



Norway's report to facilitate the calculation of its assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol for the second commitment period and to demonstrate its capacity to account for its emissions and assigned amount.

Oslo, 14th April 2016

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Summary

Norway ratified the Doha amendment to the Kyoto Protocol June 12th 2014. This report represents Norway's report to facilitate the calculation of its assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol for the second commitment period and to demonstrate its capacity to account for its emissions and assigned amount (hereinafter referred to as the report or the report to facilitate the calculation of the assigned amount).

The report has been prepared in accordance with decisions 13/CMP.1, 2/CMP.8, 2/CMP.11 and 3/CMP.11. Information on issues has also been submitted earlier in Norway's Initial Report from 2006, National Communications and Biennial Reports as well as in our annual reporting of the greenhouse gas inventories.

Norway's greenhouse gas inventory 1990-2014

Norway's inventory for the years 1990-2014 is prepared in accordance with the revised UNFCCC reporting guidelines on annual inventories for Annex I Parties (decision 24/CP.19). The 2016 submission consists of the 2016 National Inventory Report (NIR) and the Common Reporting Format (CRF tables). The revised reporting guidelines for inventories has four national totals. In the Kyoto Protocol's first commitment period, Norway included indirect CO₂ emissions in the calculation of the assigned amount and has accounted for these emissions. Norway will continue this practice in the Kyoto Protocol's second commitment period, so the national total for the basis of calculating the assigned amount is the total CO₂ equivalent emissions, including indirect CO₂ and without land use, land-use change and forestry.

Total CO₂ equivalent emissions, including indirect CO₂ and without land use, land-use change and forestry were 51.9 million tonnes of CO₂ equivalents in 1990 and 53.2 million tonnes in 2014. This corresponds to an increase of 2.4 per cent from 1990 to 2014.

Calculation of assigned amount

Norway has previously selected 1990 as the base year for the greenhouse gases hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). For nitrogen trifluoride (NF₃), Norway selects 2000 as the base year.

Based on the National Inventory Report (NIR) and Common Reporting Format (CRF) submitted on 14th April 2016, Norway has calculated its assigned amount as:

$$51\,912\,870 \text{ tonnes CO}_2 \text{ equivalent} \times 0.84 \times 8 \\ = \mathbf{348\,854\,484 \text{ tonnes CO}_2 \text{ equivalents}}$$

Calculation of commitment period reserve

The commitment period reserve should not drop below 90 per cent of the Party's assigned amount or 100 per cent of eight times its most recently reviewed inventory, whichever is lowest. For Norway, the lowest number corresponds to 90 per cent of Norway's assigned amount:

$$348\,854\,484 \text{ tonnes CO}_2 \text{ equivalents} \times 0.90 \\ = \mathbf{313\,969\,036 \text{ tonnes CO}_2 \text{ equivalents}}$$

Calculation of difference related to Article 3, paragraph 7 ter

The report to facilitate the calculation of the assigned amount shall contain information on the calculation of the difference between the assigned amount of the second commitment period and average annual emissions for the first three years of the preceding commitment period multiplied by eight, pursuant to Article 3, paragraph 7 ter.

The average emissions for the years 2008, 2009 and 2010 multiplied by 8 is:

= 54 453 768 x 8

= 435 630 147 tonnes CO₂ equivalents

This number (435 630 147 tonnes CO₂ equivalents) is higher than the assigned amount calculated to 348 854 484, so cancellation according to Article 3, paragraph 7 ter is not relevant for Norway.

Land-use, land-use change and forestry (LULUCF)

For the second commitment period Norway will continue to report emissions and removals from *Deforestation* and *Afforestation/Reforestation* under Article 3.3 and *Forest Management* under Article 3.4., as in accordance with paragraph 7 in Annex I to decision 2/CMP.7. In addition, Norway has elected to include emissions and removals from the voluntary activities *Cropland Management* and *Grazing land Management* under Article 3.4 in its accounting for the second commitment period of the Kyoto Protocol. Norway intends to account for all the activities under Article 3.3, and for forest management, cropland management and grazing land management activities under Article 3.4 for the entire commitment period and not annually.

