, if a margin is needed;

(l) A description of its national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol, reported in accordance with the "Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol", if the Party included in Annex I did not have a quantified emission limitation and reduction target in the first commitment period;

(m) A description of its national registry, reported in accordance with the "Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol", if the Party included in Annex I did not have a quantified emission limitation and reduction target in the first commitment period.

In addition, this report also reflects the additional guidance contained in Decision 3/CMP.11 and Decision 4/CMP.11. These decisions contain relevant provisions related to reporting and accounting, and review and adjustment for the second commitment period under the Kyoto Protocol.

(1) Hungary's emissions and removals of greenhouse gases (base year – 2014)

Pursuant to the UN Framework Convention on Climate Change (UNFCCC), Hungary has been preparing annual inventories of greenhouse gas emissions using the IPCC methodology. Base year emissions of Hungary equal the sum of average emissions and removals of the years 1985 to 1987. The base period is used as point of reference for the greenhouse gas reduction commitment, under which Hungary has undertaken to reduce the emissions by 6% in the first commitment period. As regards inventory preparation, Hungary switched to the method recommended by the 2006 IPCC Guidelines for National Greenhouse Gas 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" and the 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol. GHG emissions and removals and other relevant information have been submitted in the Common Reporting Format (CRF) in accordance with the tables as specified in these reporting guidelines.

The information described below is taken from the Hungarian national greenhouse gases (GHG) inventory 2014, which covers all emissions and removals of GHG on the territory of Hungary. In 2014, the total GHG emissions, without LULUCF, were 57.2 million tonnes CO_2 equivalents, 39.2% below 1990 level; while compared to the base year, emissions in 2014 were 47.8% lower (s. Tables and Figures below). Total GHG emissions in 2014 were the lowest in the whole time series (1985-2014).

Table 1 Summary of GHG emissions (excl. LULUCF) of Hungary by gases (base year – 2014; kt CO_2 eq)

	BY	1990	1995	2000	2005	2008	2010	2012	2013	2014
CO_2	85,194	73,115	61,354	58,337	60,330	57,325	52,109	46,775	43,931	43,573
CH_4	12,660	11,967	9,034	8,958	8,443	8,251	8,037	7,825	7,619	7,614
N_2O	11,404	8,665	5,001	5,621	5,982	4,487	4,055	4,200	4,599	4,504
HFCs	NO	NO	42	273	804	1,164	1,223	1,185	1,280	1,428
PFCs	371	376	223	283	281	5	2	2	2	2
SF_6	6	11	52	84	94	108	99	120	123	104
NF_3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Total	**109,636**	**94,134**	**75,706**	**73,557**	**75,933**	**71,340**	**65,524**	**60,107**	**57,554**	**57,225**

Figure 1 GHG emissions (excl. LULUCF) of Hungary in kt CO_2 equivalents by gases (base year – 2014)

