

Ministry of the Environment of Estonia

**Report to facilitate the estimation of Estonia's assigned amount  
under the Kyoto Protocol for the second commitment period**

Report to the UNFCCC

June, 2016

*Estonia'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 the capacity of the Party with a quantified emission limitation and reduction commitment inscribed in the third column of Annex B to account for its emissions and assigned amounts.*

## **PREFACE**

Estonia's Ministry of the Environment has prepared this report to the United Nations Framework Convention on Climate Change (UNFCCC) to facilitate the estimation of Estonia's assigned amount for the second commitment period pursuant to Article 3, paragraphs 7bis, 8 and 8bis of the Kyoto Protocol and to demonstrate its capacity to account for its emissions and assigned amount during the second commitment period of the Kyoto Protocol.

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, including Estonia, intend to fulfil their reduction targets under the second commitment period jointly.

This report generally follows the structure and the requirements set out in Annex I to Decision 2/CMP.8.

In addition, this report also reflects the additional guidance contained in decision 3/CMP.11. This decision contains relevant provisions related to reporting and accounting for the second commitment period under the Kyoto Protocol, including the specification of elements for this report.

## Contents

1. Greenhouse gas inventory for 1990–2014 .....	4
2. Identification of base years for the second commitment period .....	6
2.1 Selected base year for NF <sub>3</sub> .....	6
3. The agreement under Article 4, where EU with its Member States, have agreed to fulfil their commitments under Article 3 jointly .....	6
4. Calculation of Estonia's assigned amount .....	7
5. Calculation of Estonia's commitment period reserve .....	8
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 .....	8
7. Application of paragraphs 23–26 of decision 1/CMP.8.....	9
8. Application and calculation pursuant to paragraph 13 in the annex of decision 2/CMP.710	
9. Selection of threshold values for the forest definition to be used for reporting under Articles 3.3 and 3.4.....	10
10. Selection of activities under Article 3.4 .....	11
11. Frequency of accounting for activities under Article 3.3 and Article 3.4 of the KP.....	11
12. The forest management reference level .....	12
13. Information on how emissions from HWP have been calculated .....	12
14. Information on exclusion of emissions from natural disturbances .....	12
14.1 Country-specific information on the background level of emissions associated with annual natural disturbances .....	12
14.2 Information on how the background level have been estimated.....	13
14.3 Expectation of net credits or debits.....	13
14.4 Information how the margin is established .....	13
15. Description of the national system .....	13
16. Description of the national registry .....	14
Annex 1. Submission of information on forest management reference levels by Estonia and the technical assessment report.....	15

## **1. Greenhouse gas inventory for 1990–2014**

A complete inventory on anthropogenic greenhouse gas emissions by sources and removals by sinks not controlled by the by the Montreal Protocol, for the years 1990–2014 is provided in the report Greenhouse Gas Emissions in Estonia 1990–2014 (Estonia's national inventory report and the common reporting tables). The complete inventory is submitted as a separate document in conjunction with this report in accordance with paragraph 1(a) of annex I to decision 2/CMP.8.

National Inventory Report and associated Common Reporting Format (CRF) tables were prepared in accordance with the UNFCCC reporting Guidelines on Annual Inventories. The CRF tables are produced with the CRF Reporter software (version 5.14.2). The methodologies used for the Estonia's greenhouse gas inventory are consistent with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Estonia, as an Annex I Party that is also part of the Kyoto Protocol is required to report supplementary information in accordance with Article 7, paragraph 1, of the Kyoto Protocol. The required information is specified in the Annex of Decision 15/CMP.1.

Estonia has chosen to report greenhouse gas emission removals from activities under Article 3.3 (i.e. afforestation, reforestation and deforestation) and Article 3.4 (forest management) for the second commitment period.

Estonia's national greenhouse gas (GHG) inventory system is designed and operated according to the guidelines for national system under article 5, paragraph 1, of the Kyoto Protocol (Decision 19/CMP.1) to ensure the transparency, consistency, comparability, completeness and accuracy of inventories. Inventory activities include planning, preparation and management of the inventories.

Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol (Decision 22/CP.7) require that the emissions from sources listed in Annex A to the Protocol are clearly distinguished from estimates for Articles 3.3 and 3.4. Even if reporting under these Articles is not yet done, Estonia has clarified its reporting to facilitate this task in the future.

In 2014, the total GHG emissions, without LULUCF were 21 059 240 tonnes CO<sub>2</sub> equivalents, or 47.3 % below 1990 levels and with LULUCF the total emissions were 20 482 460 tonnes CO<sub>2</sub> equivalents or 35.7% below 1990 levels (see Table 1).