1. Introduction

Paragraph 2 in Decision 2/CMP.8 states that each Party with a quantified emission limitation and reduction commitment inscribed in the third column of Annex B to the Kyoto Protocol, shall submit to the secretariat, by April 15th 2015, a report to facilitate the calculation of its assigned amount pursuant to Article 3, paragraphs 7bis, 8 and 8bis, of the Kyoto Protocol for the second commitment period and to demonstrate its capacity to account for its emissions and assigned amount (hereinafter referred to as the report to facilitate the calculation of the assigned amount).

According to Decision 13/CP.20 of the Conference of the Parties to the UNFCCC, CRF Reporter version 5.0.0 was not functioning in order to enable Annex I Parties to submit their CRF tables for the year 2015. In the same Decision, the Conference of the Parties reiterated that Annex I Parties may submit their CRF tables after 15th of April 2015, but not later than the corresponding delay in the CRF Reporter availability. "Functioning" software means that the data on the greenhouse emissions/removals are reported accurately both in terms of reporting format tables and XML format. On November 13th 2015, Norway submitted its inventory for 1990-2013 consisting of its NIR and CRF in accordance with the revised reporting guidelines under the Convention.

Norway did not report under the Kyoto Protocol in 2015 since the CRF reporter version 5.10 had issues in the reporting format tables and XML format in relation to Kyoto Protocol requirements. It was therefore not yet functioning to allow submission of all the information required under Kyoto Protocol. Since the CRF reporter version 5.10 did not allow reporting in accordance with the Kyoto Protocol requirements, Norway did not submit its report to facilitate the calculation of the assigned amount in 2015. However, with CRF version 5.12, Norway reported its inventory under the Kyoto Protocol on 14th April 2016 and this report to facilitate the calculation of the assigned amount is submitted in conjunction with the inventory submission in 2016. CRF reporter version 5.12 has not yet been officially considered "functioning" as there are still issues with e.g. mapping, aggregations and calculations. Since the CRF reporter 5.12 has not yet been officially considered "functioning", we reserve the right to correct errors, especially those that are caused by the CRF reporter.

Annex I to the Decision 2/CMP.8 specifies the information to be included in the report to facilitate the calculation of the assigned amount. In addition, decisions 2/CMP.11 and 3/CMP.11 specify further information to be included in this report. Since Norway had a quantified emission limitation and reduction target in the first commitment period, our understanding is that our report should include:

- Complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases;
- The identification of the selected base year for nitrogen trifluoride;
- Any agreement under Article 4 of the Kyoto Protocol for the second commitment period, where Norway has reached such an agreement to fulfil its commitments under Article 3 of the Kyoto Protocol jointly with other Parties;
- The calculation of the assigned amount;
- The calculation of the commitment period reserve;

- The calculation of the difference between the assigned amount for the second commitment period and average annual emissions for the first three years of the preceding commitment period multiplied by eight, pursuant to Article 3, paragraph 7 ter;
- Information on whether Norway has used, in the calculation of the average annual emissions for the first three years of the preceding commitment period: (a) The gases and sources listed in Annex A to the Kyoto Protocol; or (b) The same greenhouse gases, sectors and source categories as those used to calculate the assigned amount for the second commitment period;
- Whether Norway selected its forest definition for the first commitment period, and if so, the definition for the second commitment period shall be the same;
- The identification of Norway's 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 Norway 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,
- The identification of whether, for each activity under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, Norway intends to account annually or for the entire commitment period;
- The forest management reference level as inscribed in the appendix to the annex to decision 2/CMP.7, 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;
- 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;
- An indication of whether Norway intends to apply the provisions to exclude emissions from natural disturbances;

Since Norway had a quantified emission limitation and reduction target in the first commitment period, this report does not contain a description of the national system or the national registry. This is in accordance with paragraphs 1(l) and 1(m) of the Annex to decision 2/CMP.8.

2. Norway's greenhouse gas inventory 1990-2014

2.1 Overview

This report to facilitate the calculation of the assigned amount, is submitted in conjunction with Norway's inventory for the years 1990-2014 under the Kyoto Protocol, submitted on 14th April 2016. More details about the Norwegian inventory are provided in the CRF tables and in the 2016 NIR, especially chapter 2 (Trends in Greenhouse Gas Emissions).