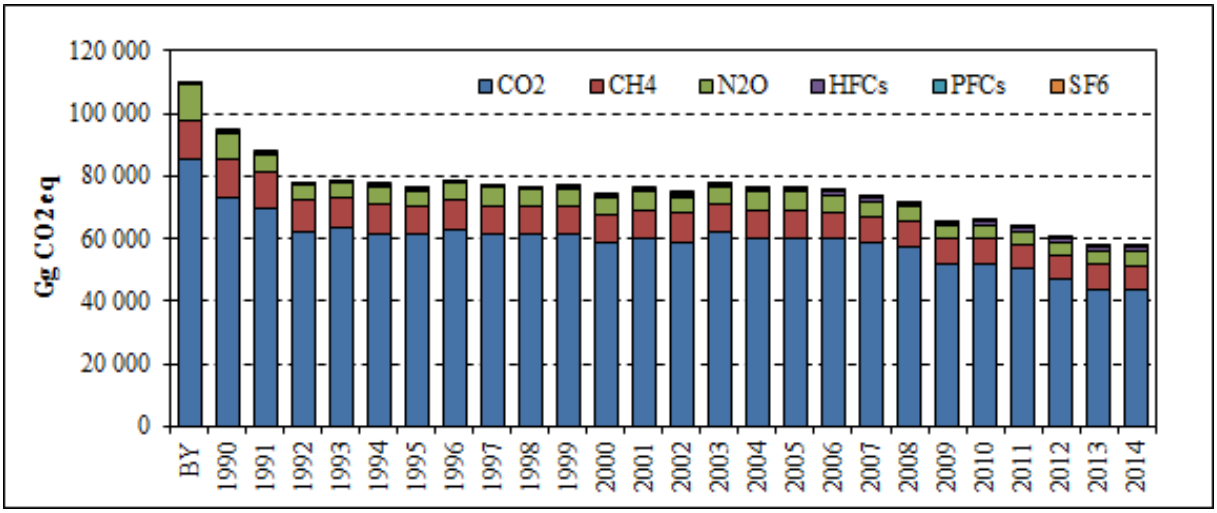
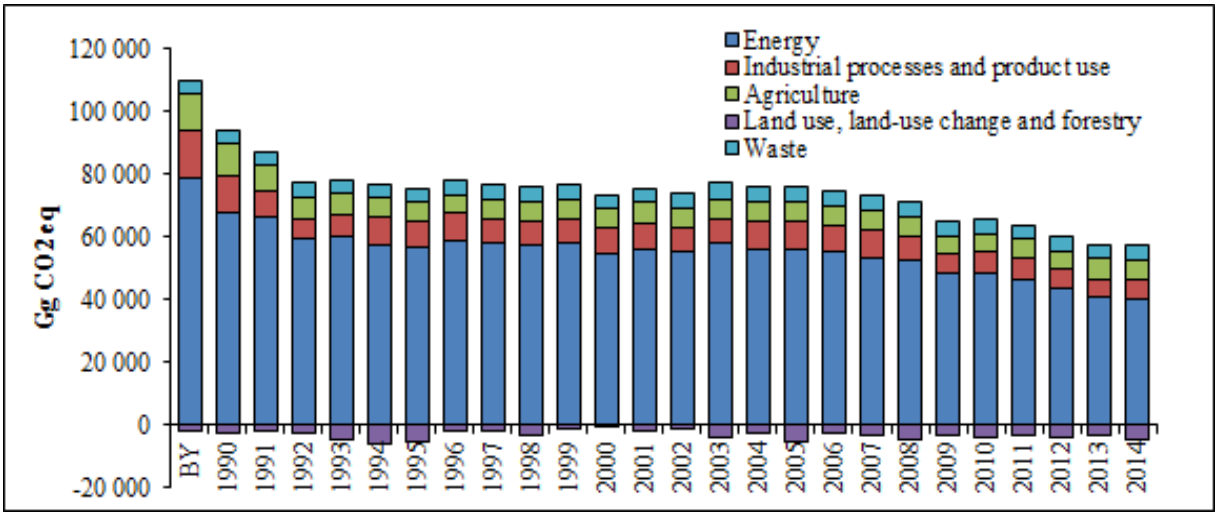


Table 2 Summary of GHG emissions of Hungary by sectors (base year – 2014; kt CO_2 eq)

	BY	1990	1995	2000	2005	2008	2010	2012	2013	2014
Energy	78,826	68,088	57,017	54,432	55,782	52,976	48,644	43,360	41,077	40,280
Industry	15,076	11,712	8,271	8,270	9,284	7,458	6,563	6,238	5,722	6,129
Agriculture	12,051	10,108	5,968	6,165	6,128	6,116	5,685	5,961	6,386	6,533
LULUCF	-1,721	-2,433	-5,346	-215	-5,079	-4,758	-3,710	-4,075	-3,098	-4,594
Waste	3,682	4,226	4,450	4,690	4,740	4,791	4,633	4,548	4,369	4,284
Total	**107,915**	**91,701**	**70,360**	**73,341**	**70,855**	**66,582**	**61,813**	**56,032**	**54,456**	**52,632**

Figure 2 Greenhouse gas emissions of Hungary in kt CO2 equivalents by sectors (base year – 2014)



(2) Selection of base year for HFCs, PFCs, SF6 and NF3

Under the Kyoto Protocol Hungary has chosen **1995** as its base year for hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). For nitrogen trifluoride (NF_3) Hungary has also chosen **1995** as its base year.

(3) Agreement under Article 4 of the Kyoto Protocol

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

The European Union and its Member States already made use of this option during the first commitment period (2008-2012), fulfilling their respective commitments under Article 3 (1) of the Kyoto Protocol jointly as a bloc of 15 countries, which were Member States of the Union at the time the Kyoto Protocol was ratified.

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.[1]

The ratification decision (Council Decision (EU) 2015/1339) sets out the terms of the joint fulfilment between the Union and its Member States and Iceland. The same terms are integral part of the Agreement between the European Union and its Member States, of the one part, and Iceland, of the other part, concerning Iceland's participation in the joint fulfilment of the commitments of the European Union, its Member States and Iceland in the second commitment period of the Kyoto Protocol in accordance with Council Decision (EU) 2015/1340. These terms are enclosed as Annex A.