**Table 1** Greenhouse gas emissions in Estonia. Emission trends, kt CO<sub>2</sub> equivalents

<b>GREENHOUSE GAS EMISSIONS</b>	<b>Base year (1990)</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
CO <sub>2</sub> emissions without net CO <sub>2</sub> from LULUCF	36 666.03	17 953.74	15 141.39	16 330.73	18 755.65	17 264.52	14 153.01	17 833.78	18 449.93	17 304.64	19 566.37	18 918.72
CH <sub>4</sub> emissions without CH <sub>4</sub> from LULUCF	1 912.19	1 246.81	1 237.39	1 209.50	1 223.38	1 213.68	1 168.37	1 182.87	1 134.03	1 143.21	1 132.69	1 102.37
N <sub>2</sub> O emissions without N <sub>2</sub> O from LULUCF	1 386.95	702.71	601.32	621.45	666.54	744.69	701.68	717.87	716.30	780.57	769.16	819.53
HFCs	NO	28.45	79.15	134.96	170.37	150.39	157.53	175.43	183.00	193.03	206.46	216.52
PFCs	NO	NO	NO	NA,NO	0.08	0.05	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs and PFCs	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
SF <sub>6</sub>	NO	3.07	2.61	1.03	0.92	1.29	1.38	1.73	1.77	1.88	2.03	2.10
NF <sub>3</sub>	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
<b>Total (without LULUCF)</b>	39 965.17	19 934.79	17 061.85	18 297.67	20 816.94	19 374.62	16 181.97	19 911.68	20 485.04	19 423.33	21 676.71	21 059.24
<b>Total (with LULUCF)</b>	31 838.95	10 299.30	18 017.28	12 993.22	13 164.35	11 750.84	9 753.77	14 572.28	17 141.12	17 506.56	21 028.49	20 482.46
<b>GREENHOUSE GAS SOURCE AND SINK CATEGORIES</b>	<b>Base year (1990)</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
1. Energy	35 950.56	17 599.32	14 743.64	15 969.85	18 218.68	16 702.01	14 103.94	17 746.17	18 233.03	16 857.08	19 049.11	18 697.85
2. Industrial processes and product use	961.64	634.87	697.41	727.68	959.35	965.91	475.91	537.47	660.14	904.87	995.22	706.68
3. Agriculture	2 682.87	1 302.60	1 057.25	1 083.23	1 126.17	1 198.81	1 130.04	1 165.05	1 166.30	1 254.32	1 262.93	1 317.93
4. Land use, land-use change and forestry	-8 126.21	-9 635.49	955.42	-5 304.46	-7 652.59	-7 623.78	-6 428.20	-5 339.40	-3 343.91	-1 916.76	-648.22	-576.78
5. Waste	370.09	398.01	563.55	516.91	512.73	507.89	472.07	462.99	425.56	407.06	369.44	336.78

## **2. Identification of base years for the second commitment period**

The base year for carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and Nitrous oxide (N<sub>2</sub>O) will be 1990 and for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride the base year will be 1995. These are the same base years for these gases as in the first commitment period.

### **2.1 Selected base year for NF<sub>3</sub>**

Article 3, paragraph 8bis of the Doha Amendment to the Kyoto Protocol reads „*any Party included in Annex I may use 1995 or 2000 as its base year for nitrogen trifluoride*“ for the purposes of calculating its assigned amount in accordance with Article 3, paragraph 7bis. Estonia has selected 1995 as the base year for NF<sub>3</sub>.

## **3. The agreement under Article 4, where EU with its Member States, have agreed to fulfil their commitments under Article 3 jointly**

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 adaption 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, including Estonia, intend to fulfil their reduction targets under the second commitment period jointly<sup>1</sup>.

The European Union ratification decision (Council Decision (EU) 2015/1339<sup>2</sup>) sets out the terms of the joint fulfilment between the Union and its Member States and Iceland.

The emission level for Estonia 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. 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<sub>3</sub>) 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

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<sup>1</sup> Declaration made in footnotes 4, 6 and 8 to Annex B of the Doha Amendment

<sup>2</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015D1339&from=EN>

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).<sup>3</sup>

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 Member States, including Estonia, shall continue to report individually on emissions by sources and removals by sinks, submitting full GHG 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 Estonia's assigned amount**

Pursuant to Annex I to Decision 3/CMP.11, section I, B paragraph 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.

