

Report to facilitate the calculation of the assigned amount of Italy for the second commitment period under the Kyoto Protocol

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Introduction

This report explains the modalities for the accounting of the Italian 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 Union, the 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 1990 to 2014 is included. This information has been submitted to the European Union in the framework of the Monitoring Mechanism of greenhouse gas emissions and to the UNFCCC.

1. Greenhouse gas inventory for the period 1990 – 2014

The methodologies used in the preparation of Italy's greenhouse gas inventory are consistent with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, and the 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol.

The greenhouse gas emissions time series for the period 1990 to 2014 is shown in Table 1.

GHG emissions	1990	1995	2000	2005	2010	2011	2012	2013	2014
<i>Gg CO₂ equivalent</i>									
CO ₂ excluding net CO ₂ from LULUCF	436,204	447,201	465,175	490,914	428,880	416,500	389,341	362,064	342,827
CO ₂ including net CO ₂ from LULUCF	427,652	421,275	444,563	458,336	393,526	389,730	369,357	330,325	315,134
CH ₄ excluding CH ₄ from LULUCF	54,531	54,532	55,515	50,821	47,942	46,314	46,521	44,074	43,252
CH ₄ including CH ₄ from LULUCF	56,201	54,918	56,466	51,205	48,302	46,889	47,741	44,270	43,587
N ₂ O excluding N ₂ O from LULUCF	27,427	28,789	29,717	28,650	19,946	19,523	20,045	19,100	18,585
N ₂ O including N ₂ O from LULUCF	28,239	29,600	30,388	29,258	20,581	20,353	20,961	19,818	19,328
HFCs	444	813	2,098	5,998	9,725	10,326	10,844	11,502	11,978
PFCs	2,907	1,450	1,388	1,940	1,520	1,661	1,499	1,705	1,564
SF ₆	408	664	561	547	391	438	442	417	354
NF ₃	NA,NO	NA,NO	26	33	20	28	25	26	28
Total (excluding LULUCF)	521,921	533,450	554,479	578,904	508,424	494,790	468,718	438,887	418,587
Total (including LULUCF)	515,851	508,720	535,489	547,318	474,065	469,425	450,870	408,063	391,972

GHG categories	1990	1995	2000	2005	2010	2011	2012	2013	2014
<i>Gg CO₂ equivalent</i>									
1. Energy	422,148	435,465	454,267	476,003	421,299	407,806	384,450	358,707	339,798
2. Industrial Processes and Product Use	40,313	37,957	38,459	45,557	34,763	34,787	31,830	30,870	30,265
3. Agriculture	36,200	36,213	35,628	33,124	30,963	31,486	31,918	30,792	30,338
4. LULUCF	-6,070	-24,730	-18,990	-31,586	-34,359	-25,364	-17,848	-30,825	-26,615
5. Waste	23,259	23,814	26,126	24,220	21,399	20,710	20,521	18,519	18,187
6. Other	NA								

Table 1. Italian greenhouse gas emissions and removals in CO₂ equivalent [Gg CO₂ eq.]

2. Identification of selected base year for NF₃

Italy has chosen the year 1995 as the base year for the emissions of nitrogen trifluoride (NF₃) in accordance with Article 3 paragraph 8bis of the Kyoto Protocol.

3. Agreement under Article 4

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 jointly¹.

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.

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.

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/EC² so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. The sectors covered

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

² OJ L140, 5.6.2009, p. 63

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 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 2 .

Country	Emission level [tonnes of CO₂eq.]
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
Slovenia	99,425,782
Slovakia	202,268,939
Finland	240,544,599
Sweden	315,554,578

³ OJ L140, 5.6.2009, p. 136

Country	Emission level [tonnes of CO ₂ eq.]
United Kingdom	2,743,362,625
Iceland	15,327,217

Table 2. 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

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.

4. Calculation of Italy's assigned amount pursuant to Article 3(7bis), (8) and (8bis) of the Kyoto Protocol

Pursuant to Article 3(7bis), (8) and (8bis) of the Kyoto Protocol and paragraph 2 of Annex I to document FCCC/SBSTA//2015/L.13, the assigned amount for the second commitment period for the European Union is equal to the percentage inscribed in the third column of Annex B of the Annex to the Doha amendment of the aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases in the base year multiplied by eight, taking into account Article 3(7bis) of the Kyoto Protocol and paragraph 2 of the Annex to document FCCC/SBSTA/2015/L.13. 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 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.