Members of the joint fulfilment agreement for the second commitment period

The European Union, its Member States and the Republic of Iceland are members of this agreement (referred to as 'the members'). The following States are at present Member States of the European Union: the Kingdom of Belgium, the Republic of Bulgaria, the Czech Republic, the Kingdom of Denmark, the Federal Republic of Germany, the Republic of Estonia, Ireland, the Hellenic Republic, the Kingdom of Spain, the French Republic, the Republic of Croatia, the Italian Republic, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Grand Duchy of Luxembourg, Hungary, the Republic of Malta, the Kingdom of the Netherlands, the Republic of Austria, the Republic of Poland, the Portuguese Republic, Romania, the Republic of Slovenia, the Slovak Republic, the Republic of Finland, the Kingdom of Sweden, the United Kingdom of Great Britain and Northern Ireland.

[1] Declaration made in footnotes 4, 6 and 8 to Annex B of the Doha Amendment and Council Decisions (EU) 2015/1339 and 2015/1340

Iceland participates in this agreement pursuant to the agreement with Iceland concerning Iceland's participation in the joint fulfilment of the commitments of the European Union, its Member States and Iceland in the second commitment period of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

Provisions of the joint fulfilment relevant to the calculation of the assigned amounts

The joint assigned amount is calculated pursuant to the quantified emission limitation and reduction commitment listed in the third column of the table contained in Annex B to the Kyoto Protocol and in accordance with the provisions of Article 3 thereof. The assigned amounts of the members are determined in accordance with the terms of the joint fulfilment.

The calculation pursuant to Article 3(7ter) of the Kyoto Protocol shall apply to the joint assigned amount of the second commitment period determined in accordance with Article 3 (7bis), (8) and (8bis) of the Protocol and the sum of the average annual emissions of the members for the first three years of the first commitment period multiplied by eight.

Respective emission levels allocated to the members to the joint fulfilment

The joint quantified emission limitation and reduction commitment for the members listed in the third column of Annex B of the Kyoto Protocol for the European Union, its 28 Member States and Iceland is 80%. The joint assigned amount of the Members is determined pursuant to Article 3(7bis), (8) and (8bis) of the Kyoto Protocol on the basis of the combined base year.

The respective emission levels of the members to the joint fulfilment are as follows:

- The emission level and assigned amount for the European Union is the difference between the joint assigned amount of the members, and the sum of the emission levels of the Member States and Iceland.

- The assigned amount of the European Union is counted against the emissions of greenhouse gases listed in Annex A to the Kyoto Protocol that are also covered by the EU Emissions Trading System (EU ETS) pursuant to Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC[2] so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. The sectors covered by the EU Emissions Trading System are those specified in Annex I of the EU ETS Directive and taking into account the application of its Articles 24 and 27.

- The emission levels of the Member States and Iceland 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

[2] OJ L140, 5.6.2009, p. 63

so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. 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 (NF3) under the Kyoto Protocol. These emission levels are no longer derived as a reduction percentage compared to base year emissions as in the first commitment period, but as an absolute figure, expressed in tonnes of carbon dioxide equivalents listed for each Member State and Iceland. The figure for individual Member States is equal to the sum of each Member State's Annual Emissions Allocation under Decision No 406/2009/EC on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020 (Effort Sharing Decision) for the years 2013 to 2020 before the application of Article 3(7bis).[3] The respective emission levels of the 28 Member States and Iceland in accordance with Article 4(1) and (5) of the Protocol and before application of Article 3(7bis) are listed in Table 3.

Table 3 Emission levels of the Member States and Iceland set out in the terms of the joint fulfilment before application of Article 3(7bis) for the second commitment period under the Kyoto Protocol

Country	Emission level [tonnes of CO_2eq.]
Belgium	584,228,513
Bulgaria	222,945,983
Czech Republic	520,515,203
Denmark	269,321,526
Germany	3,592,699,888
Estonia	51,056,976
Ireland	343,467,221
Greece	480,791,166
Spain	1,766,877,232
France	3,014,714,832
Croatia	162,271,086
Italy	2,410,291,421
Cyprus	47,450,128
Latvia	76,633,439
Lithuania	113,600,821
Luxembourg	70,736,832
Hungary	***434,486,280***
Malta	9,299,769
Netherlands	919,963,374
Austria	405,712,317
Poland	1,583,938,824
Portugal	402,210,711
Romania	656,059,490

[3] OJ L140, 5.6.2009, p. 136

Country	Emission level [tonnes of CO_2eq.]
Slovenia	99,425,782
Slovakia	202,268,939
Finland	240,544,599
Sweden	315,554,578
United Kingdom	2,743,362,625
Iceland	15,327,217

The terms of the joint fulfilment determine that the assigned amounts of the members shall be equal to their respective emission levels, adjusted for Article 3(7bis) of the Kyoto Protocol. The assessment of compliance of the joint fulfilment at the end of the second commitment period does not require changes to the annual inventory reporting. The European Union, the 28 Member States and Iceland will continue to report individually on emissions by sources and removals by sinks, submitting full greenhouse gas inventories covering all anthropogenic emissions by sources and removals by sinks for gases listed on Annex A to the Kyoto Protocol and all source categories covered by the UNFCCC reporting guidelines occurring on their territories under the Kyoto Protocol.