Norway's inventory for the years 1990-2014 is prepared in accordance with the revised UNFCCC reporting guidelines on annual inventories for Annex I Parties (decision 24/CP.19). The 2016 submission consists of the 2016 NIR and the corresponding CRF tables. The revised reporting guidelines for inventories has four national totals and all four time series are shown in Table 1. In the Kyoto Protocol's first commitment period, Norway included indirect CO₂ emissions in the calculation of the assigned amount and has accounted for these emissions. Norway will continue this practice in the Kyoto Protocol's second commitment period, so the national total for the basis of calculating the assigned amount is the total CO₂ equivalent emissions, including indirect CO₂ and without land use, land-use change and forestry.

Table 1. Total emissions and removals of greenhouse gases in Norway. Million tonnes of CO₂ -equivalents.

Year	Total CO ₂ equivalent emissions without land use, land-use change and forestry	Total CO ₂ equivalent emissions with land use, land-use change and forestry	Total CO ₂ equivalent emissions, including indirect CO ₂ , without land use, land-use change and forestry	Total CO ₂ equivalent emissions, including indirect CO ₂ , with land use, land-use change and forestry
1990	51.3	40.9	51.9	41.4
1995	50.5	36.9	51.4	37.8
2000	53.9	30.3	54.9	31.3
2004	55.5	28.8	56.2	29.5
2005	54.7	30.1	55.3	30.6
2006	54.6	28.7	55.1	29.2
2007	56.5	30.7	56.9	31.1
2008	55.1	28.7	55.4	29.1
2009	52.3	23.9	52.7	24.2
2010	54.9	29.1	55.3	29.4
2011	54.0	26.6	54.3	26.9
2012	53.5	27.5	53.8	27.8
2013	53.2	26.9	53.6	27.2
2014	52.8	27.4	53.2	27.7

Source: Norway's NIR 2016.

Total CO₂ equivalent emissions, including indirect CO₂ and without land use, land-use change and forestry were 51.9 million tonnes of CO₂ equivalents in 1990 and 53.2 million tonnes in 2014. This corresponds to an increase of 2.4 per cent from 1990 to 2014. In 2014, the net greenhouse gas emissions including the LULUCF sector amounted to 27.7 million tonnes of CO₂ equivalents compared to 41.4 million tonnes of CO₂ equivalents in 1990.

The total contribution from various categories from 1990 to 2014 is illustrated in Figure 1.