The respective assigned amounts of each Member State and Iceland, including Estonia, are equal to the emission levels agreed under the terms of the joint fulfilment, listed in Annex 2 of the ratification decision, after the application of Article 3(7bis) of the Kyoto Protocol. The figure for individual Member States is equal to the sum of each Member State's Annual Emission Allocation (AEA) under Annex II of Commissions Decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 <sup>4</sup> before the application of Article 3, paragraph 7bis.

According to this Estonia's assigned amount for the second commitment period is **51 056 976 tonnes of CO<sub>2</sub> equivalent**.

Land use, land-use change and forestry constituted a net sink in 1990, therefore the emissions and removals from this sector do not affect the calculation of Estonia's assigned amount.

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<sup>3</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0136:0148:EN:PDF>

<sup>4</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D0162&from=EN>

The individual assigned amounts of each Member State and Iceland shall be issued in the Kyoto registry of the respective Member States and Iceland.

## **5. Calculation of Estonia'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.

Both methods to calculate Estonia's commitment period reserve are presented hereinafter:

- 1) 90% of a Party's assigned amount

90% from 51 056 976 = 45 951 278.4 tonnes of CO<sub>2</sub> equivalent.

- 2) 100% of most recently reviewed inventory multiplied by 8 (Estonia has interpreted the 'most recently reviewed inventory' as the 2016 inventory submission)

21 059 240 \* 8 = 168 473 920 tonnes of CO<sub>2</sub> equivalent.

Consequently the commitment period reserve for Estonia is **45 951 278.4** tonnes of CO<sub>2</sub> equivalent.

## **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. Considering this no specific information for Estonia is to be reported.



## **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 quantitie resulting from forest management that can be added to the assigned amount to Estonia is presented in Table 2.

**Table 2** Maximum accountable quantitie resulting from forest management under Article 3, paragraph 4 in the second commitment period

<b>Forest management cap for the second commitment period</b> (tonnes CO <sub>2</sub> eq.)	11 190 246
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## **9. Selection of threshold values for the forest definition to be used for reporting under Articles 3.3 and 3.4**

Each Party included in Annex I shall, for the purpose of applying the definition of “forest” as contained in decision 16/CMP.1, apply the definition of forest selected in the first commitment

period. Estonia will use its forest definition as selected for the first commitment period with thresholds as follows:

- minimum tree crown cover - 30 per cent,
- minimum land area - 0.5 hectare,
- minimum tree height - 2 metres.

Forest is defined as: Land spanning more than 0.5 hectares with trees higher than 2 meters and a canopy cover of more than 30 percent, or trees able to reach these thresholds in situ. Temporarily unstocked areas are included. It does not include land that is predominantly under agricultural or urban land use.

Estonia applies the same forest definition for both UNFCCC and KP reporting.

## **10. Selection of activities under Article 3.4**

Estonia did not elect any activities under the Article 3 paragraph 4, of the Kyoto Protocol for the first commitment period. According to Decision 2/CMP.7 Annex paragraph 7 Estonia will account for anthropogenic greenhouse gas emissions by sources and removals by sinks resulting from the forest management for the second commitment period.

Estonia has decided not to elect other activities under the Article 3(4).

According to paragraph 33 of the Annex to Decision 2/CMP.7 Estonia will apply the provision with respect to the treatment of natural disturbances (ND) emissions to forest management. Background level is estimated to be 181.7 kt CO<sub>2</sub> eq. and the margin for ND is 112.5 kt CO<sub>2</sub> eq.

For identifying land-use and land use changes, Estonia uses method of sample plots (provided by the National Forest Inventory, which covers the whole country) that will track land categories and changes of land-use over the time.

## **11. Frequency of accounting for activities under Article 3.3 and Article 3.4 of the KP**

Estonia will account for anthropogenic greenhouse gas emissions by sources and removals by sinks resulting from any activity under Article 3.3 and forest management under Article 3.4 for the entire commitment period.

## **12. The forest management reference level**

According to the Appendix of Decision 2/CMP.7 Estonia's forest management reference level (FMRL) is -1.742 Mt CO<sub>2</sub> eq/year and applying first order decay function for harvested wood products (HWP) reference level is -2.741 Mt CO<sub>2</sub> eq/year. Estonia is working on the complete and official technical corrections calculations with the support of Joint Research Centre (JRC).

More information is available in Annex 1 to this report.

## **13. Information on how emissions from HWP have been calculated**

The estimated annual accumulation of -0.999 Mt CO<sub>2</sub> yr<sup>-1</sup> in HWP pools included in the FMRL is estimated using the approach proposed in Chapter 2, Annex II of FCCC/KP/AWG/2010/CRP.4/Rev.4 with annual production data, specific half-lives for product types, application of the first order decay function as in IPCC 2006. Guidelines equation 12.1, with default half-lives of 2 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 back to 1992 are taken into account. The estimates include exports.