(4) Calculation of Hungary's assigned amount

Pursuant to Article 3(7bis), (8) and (8bis) of the Kyoto Protocol and paragraph 2 of Annex I to decision 3/CMP.11 under the Kyoto Protocol, the assigned amount for the second commitment period shall be equal to the percentage inscribed in the third column of Annex B to the Kyoto Protocol of the aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases from the sources listed in Annex A to the Kyoto Protocol in the base year period multiplied by eight, taking into account Article 3(7bis) of the Kyoto Protocol as explained above. This method of calculation is applied to the calculation of the joint assigned amount only. It does not apply to the calculation of the individual assigned amounts for the European Union, the Member States individually, or Iceland. Thus, the calculations of the base year emissions do not play a role in the calculation of their individual assigned amounts, which are instead determined pursuant to the joint fulfilment agreement.

As was the case for the first commitment period, the joint assigned amount units will not be issued separately but instead the assigned amounts of each member of the joint fulfilment agreement are recorded in the compilation and accounting database and the EU and each of the Member States and Iceland can issue their respective assigned amount units in their respective registries.

The joint assigned amount of the European Union, its Member States and Iceland for the second commitment period will be determined pursuant to Article 3(7 bis), (8) and (8 bis) of the Kyoto Protocol, and its calculation will be facilitated by the report submitted by the European Union pursuant to paragraph 2 of Decision 2/CMP.8.

The respective assigned amounts of each EU Member State and Iceland are equal to the emission levels agreed under the terms of the joint fulfilment, listed in Annex 2 of the ratification decision and the results of the application of the second sentence of Article 3(7bis) of the Kyoto protocol for that Member State or Iceland. This is in accordance with paragraph 5(c) of the annex to decision 13/CMP.1 of the Kyoto Protocol as replaced by paragraph 2 of decision 3/CMP.11 of the Kyoto Protocol which requires that "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". The final assigned amounts for each Member State and Iceland are shown in Table 2 7. The individual assigned amounts of each Member State and Iceland shall be issued in the Kyoto registry of the respective Member States and Iceland.

Based on the above method of calculation, the individual assigned amount of Hungary for the second commitment period equals the emission level shown in Table 3 i.e. it is equal to **434,486,280 tonnes of CO_2eq.**

(5) The calculation of Hungary's commitment period reserve

Parties are required by decision 11/CMP.1 under the Kyoto Protocol and paragraph 18 of Decision 1/CMP.8 to establish and maintain a commitment period reserve as part of their responsibility to manage and account for their assigned amount. The commitment period reserve (CPR) 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 90% of Hungary's total assigned amount units (434,486,280 tonnes CO_2 eq * 0,9 = 391,037,652 tonnes CO_2 eq) is lower than the 100% of eight times its most recently reviewed inventory (emission level 2014) multiplied by 8 (57 225 155 t CO_2 eq * 8 = 457,801,242 t CO_2 eq.). Based on the above calculation, Hungary's CPR applicable for the second commitment period is **391,037,652 tonnes CO_2eq**.

(6) Difference between the assigned amount for the second commitment period and the average emissions for the first three years of the preceding commitment period

According to Article 3(7ter) of the Kyoto Protocol, any positive difference between the assigned amount of the second commitment period and the average annual emissions for the first three years of the preceding commitment period multiplied by eight shall be transferred to the cancellation account.

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.

(7) Application of paragraphs 23 – 26 of decision 1/CMP.8

According to decision 1/CMP.8, paragraph 23, each Party included in Annex I with a commitment inscribed in the third column of Annex B as contained in annex I to this decision shall establish a previous period surplus reserve (PPSR) account in its national registry. Based on this provision, the European Union, each Member State and Iceland will establish previous period surplus reserve accounts in their respective registries.

According to decision 1/CMP.8, paragraph 24, where the emissions of a Party referred to in paragraph 23 above in a commitment period are less than its assigned amount under Article 3, the difference shall, on request of that Party, be carried over to the subsequent commitment period, as follows:

(a) Any ERUs or CERs held in that Party's national registry that have not been retired for that commitment period or cancelled may be carried over to the subsequent commitment period, up to a maximum for each unit type of 2.5 per cent of the assigned amount calculated pursuant to Article 3(7) and (8);

(b) Any AAUs held in that Party's national registry that have not been retired for that commitment period or cancelled shall be added to the assigned amount for that Party for the second commitment period. That part of a Party's assigned amount consisting of AAUs held in that Party's national registry that has not been retired for that commitment period or cancelled shall be transferred to its previous period surplus reserve account for the subsequent commitment period, to be established in its national registry;

Based on this provision, the European Union, each Member State and Iceland will carry over any remaining ERUs, CERs or AAUs that have not been retired of cancelled for the first commitment period in their respective registries to their respective previous period surplus reserve accounts. The 2.5 per cent limit in paragraph 24 (a) of decision 1/CMP.8 will be calculated based on the assigned amounts of the Member States, Iceland and the European Union calculated pursuant to Article 3(7) and (8) for the first commitment period.