The proposal for Italy's emission level in terms of tonnes of carbon dioxide equivalent pursuant to Article 3(7bis), (8) and (8bis) of the Kyoto Protocol, taking into account the methodologies for estimating anthropogenic emissions by sources and removals by sinks referred to in Article 5(2) of the Kyoto Protocol and the modalities of assigned amount pursuant to Article 3(7bis), (8) and (8bis) of the Kyoto Protocol, as well as the agreement under Article 4 that implement the joint fulfilment of commitments of the European Union, as stated in the Doha Amendment to the Kyoto Protocol to the United Nations Framework Convention on Climate Change, is equal to 2,410,291,421 tonnes of CO₂ equivalent.

Land-use change and forestry does not constitute a net source of greenhouse gas emissions in the base year.

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.

5. Calculation of Italy'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 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 national commitment period reserve is calculated in accordance with paragraph 6 of the Annex to decision 11/CMP.1 as 90% of the proposed assigned amount or 100% of eight times its most recently reviewed inventory, whichever is the lowest.

The Italian commitment period reserve is calculated either as:

$$2,410,291,421 \text{ t CO}_2 \text{ equivalent} * 0.9 = 2,169,262,279 \text{ t CO}_2 \text{ equivalent}$$

or:

$$418,587,215 \text{ t CO}_2 \text{ equivalent (emission level 2014)} * 8 = 3,348,697,719 \text{ t CO}_2 \text{ equivalent}$$

Italy has interpreted the 'most recently reviewed inventory' as the year 2014, which will be reviewed by October 2016.

The Italian commitment period reserve is therefore **2,169,262,279** t CO₂ equivalent.

Table 3 summarises the emission level and the commitment period reserve for Italy.

Assigned amount for the second commitment period (t CO ₂ eq)	90 % of assigned amount (t CO ₂ eq)	100% of most recently reviewed inventory multiplied by 8 (t CO ₂ eq)	Commitment period reserve (t CO ₂ eq)	Article 3.7
2,410,291,421	2,169,262,279	3,348,697,719	2,169,262,279	Does not apply

Table 3. Italy's emission level and commitment period reserve

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 Doha Amendment 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 or 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 Italy is presented in Table 4.

Forest management cap for the second commitment period (t CO ₂ eq.)	146,137,768
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Table 4. Maximum accountable quantities resulting from forest management under Article 3, paragraph 4 in the second commitment period

9. Forest definition and thresholds parameters to be used for reporting under Article 3, paragraphs 3 and 4 of Kyoto Protocol

The forest definition to be used in the second commitment period is the same definition adopted for the first commitment period.

The forest definition adopted by Italy is in line with the definitions of the Food and Agriculture Organization of the United Nations, therefore the following threshold values for tree crown cover, land area and tree height are applied:

- a. a minimum area of land of 0.5 hectares;
- b. tree crown cover of 10 per cent;
- c. minimum tree height of 5 meters.

10. Selection of activities under Article 3, paragraph 4, for accounting in the second commitment period

Cropland Management and Grazing Land management:

Italy has elected Cropland management and Grazing Land management as an activity under Article 3.4.

Revegetation:

Italy has not elected Revegetation as an activity under Article 3.4.

Wetland drainage and rewetting:

Italy has not elected Wetland drainage and rewetting as an activity under Article 3.4.

The land accounted for 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. The national system under Article 5, paragraph 1, of the Kyoto Protocol will identify land areas subject to Article 3, paragraphs 3 and 4 activities; in particular the *National Registry for Carbon sinks*, part of the Italian National System⁴, includes information on lands subject of activities subject to the art. 3.3 and art. 3.4 activities and related carbon stock changes. The National Registry for Carbon sinks is the instrument to estimate, following the COP/MOP decisions and in accordance with the IPCC guidelines, the greenhouse gases emissions by sources and removals by sinks in the land subject to the art. 3.3 and art. 3.4 activities and to account for the net removals in order to allow the Italian Registry to issue the relevant amount of RMUs.

11. Identification of the accounting period for each activity

Italy intends to account for each activity under Article 3, paragraphs 3 and 4 of the Kyoto Protocol for the entire commitment period.