## **14. Information on exclusion of emissions from natural disturbances**

Estonia will apply the provisions to exclude emissions from ND for the accounting for 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).

### **14.1 Country-specific information on the background level of emissions associated with annual natural disturbances**

In Estonia the most important NDs are extreme weather events (storms). Estonia did not consider NDs in the construction of its FMRL.

## **14.2 Information on how the background level have been estimated**

### **Remarks on the data**

#### **Perished stands**

According to Forest Act a forest in which the canopy density as determined on the basis of live trees is less than 30 per cent has fallen below 0.3 due to biotic or abiotic damages is deemed to be perished.

In 1998–2013 the stands which, according to forest protection expertize, were designated to salvage logging due to forest damages were deemed to perished stands. Area and growing stock of such stands are calculated according to the data of forest protection expertize.

In 1991–1997 the area of perished stand is presented according the data of Statistics Estonia and in 1990 according the data of Estonian State Forest Protection Service (no data of Statistics Estonia in 1990). In 1990–1997 the growing stock of perished stands is calculated according to average growing stocks of perished stands by different damaging agents during years 1998–2013.

### **Background level**

For calculating annual carbon losses in biomass due to disturbances, the Tier 2 approach and Method 2 – the stock -difference method was applied. Background level is estimated to be 181.7 kt CO<sub>2</sub> eq. The margin for the ND is 112.5 kt CO<sub>2</sub> eq., which equal twice the standard deviation of the time series 1990–2009 that defining the background level.

## **14.3 Expectation of net credits or debits**

The expectation of net credits during the commitment period should be avoided.

## **14.4 Information how the margin is established**

The margin is equal twice the standard deviation of the time series 1990–2009 that defining the background level.

## **15. Description of the national system**

A description of the national system is required pursuant to the Annex to decision 2/CMP.8 if the Party did not have a quantified emission limitation and reduction target in the first

commitment period. Estonia already had a quantified emission limitation and reduction target in the first commitment period and provided this description in the report to calculate the assigned amount of the first commitment period. Subsequently any changes that occurred were reported as part of the annual supplementary information under Article 7 of the Kyoto Protocol and included in the national inventory report.

## **16. Description of the national registry**

A description of the national registry is required pursuant to the Annex to decision 2/CMP.8 if the Party did not have a quantified emission limitation and reduction target in the first commitment period. Estonia already had a quantified emission limitation and reduction target in the first commitment period and provided a description of the national registry in the report to calculate the assigned amount of the first commitment period. Subsequently changes that occurred related to the national registry were reported as part of the annual supplementary information under Article 7 of the Kyoto Protocol included in the national inventory report.

## **Annex 1. Submission of information on forest management reference levels by Estonia 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 Estonia” of 18 April 2011, which is published at

[https://unfccc.int/files/meetings/ad\\_hoc\\_working\\_groups/kp/application/pdf/awgkp\\_estonia\\_fmrl\\_2011.pdf](https://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_estonia_fmrl_2011.pdf)

A.2: The correction to the submission of information on forest management reference levels by Estonia”, as communicated 10 May 2011, which is published at

[https://unfccc.int/files/meetings/ad\\_hoc\\_working\\_groups/kp/application/pdf/awgkp\\_estonia\\_correction.pdf](https://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/awgkp_estonia_correction.pdf)

A.3: The “Report of the technical assessment of the forest management reference level submission of Estonia submitted in 2011”, FCCC/TAR/2011/EST, 3 October 2011 and published at <http://unfccc.int/resource/docs/2011/tar/est01.pdf>

## **Abbreviations**

AAU- Assigned Amount Unit

AEA- Annual Emission Allocation

CH<sub>4</sub>- methane

CMP- Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol

CO<sub>2</sub>- carbon dioxide

COP- Conference of the PartiesCRF- Common Reporting Format

EU- European Union

FMRL- Forest Management reference level

GHG- greenhouse gas

HFC- hydrofluorocarbon

HWP- harvested wood products

IPCC- Intergovernmental Panel on Climate Change

JRC- Joint Research Centre

KP- Kyoto Protocol

LULUCF- Land use, land-use change and forestry

NF<sub>3</sub>- nitrogen trifluoride

N<sub>2</sub>O- nitrous oxide

SF<sub>6</sub>- sulphur hexafluoride

UNFCCC- United Nations Framework Convention on Climate Change