According to decision 1/CMP.8, paragraph 25, units in a Party's previous period surplus reserve account may be used for retirement during the additional period for fulfilling commitments of the second commitment period up to the extent by which emissions during the second commitment period exceed the assigned amount for that commitment period, as defined in Article 3(7 bis), (8) and (8 bis), of the Kyoto Protocol. This provision will be applied to the European Union, its Member States and Iceland individually due to the fact that the previous period surplus reserve accounts will be established in the Kyoto registries of the European Union, its Member States and Iceland. Units in a member's Previous Period Surplus

Reserve account may be used for retirement during the additional period for fulfilling commitments of the second commitment period, up to the extent by which that member's emissions during the second commitment period exceed its respective assigned amount for that commitment period.

According to decision 1/CMP.8, paragraph 26, units may be transferred and acquired between previous period surplus reserve accounts. This provision will be applied to the European Union, its Member States and Iceland individually due to the fact that the previous period surplus reserve accounts will be established in the Kyoto registries of the European Union, its Member States and Iceland.

(8) Application and calculation pursuant to paragraph 13 in the annex of decision 2/CMP.7

According to paragraph 13 in the annex of decision 2/CMP.7 for the second commitment period, additions to the assigned amount of a Party resulting from forest management under Article 3(4), and from forest management project activities undertaken under Article 6, shall not exceed 3.5 per cent of the base year greenhouse gas emissions excluding land use, land-use change and forestry pursuant to Article 3(7) and (8), or any amendments thereto, times the duration of the commitment period in years. Similar to the general accounting of emissions and removals under Article 3(3) and (4), Member States and Iceland will apply this provision individually. The maximum accountable quantities resulting from forest management that can be added to the assigned amounts to Hungary is **30,680,949 tonnes CO_2eq.**

(9) The identification of Hungary's selection of single minimum values for use in accounting for its activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Hungary chose single minimum values for „forest" for the first commitment period in its first Initial Report in 2006, and will continue to use the same values in the second commitment period. These values are the following:

Characteristics	Chosen Value	Justification
Single minimum land area	0.5 ha	identical with value reported to FAO earlier
Single minimum width of forest area	10 m	defined by the methodology of current forest inventory
A single minimum tree crown cover value	30%	identical with value reported to FAO earlier
A single minimum tree height value	5 meters	identical with value reported to FAO earlier

(10) 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

Hungary **does not elect** the following activities under Article 3, paragraph 4 of the Kyoto Protocol: Cropland Management, Grazing Land Management and Revegetation in the second commitment period. Note that Hungary elected Forest Management for the first commitment period, and will continue to account for it in the second commitment period.

(11) 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

Hungary intends to account for Article 3.3 and 3.4 (Forest Management only) LULUCF activities **annually**.

(12) The forest management reference level, any technical corrections as contained in the inventory report for the first year of the second commitment period and references to those sections in the national inventory report where such information is reported consistent with the requirements of decision 2/CMP.7, annex, paragraph 14

As reported in Hungary's Submission of information on forest management reference levels (https://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_hungary_2011.pdf), the forest management reference level (FMRL) for Hungary, a member state of the EU, was developed in cooperation with the Joint Research Centre (JRC) of the European Commission in 2011. First, annual net emissions for FM were estimated for 2000-2008 and projected until 2020, assuming a 'business as usual' scenario, for the total of the above- and below-ground biomass carbon pools using two models of EU modelling groups, i.e., the G4M (Global Forestry Model) (from the International Institute for Applied Systems Analysis, or IIASA) and the EFISCEN (European Forest Information Scenario Model of the European Forest Institute) models. Then, the emissions and removals estimated by the models in this run for the period 2000 to 2008 were calibrated/adjusted using an offset, defined as the difference between the average of the historical forest management net emissions for 2000–2008, included in the National GHG Inventory of 2011, and the average of the mean values from the two models for the same period. (The offset was applied to the model results in order to make the projection and the historical forest management values more consistent.)

Note that, at the request of the review team, the models were re-run during the technical assessment of the FMRL submission of Hungary, producing a somewhat different output. Then, the above calibration was also repeated, yielding the FMRL value that was officially approved by the Report of the technical assessment of the forest management reference

level submission of Hungary submitted in 2011 (FCCC/TAR/2011/HUN), and is used in Appendix to Decision 2/CMP.7.