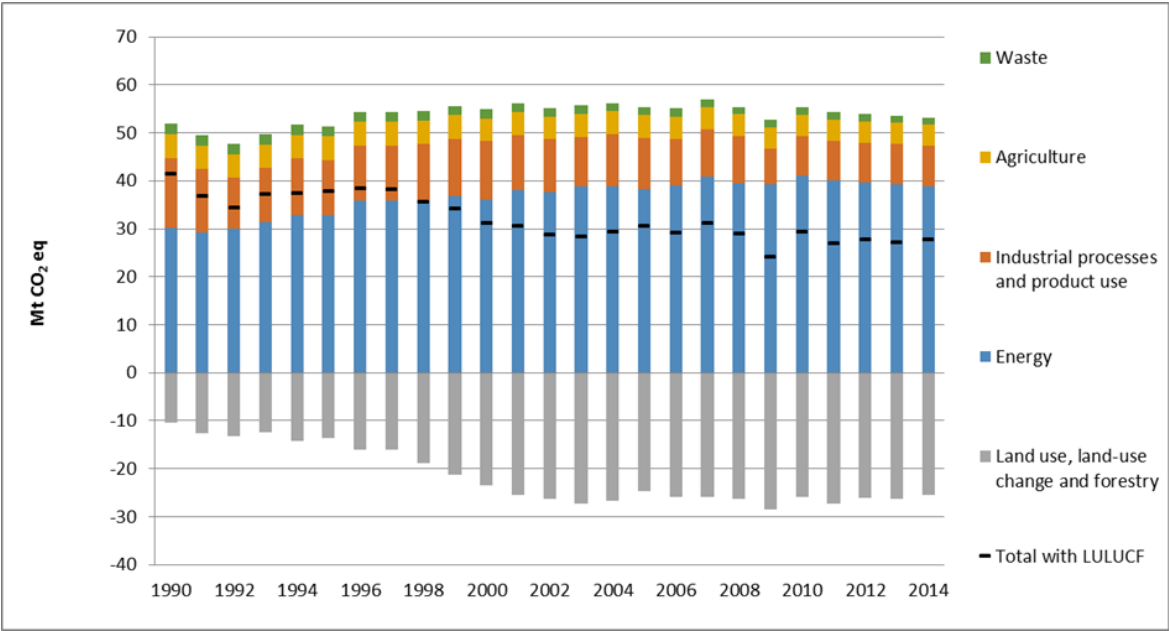


Figure 1. Total emissions and removals of greenhouse gases from the different sectors in Norway. Million tonnes of CO₂ -equivalents. Source: Norway’s NIR 2016

As shown in Figure 2, CO₂ is by far the largest contributor to the total GHG emissions, followed by CH₄, N₂O, and then the fluorinated gases PFCs, SF₆ and HFCs. In 2014, the relative contributions to the national totals from the different gases were: CO₂ 82.5 per cent, CH₄ 10.0 per cent, N₂O 4.8 per cent and fluorocarbons (PFCs, SF₆ and HFCs) 2.7 per cent. While the relative share of the gases has been quite stable since 2010, the relative share of CO₂ has increased by approximately 1 per cent each year during the period 2005-2010, from 78.8 per cent in 2005 up to 82.9 per cent in 2010.

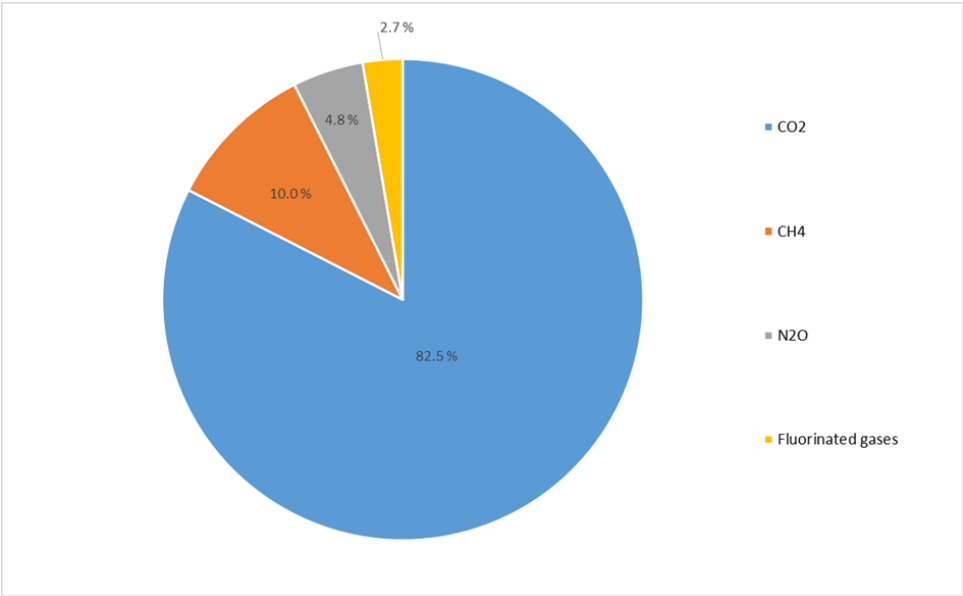


Figure 2. Distribution of emissions of greenhouse gases in Norway by gases. 2014. Per cent. Source: Norway’s NIR 2016

3. Calculation of assigned amount

3.1 Selected base year for NF₃

Norway has previously selected 1990 as the base year for the greenhouse gases hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). For nitrogen trifluoride (NF₃), Norway selects 2000 as the base year.

3.2 Agreement under Article 4

Norway has not reached any agreement to meet its commitment under Article 3.1 jointly with any other Parties.

3.3 Calculation of Norway's assigned amount

The calculation of Norway's assigned amount is based on the Norwegian National Inventory Report (NIR) and Common Reporting Format (CRF) submitted xx April 2016. Norway's assigned amount for the second commitment period is equal to 84 percent of its aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases, listed in Annex A in 1990, multiplied by eight.