12. Forest management reference level

The forest management reference level (FMRL⁵) for Italy, inscribed in the appendix to the annex to decision 2/CMP.7, is equal to -21.182 Mt CO₂ eq. per year assuming instantaneous oxidation of HWP, and -22.166 Mt CO₂ eq. applying a first-order decay function for HWP.

Italy is one of the member States of the EU for which the JRC of the European Commission developed projections in collaboration with two EU modeling groups. The FMRL⁶ is the averages of the projected forest management (FM) data series for the period 2013-2020, taking account of policies implemented before mid-2009, with emissions/removals from harvested wood product (HWP) using the first order decay functions, and assuming instant oxidation. Aboveground and belowground biomass, dead organic matter and HWP are included in the FMRL. Non-CO₂ GHGs from forest wildfires are also included in the submission.

The need for a Technical Correction (TC) to be applied to the FMRL has been detected, due to the availability of new forest inventory data and consequent recalculations of the reported data on FM and *Forest Land Remaining Forest Land used* to establish the reference level. Therefore to ensure methodological consistency between the FMRL and reporting for Forest Management during the second commitment period, Italy is going to apply a technical correction.

Qualitative information on TC and methodological consistency have been included in the 2015 and 2016 national inventory report submissions; a quantitative assessment will be reported in the next

⁴ National Inventory system: <http://www.sinanet.isprambiente.it/it/sia-ispra/serie-storiche-emissioni/national-greenhouse-gas-inventory-system-in-italy.-year-2012/view>

⁵ Submission of information on forest management reference levels by Italy: http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_italy_2011.pdf
Communication of 11 May 2011 regarding harvested wood products value by Italy:

http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_italy_corr.pdf

Technical assessment report of the FMRL by Italy:

http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600006501#beg

⁶ When constructing the FMRL, the following elements were taken into account: (a) removals or emissions from forest management as shown in GHG inventories and relevant historical data, (b) age-class structure, (c) forest management activities already undertaken, (d) projected forest management activities under business as usual, (e) continuity with the treatment of forest management in the first commitment period.

national inventory report inventory submissions, consistently with the requirements of decision 2/CMP.7, annex, paragraph 14.

13. Information on harvested wood products emissions calculation

Annual changes in carbon stocks and associated CO₂ emissions and removals from the Harvested Wood Products (HWP) pool are estimated, following the production approach described in the Annex to Volume 4, Chapter 12, of the 2006 IPCC Guidelines (IPCC, 2006), in line with Decision 2/CMP.7 and the guidance provided by the 2013 KP Supplement (IPCC, 2014)

Emissions from this source are mainly influenced by the trend in forest harvest rates: in 2014, the net emissions and removals from harvested wood products were –191.4 kt CO₂.

The activity data (production of sawnwood, wood based panels and paper and paperboard) are derived from FAO⁷ forest product statistics. The Tier 2 approach, first order decay, has been applied to the HWP categories (sawnwood, wood based panels and paper and paperboard) according to equation 2.8.5 (IPCC, 2014). Equation 2.8.1 (IPCC, 2014) has been applied to estimate the annual fraction of the feedstock coming from domestic harvest for the HWP categories sawnwood and wood-based panels. The change in carbon stocks has been estimated separately for each product category; the default values (Table 2.8.1, IPCC 2014) have been applied. Emission factors for specific product categories were calculated with default half-lives of 35 years for sawnwood, 25 years for wood panels and 2 years for paper (Table 2.8.2, IPCC 2014).

The estimated annual accumulation of –0.984 Mt CO₂ eq. per year in HWP pools included in Italy's FMRL was estimated using C-HWP-Model, which estimates delayed emissions on the basis of the annual stock change of semi-finished wood products as outlined in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, with annual production data, specific half-lives for product types, application of the first-order decay function using equation 12.1 from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* with default half-lives of two years for paper, 25 years for wood panels and 35 years for sawn wood and instantaneous oxidation assumed for wood in solid waste disposal sites. Historical data since 1900 were taken into account. The estimates excluded exports. The activity data (production and trade of sawnwood, wood based panels and paper and paperboard) were derived from the TIMBER⁸ database (time series 1964-2009).

14. Provisions whether to exclude natural disturbances for 3.3 and 3.4 activities

Italy intends to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation (AR) under Article 3, paragraph 3 and forest management (FM) under Article 3, paragraph 4, of the Kyoto Protocol during the second commitment period in accordance with decision 2/CMP.7, annex, paragraph 33.