The only forest pools included in the construction of the FMRL were the above- and below-ground biomass pools. Later, emissions from organic soils, and non-CO2 emissions from wildfires were added, but the dead organic matter (litter and dead wood) and the mineral soil organic carbon pools were not included as they are demonstrated that they are not a source. The contribution of HWP to the FMRL of Hungary was estimated using the approach proposed in document FCCC/KP/AWG/2010/18/Add.1, chapter II, annex I. Due to a number of methodological changes since the above estimation and review, a technical correction of the FMRL has become necessary. This is described in the next section.

Technical Corrections of the FMRL

Pursuant to Paragraphs 14 and 15 of Annex to Decision 2/CMP.7 (Land use, land-use change and forestry) contained in document FCCC/KP/CMP/2011/10/Add.1, p.15, a technical correction was necessary for the above FMRL. This is because although the pools included in the FMRL are the same as those reported in both the 2011 NIR and the NIR last year and were consistent with previous reporting, there are several methodological changes that have been implemented in the estimation of emissions and removals from FM, including the HWP pool.

All these changes, which have been identified using Table 2.7.1 of the IPCC 2013 KP Supplement, are reported in Table 4 below. As a result, emission and removal estimates that are used in the estimation of the FMRL were changed. For the sake of transparency, Table 5 below reports both historical and projected estimates from the submission of 2011 and this year as relevant.

Table 4 Elements of the Technical Correction based on Table 2.7.1 of the IPCC 2013 KP Supplement.

Criteria	Change in the estimation of emissions and removals from FM	Partial technical correction (kt CO_2)
1 Changes in the method used for GHG reporting of FM or Forest Land remaining Forest Land (FL-FL) after the adoption of FMRL	none	0
2. Changes in any of the following methodological elements used to establish the FMRL (as reported in the FMRL submission) after the adoption of FMRL		
a) New pools and gases	emissions from organic soils	62
b) Area under FM	area was increased by adding the area of Found Forests	-99
c) Historical data from GHG inventory	recalculated due to the change of several emissions/removal factors	-15
d) Forest characteristics and related management	all changes, if any, are reflected in the recalculation of historical data	
e) Historical harvesting rates	none	0
f) Climate data assumed by models for projecting	none	0
g) HWP: new/recalculated data and/or methods; inclusion of provisions	revised data and method according to the KP Supplement	12
h) Natural disturbances	Hungary has elected not to exclude emissions from natural disturbances	0
3. Other possible methodological inconsistencies	none	0
	TOTAL	**-40**

Table 5 Emission and removal estimates of corrected elements: (a) historical values of non-HWP elements, and (b) projected values for the HWP pool, as reported in our FMRL submission of 2011 and in this year (data are in $ktCO_2eq$).

(a)

Emissions and removals ($ktCO_2$ eq) from:	Submission	2000	2001	2002	2003	2004	2005	2006	2007	2008	average 2000-2008	difference
biomass pools	2011	95	-1 309	-672	-2 676	-1 555	-3 576	-1 536	-1 769	-2 808	-1 756	-99
	2016	120	-1 447	-591	-2 863	-1 743	-3 840	-1 613	-1 736	-2 983	-1 855	
organic soils	2011	0	0	0	0	0	0	0	0	0	0	62
	2016	62	62	62	62	62	62	62	62	62	62	
non-CO_2 emissions	2011	35	32	32	32	27	44	28	39	27	33	-15
	2016	21	18	18	17	12	28	12	24	11	18	
TOTAL	2011	130	-1 277	-639	-2 645	-1 528	-3 532	-1 508	-1 729	-2 780	-1 723	-53
	2016	202	-1 368	-512	-2 785	-1 670	-3 750	-1 540	-1 650	-2 911	-1 776	

(b)

Emissions and removals ($ktCO_2$ eq) from:	Submission	2013	2014	2015	2016	2017	2018	2019	2020	average 2013-2020	difference
HWP	2011	-107	-101	-100	-101	-105	-110	-116	-122	-108	12
	2016	-74	-78	-87	-94	-100	-106	-112	-119	-96	

It is important to highlight that the basis for the projection of emissions and removals from FM, i.e. the average of the estimates of the two above model, has not been changed since 2011. Thus, the methodology of the projection, including the effect of policies on the projections, is the same as before.

Considering all the above, all elements of the necessary technical correction are reported in Table 5. The technically corrected FMRL was developed from the total of these elements using Equation 2.7.1 of the IPCC 2013 KP Supplement:

$$FMRL_{corr} = FMRL + Technical_Correction$$

where

$FMRL_{corr}$ = the corrected FMRL,

FMRL = Forest Management Reference Level inscribed in Appendix to Decision 2/CMP.7

Technical_Correction = the total of the partial corrections in Table 6.