Based on the National Inventory Report (NIR) and Common Reporting Format (CRF) submitted on 14th April 2016, Norway has calculated its assigned amount as:

$$51\,912\,870 \text{ tonnes CO}_2 \text{ equivalent} \times 0.84 \times 8 \\ = \mathbf{348\,854\,484 \text{ tonnes CO}_2 \text{ equivalents}}$$

3.4 Calculation of commitment period reserve

The commitment period reserve should not drop below 90 per cent of the Party's assigned amount or 100 per cent of eight times its most recently reviewed inventory, whichever is lowest.

90 per cent of assigned amount

$$348\,854\,484 \text{ tonnes CO}_2 \text{ equivalents} \times 0.90 \\ = \mathbf{313\,969\,036 \text{ tonnes CO}_2 \text{ equivalents}}$$

100 per cent of eight times its most recently reviewed inventory

Norway's most recently reviewed inventory is the inventory for the years 1990-2012 submitted in 2014. In the review report (FCCC/ARR/2014/NOR), the emissions without LULUCF in 2012 were 52 757 240 tonnes CO₂ equivalents.

$$52\,757\,240 \text{ tonnes CO}_2 \text{ equivalents} \times 8 \\ = \mathbf{422\,057\,920 \text{ tonnes CO}_2 \text{ equivalents}}$$

For Norway, the lowest number is equivalent to 90 per cent of Norway's assigned amount. Norway's commitment period reserve is therefore:

= 313 969 036 tonnes CO₂ equivalents

3.5 Calculation of difference related to Article 4, paragraph 7 ter

Decision 3/CMP.11 states that the report to facilitate the calculation of the assigned amount shall contain information on the calculation of the difference between the assigned amount of the second commitment period and average annual emissions for the first three years of the preceding commitment period multiplied by eight, pursuant to Article 3, paragraph 7 ter.

Based on the National Inventory Report (NIR) and Common Reporting Format (CRF) submitted on 14th April 2016, Norway's emissions (without LULUCF) in the years 2008, 2009 and 2010 were 55 415 746, 52 673 710, 55 271 849 tonnes CO₂ equivalents respectively. The average for these years is therefore 54 453 768 tonnes CO₂ equivalents. The average emissions for the years 2008, 2009 and 2010 multiplied by 8 is therefore:

= 54 453 768 x 8

= 435 630 147 tonnes CO₂ equivalents

This number (435 630 147 tonnes CO₂ equivalents) is higher than the assigned amount calculated to 348 854 484, so cancellation according to Article 3, paragraph 7 ter is not relevant for Norway.

4. Land-use, Land-use change and forestry (LULUCF)

4.1 Definition of forest for activities under Article 3.3 and 3.4

In the first commitment period, the definitions of single minimum values for tree crown cover, land area and tree height for use in accounting for its activities under Article 3.3 and 3.4 were identified. In the first commitment period, Norway applied the following forest definition for accounting activities under Article 3.3 and 3.4, consistent with the information that historically has been reported to the Food and Agriculture Organisation (FAO) of the United Nations:

- Minimum value for tree crown cover: 10 per cent
- Minimum value for forest area: 0.5 ha
- Minimum value for tree height of 5 m at maturity in situ.

In accordance with paragraph 1(f) in Annex I of decision 2/CMP.8, the definitions for the second commitment period shall be the same.

Areas normally forming part of the forest area, which are temporarily unstocked as a result of human intervention or natural causes and are expected to revert to forest, are included in land area considered forest land.

4.2 Election of activities under Article 3.4

For the second commitment period, Norway will continue to report emissions and removals from *Forest Management* under Article 3.4., as in accordance with paragraph 7 of the Annex to decision 2/CMP.7. In addition, and in accordance with paragraph 6 of the Annex to decision 2/CMP.7 and paragraph 1(g) in Annex I of decision 2/CMP.8, Norway has elected to include emissions and removals from the voluntary activities *Cropland Management* and *Grazing land Management* under Article 3.4. in its accounting for the second commitment period of the Kyoto Protocol.

Forest management is defined by Decision 16/CMP.1 as “....a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner.”