The FM and AR background levels of emissions associated with annual natural disturbances have developed, on the basis of country-specific information, in accordance with the paragraphs 33(a)

⁷ Food and Agriculture Organization of the United Nations: forest product statistics, <http://faostat3.fao.org/download/F/FO/E>

⁸ UNECE, TIMBER database: <http://www.unece.org/forests/fpm/onlinedata.html>

and (b) of Annex to Decision 2/CMP.7 and related guidance provided by the IPCC 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol (2013 KP Supplement).

Total and area specific emissions from disturbances for the calibration period for FM																										
Disturbance type*	Inventory year during the calibration period																									
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
	Total annual emission [Gg CO ₂ eq.]																									
Wildfires	7,464	2,256	3,241	7,988	3,116	1,509	1,358	4,492	4,988	2,804	3,893	2,510	1,393	2,961	1,371	1,440	1,068	7,045	1,491	1,680	860	1,650	4,494	891	1,302	
Insect attacks and disease infestations																										
extreme weather events																										
geological disturbances																										
other																										
SUM	7,464	2,256	3,241	7,988	3,116	1,509	1,358	4,492	4,988	2,804	3,893	2,510	1,393	2,961	1,371	1,440	1,068	7,045	1,491	1,680	860	1,650	4,494	891	1,302	
For all land under FM	Total area [kha]																									
	7511	7510	7510	7509	7508	7508	7507	7506	7505	7505	7504	7503	7502	7502	7501	7497	7494	7490	7486	7483	7479	7475	7471	7468	7464	
	Area-specific emissions (Emissions per unit of land area under FM, Mg CO ₂ eq. ha ⁻¹)**																									
	0.99	0.30	0.43	1.06	0.41	0.20	0.18	0.60	0.66	0.37	0.52	0.33	0.19	0.39	0.18	0.19	0.14	0.94	0.20	0.22	0.12	0.22	0.60	0.12	0.17	

** In any year, emissions per unit of land area are calculated as the Sum divided by the total area under FM

Table 5. Total and area specific emissions from disturbances for the calibration period for FM

Total and area specific emissions from disturbances for the calibration period for AR																										
Disturbance type*	Inventory year during the calibration period																									
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
	Total annual emission [Gg CO ₂ eq.]																									
Wildfires	745	239	364	947	389	197	190	669	788	468	685	463	269	598	288	316	229	1476	305	336	168	318	857	168	243	
Insect attacks and disease infestations																										
extreme weather events																										
geological disturbances																										
other																										
SUM	745	239	364	947	389	197	190	669	788	468	685	463	269	598	288	316	229	1,476	305	336	168	318	857	168	243	
For all land under AR	Total area [kha]																									
	74	148	221	295	369	443	516	590	664	738	811	885	959	1033	1106	1177	1231	1379	1437	1495	1553	1630	1706	1783	1860	
	Area-specific emissions (Emissions per unit of land area under AR, Mg CO ₂ eq. ha ⁻¹)**																									
	10.10	1.62	1.65	3.21	1.05	0.45	0.37	1.13	1.19	0.63	0.84	0.52	0.28	0.58	0.26	0.27	0.19	1.07	0.21	0.22	0.11	0.20	0.50	0.09	0.13	

** In any year, emissions per unit of land area are calculated as the Sum divided by the total area under AR

Table 6. Total and area specific emissions from disturbances for the calibration period for AR

The background levels, both for FM and AR, have been developed following the default method outlined in the 2013 KP Supplement, applying the following steps:

- (1) Calculation of the arithmetic mean of the annual emissions for FM (and area-specific for AR) summed over disturbance types using all years in the calibration period.
- (2) Calculation of the corresponding standard deviation (SD) of the annual emissions;
- (3) Checking whether any emission estimate is greater than the arithmetic mean plus twice the SD. In this case, such estimate(s) has(ve) been removed from the dataset and go back to step (1) above using the reduced dataset.

When no further outliers can be identified, the arithmetic mean and twice the SD, as calculated in the last step of the iterative process, define the background level and the margin, respectively.

The expectation of net credits has been avoided comparing the emissions resulting by the application of step (3) above with the mean minus twice the SD (in this case the emissions should not be removed from the dataset).

The background level and margin for FM have resulted equal to: 1,828 Gg CO₂ eq. and 1,553 Gg CO₂ eq., respectively.