Table 6 The development of the technically corrected FMRL and the related FMRLcorr based on the FMRL estimated in 2011, the various elements of Technical Correction values, and the corrected FM projection (data are in $ktCO_2eq$).

Derivation of data				average 2000-2008	2000	2005	2010	2015	2020	average 2013-2020
FMRL as approved earlier	Step 1: models' results (only biomass)	EFISCEN		-1,394	-1,413	-1,406	-1,300	-365	522	-103
		G4M		-2,225	-2,055	-2,382	-2,020	-1,981	-1,611	-1,845
		Average of models		-1,809	-1,734	-1,894	-1,660	-1,173	-545	-974
	Step 2: ex-post processing	Offset	biomass	53						
			non-biomass pools and GHG sources	28						
			total offset	**82**						
		Calibrated average of models		-1,728	-1,652	-1,812	-1,578	-1,091	-463	**-892**
	Step 3: Applying first-order decay function for HWP	Offset due to difference in accounting between instantaneous oxidation and first order decay function from HWP								**-108**
		Calibrated average of models		-1,728	-1,652	-1,812	-1,578	-1,199	-571	**-1,000**
Technical correction	due to new pools (i.e., organic soils)			62						62
	due to revision of biomass estimates			-99						-99
	due to revision of HWP estimates									12
	due to estimating non-CO2 emissions			-15						-15
	Total									***-40***
Corrected historical and projected FM as well as the technically corrected FMRL as the average of projected values				*-1,781*	*-1,705*	*-1,865*	*-1,631*	*-1,240*	*-611*	***-1,040***

Based on the above, Hungary's FMRL is **-1,040 $ktCO_2eq$**.

(13) 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[4]

From a methodological point of view, historical emissions and removals from HWP under FM are treated similarly to those under the UNFCCC.

The estimation was done with annual historical production data, specific half-lives for product types, application of the first-order decay function using equation 12.1 from the 2006 IPCC Guidelines with default half-lives of two years for paper, 25 years for wood panels and 35 years for sawn wood, and instantaneous oxidation was assumed for wood in solid waste disposal sites. Historical data dated back to 1964. It was assumed that, with the exception of wood harvested in deforestations, all harvested wood is allocated to forest management and that all forests in Hungary are managed. The estimates include exports.

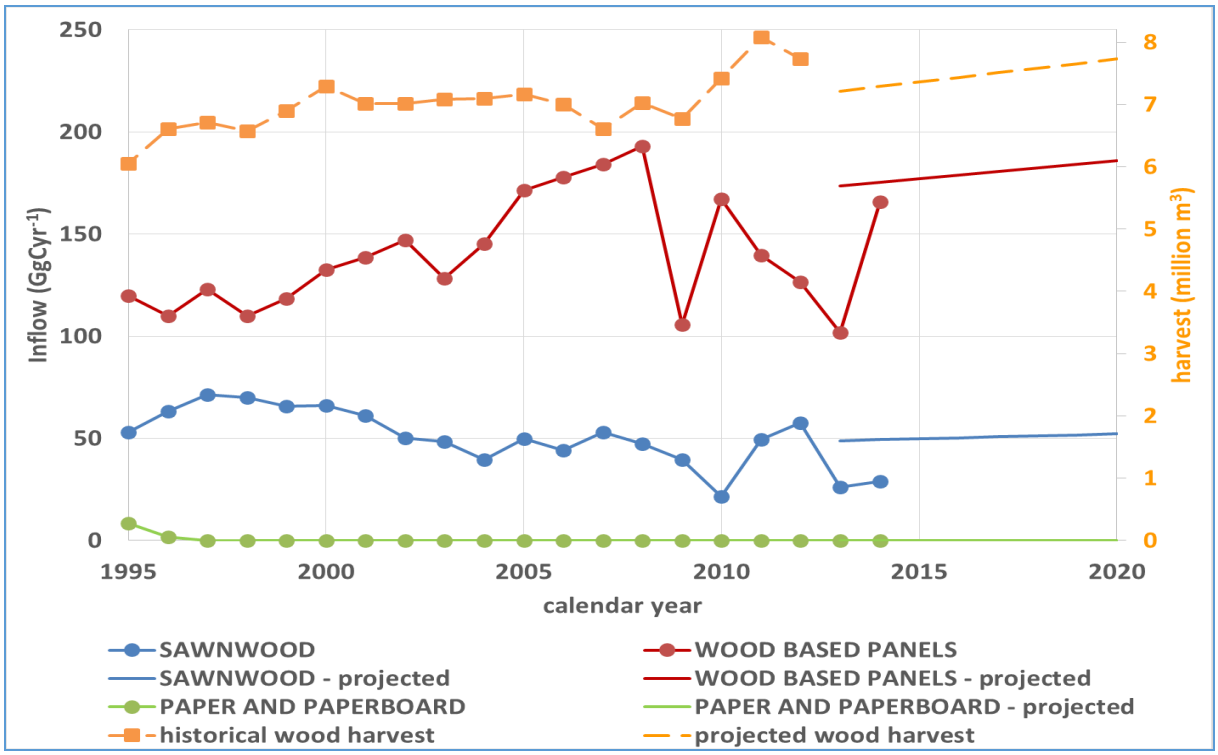
[4] Source: Hungary's NIR (2016): "11.5.2.5: Information on Harvested Wood Products under Article 3.4" available at: http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/9492.php