All forest in Norway is used either for wood harvesting, protecting and protective purposes, recreation and/or to a greater or smaller extent for hunting and picking berries. On more marginal and less productive forest land the intensity of the various management practices will decrease, but will still be present. Hence, all forest in Norway is defined as managed.

Cropland management includes all the activities that take place on cropland. Cropland is defined as lands that are annually cropped and regularly cultivated and plowed. Both annual and perennial crops are grown. Cropland also encompasses, grass leys that are in rotations with annual crops, which may include temporarily grazed fields that are regularly cultivated. All cropland are considered managed.

Grazing land management includes all the activities that take place on grassland. Grassland is identified as areas utilized for grazing on an annual basis. More than 50 % of the area should be covered with grass and it can be partly covered with trees, bushes, stumps, rocks etc. The grass

may be mechanically harvested but the soil is not plowed. Land with tree cover may be classified as grassland if grazing is considered more important than forestry even if the forest definition is met. According to the agricultural statistics that are used for determining grassland management practices, grasslands include the two categories grazing lands and surface-cultivated grass. All grasslands are considered managed according to these categories.

Land areas to be included in the accounting under the Kyoto Protocol are identified by using Approach 2 in the IPCC 2006 guidelines. In accordance with the Norwegian national system for greenhouse gas inventories under Article 5.1, land areas associated with activities under Articles 3.3 and 3.4 have been identified by using data from the National Forest Inventory (NFI). The NFI can be characterized as a single-phase, permanent, systematic, and stratified survey. An interpenetrating panel design is used, where 1/5th of the plots that are evenly distributed across the country (the so-called “panel”) are measured each year. The Norwegian Institute for Bioeconomy Research is responsible for operating the NFI. Inventory work was started in 1919 with regular inventory cycles. The 11th inventory cycle started in 2015 and will be completed in 2019. The NFI and the methodology used are thoroughly described in the Norwegian National Inventory Report (NIR).

All the NFI plots are geo-referenced, and each plot has a unique identification code. This 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.

4.3 Accounting under Article 3.3 and 3.4

Norway intends to account for all the activities under Article 3.3, and for forest management, cropland management and grazing land management activities under Article 3.4 for the entire commitment period.

4.4 Forest management reference level and technical corrections

Norway has chosen 1990 as base year for the forest management reference level (FMRL). The carbon stock in HWP is included in the FMRL. Hence, the emissions from harvested wood products (HWP) occurring during the second commitment period from HWP removed from forest prior to the start of the commitment period will also be accounted for. Due to the inclusion of harvested wood products (HWP) in the reporting in NIR 2015, as in accordance with paragraph 29 in annex I to decision 2/CMP.7, and changes in methods applied to estimate carbon stock changes in NIR 2015 and NIR 2016, the FMRL presented in the appendix to Annex I of decision 2/CMP. 7 has been recalculated. A technical correction has hence been applied to include in the accounting the impact of the recalculations on the reported data that have been used to set the reference level.

The FMRL as inscribed in the appendix to the annex to decision 2/CMP.7 is -11.4 Mt CO₂-eq, whereas the corrected FMRL, as reported in the Norwegian National Inventory Report (NIR) for 2016 (Miljødirektoratet 2016) is -13 Mt CO₂-eq.

Information on the FMRL and the technical correction is reported consistent with the requirements of paragraph 14 in the Annex of decision 2/CMP.7, in Chapter 11.5.5 in the NIR 2016 (Miljødirektoratet 2016).

4.5 Indication of whether the provision to exclude emissions from natural disturbances is applied

Norway 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.

References

The Norwegian Environment Agency, 2016. Greenhouse Gas Emissions 1990-2014, National Inventory Report. Report M-534.

http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/9492.php

The Norwegian Environment Agency, 2015. Greenhouse Gas Emissions 1990-2014, National Inventory Report Report M-422.

http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8812.php

Norway's second Biennial Report under the Framework Convention on Climate Change.

http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/br2_norway.pdf

Norway's sixth National Communication and first Biennial Report under the Framework Convention on Climate Change.

http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/nc6_nor_resubmission.pdf

Norway's Initial Report under the Kyoto Protocol. Calculation of Assigned Amount under Article 7, Paragraph 4, of the Kyoto Protocol, in accordance with Decision 13/CMP.1

http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php