The background level and margin for AR have resulted equal to: 0.49 Gg CO₂ eq. and 0.73 Gg CO₂ eq., respectively.

ANNEX A

Notification of the terms of the agreement to fulfill jointly the commitments of the European Union, its Member States and Iceland under Article 3 of the Kyoto Protocol for the second commitment period of the Kyoto Protocol

1. Members of the agreement

The European Union, its Member States and the Republic of Iceland, each being Parties to the Kyoto Protocol, are the members of this agreement ("the members"). The following 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, and the United Kingdom of Great Britain and Northern Ireland.

Iceland is a member of this agreement pursuant to the Agreement between the European Union and its Member States and Iceland concerning Iceland's participation in the joint fulfillment of the commitments of the European Union, its Member States and Iceland for the second commitment period of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

2. Joint fulfillment of the commitments under Article 3 of the Kyoto Protocol for the second commitment period of the Kyoto Protocol

In accordance with Article 4(1) of the Kyoto Protocol, the members will fulfill their commitments under Article 3 thereof as follows:

- the members will ensure that, in accordance with Article 4(5) and (6) of the Kyoto Protocol, in the Member States and Iceland the combined sum of the aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A to the Kyoto Protocol does not exceed their joint assigned amount;

- the application of Article 3(1) of the Kyoto Protocol to greenhouse gas emissions from aviation and shipping for the Member States and Iceland is based on the Convention's approach of only including emissions from domestic flights and domestic shipping in Parties' targets. The European Union approach under the second commitment of the Kyoto Protocol will remain the same as that of the first commitment period, given the lack of progress since Decision 2/CP.3 in attributing those emissions to Parties' targets. This is without prejudice to the stringency of the European Union's commitments under the climate and energy package, which remain unchanged. It

is also without prejudice to the need to take measures concerning emissions of such gases from aviation and marine bunker fuels;

- each member may increase its ambition level by transferring assigned amount units, emission reduction units or certified emission reduction units to a cancellation account established in its national registry. The members will jointly submit the information required by paragraph 9 of Decision 1/CMP.8, and will jointly make any proposals for the purpose of Article 3(1ter) and (1quater) of the Kyoto Protocol;
- the members will continue to apply Article 3(3) and (4) of the Kyoto Protocol and decisions agreed thereunder individually;
- the combined base year emissions of the members will equal the sum of emissions in the respective base years applicable to each Member State and Iceland;
- if land use, land-use change and forestry 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;
- the calculation pursuant to Article 3(7ter) of the Kyoto Protocol shall apply to the joint assigned amount of the second commitment period for the members determined in accordance with Article 3 (7bis), (8) and (8bis) of the Kyoto 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;
- in accordance with Decision 1/CMP.8, 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, as defined in this notification.

3. Respective emission levels allocated to the members to the agreement

The quantified emission limitation and reduction commitments for the members listed in the third column of Annex B to the Kyoto Protocol are 80 %. The joint assigned amount of the members 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 emission levels of the members are as follows:

- The emission level 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. Its calculation will be facilitated by the report submitted pursuant to paragraph 2 of Decision 2/CMP.8.

- The respective emission levels of the Member States and Iceland in accordance with Article 4(1) and (5) of the Kyoto Protocol are the sum of their respective amounts listed in Table 1 below and any results of the application of the second sentence of Article 3(7bis) of the Kyoto Protocol for that Member State or Iceland.

The assigned amounts of the members shall be equal to their respective emission levels.

The assigned amount of the European Union will be counted against the emissions of greenhouse gases from sources under the European Union Emissions Trading Scheme, in which its Member States and Iceland participate, to the extent that those emissions are covered under the Kyoto Protocol. The respective assigned amounts of the Member States and Iceland cover the greenhouse gas emissions by sources and removals by sinks in each Member State or Iceland from sources and sinks not covered by Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. This includes all emissions by sources and removals by sinks covered by Article 3(3) and (4) of the Kyoto Protocol as well as all emissions of nitrogen trifluoride (NF₃) under the Kyoto Protocol.

Members of this agreement shall report separately on the emissions by sources and removals by sinks covered by their respective assigned amounts.

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
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

Table A.1: Emission levels of the Member States and Iceland (before application of Article 3(7bis)) in terms of tonnes of carbon dioxide equivalent for the second commitment period of the Kyoto Protocol