As a result of the above procedure, the net emission estimates from the HWP pool in the FM category under the KP are only different from those under the UNFCCC in that while the latter includes harvested wood products produced from all harvests from all forests, the former excludes harvested wood products from forests in the Deforestation category.

Concerning the contribution of the HWP pool to the FMRL, data was developed for all other years until 2020 using a projection with the below steps (following the example provided in Box 2.8.2 of the IPCC 2013 KP Supplement):

1. For harvests, the same projection of an increasing trend was used as those in the development of the projection of net removals of the forests under FM (Figure 3).
2. Annual changes (in percent) of the projected total annual wood harvest rates were calculated between subsequent years.
3. The averages of the historical inflow rates of the most recent five years before the projected years (i.e.,2005-2009) were calculated for the sawnwood, wood-based panel and paper and paper board categories.
4. These averages were increased using the annual changes under item 2 above to get projected inflow values for each HWP pool (Figure 3).
5. The projected inflow values were used in Equation 2.8.5 of the IPCC 2013 KP Supplement to estimate carbon stocks, as well as gains and losses.

Figure 3 Projected (in 2015) rates of inflow, historical rates that were used to develop the projected ones, and the historical and projected (in 2011) trend of total wood harvests.



For the technical correction of the FMRL (see section (12) above), the average of the carbon stock changes for years 2013-2020 (projected as described above) was used.

For the sake of transparency, some additional information is provided below to demonstrate how the provisions in paragraph 16 of the Decision 2/CMP.7 are observed:

- "Emissions that occur during the second commitment period from harvested wood products removed from forests prior to the start of the second commitment period shall also be accounted for."

These emissions are only relevant for the non-firewood wood products, and are estimated using the first order decay approach.

- "In the case the forest management reference level is based on a projection, a Party may choose not to account for the emissions from harvested wood products originating from forests prior to the start of the second commitment period, ..."

Hungary's FMRL is based on a projection, and Hungary has chosen not to account for the emissions from HWP originating from forests prior to the start of the second commitment period. For any particular year, estimates of the emissions from the HWP pool are included in both the FMRL and the annual total emissions from the FM category and, under the assumptions of the construction of the FMRL, the difference between sums of the two estimates taken for the entire CP should result in zero credits/debits.
- "... and shall ensure consistency in the treatment of the harvested wood products pool in the second commitment period in accordance with paragraph 14 above."

Consistency is ensured by the application of the above described estimation and accounting methodologies throught the entire CP.

- "Emissions from harvested wood products already accounted for during the first commitment period on the basis of instantaneous oxidation shall be excluded."

This requirement is met by only indluding during the second CP emissions from the non-firewood harvested wood product sub-categories (i.e., sawnwood, wood based panels, as well as paper and paperboard).

- "The treatment of harvested wood products in the construction of a projected forest management reference level shall be on the basis of provisions outlined in paragraph 29 below and shall not be on the basis of instantaneous oxidation."

This requirement is fully met by applying the first order decay functions, and other methodological elements as described in the IPCC 2013 KP Supplement.

(14) An indication of whether Hungary intends to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation under Article 3.3 and forest management under Article 3.4 of the Kyoto Protocol during the second commitment period

Hungary **does not intend** to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation under Article 3.3 and forest management under Article 3.4 of the Kyoto Protocol during the second commitment period.

(i) Country-specific information on the background level of emissions associated with annual natural disturbances that have been included in forest management reference level;

Not applicable

(ii) Information on how the background level(s) for afforestation and reforestation under Article 3.3 and forest management under Article 3.4 of the Kyoto Protocol have been estimated, and information on how the expectation of net credits or net debits during the commitment period is avoided, including information on how a margin is established, if a margin is needed;

Not applicable

(15) A description of national system in accordance with Article 5.1 of the Kyoto Protocol

Not applicable

(16) A description of its national registry, reported in accordance with the "Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol"

Not applicable