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## **Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of Luxembourg**

**Note by the expert review team**

### *Summary*

According to decision 2/CMP.8, each Party with a quantified emission limitation and reduction commitment inscribed in the third column of Annex B to the Kyoto Protocol, as contained in annex I to decision 1/CMP.8, shall submit to the secretariat a report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol. In accordance with decision 22/CMP.1, annex, paragraph 11, in conjunction with decision 4/CMP.11, the report to facilitate the calculation of the assigned amount is subject to a review. This report presents the results of the technical review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol, conducted by an expert review team in accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol”. The review took place from 26 September to 1 October 2016 in Bonn, Germany.

GE.17-15094(E)



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## Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction .....	1–2	3
II. Summary of the reporting on mandatory elements in the report to facilitate the calculation of the assigned amount .....	3	4
III. Technical assessment of the elements reviewed.....	4	7
IV. Questions of implementation .....	5	9
Annexes		
I. Key relevant data for Luxembourg .....		10
II. Documents and information used during the review.....		15
III. Acronyms and abbreviations .....		17

## I. Introduction<sup>1</sup>

1. The review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol (hereinafter referred to as the report to facilitate the calculation of the assigned amount) of Luxembourg was organized by the UNFCCC secretariat, in accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol”.<sup>2</sup> The review took place from 26 September to 1 October 2016 in Bonn, Germany, and was coordinated by Mr. Simon Wear and Mr. Vitor Gois Ferreira (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of Luxembourg.

2. A draft version of this report was communicated to the Government of Luxembourg, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

Table 1

### Composition of the expert review team that conducted the review of Luxembourg

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	Ms. Lea Kai Aboujaoude	Lebanon
	Mr. Lindsay Pratt	Canada
Energy	Mr. Sangay Dorji	Bhutan
	Ms. Inga Konstantinaviciute	Lithuania
	Ms. Laetitia Nicco	France
	Ms. Awassada Phongphiphat	Thailand
IPPU	Ms. Mausami Desai	United States of America
	Mr. David Kuntze	Germany
	Ms. Emilija Poposka	The former Yugoslav Republic of Macedonia
Agriculture	Ms. Agita Gancone	Latvia
	Ms. Sumaya Ahmed Zakieldeem	Sudan
LULUCF	Ms. María Fernanda Alcobé	Argentina
	Ms. Yasna Rojas Ponce	Chile
	Mr. Nijavalli Ravindranath	India
Waste	Ms. Kaat Jespers	Belgium
	Ms. Hlobisile P. Sikhosana-Shongwe	Swaziland
Lead reviewers	Ms. Lea Kai Aboujaoude	

<sup>1</sup> At the time of publication of this report, Luxembourg had not yet submitted its instrument of ratification of the Doha Amendment, and the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

<sup>2</sup> Decision 22/CMP.1 and its annex and any revisions contained in decision 4/CMP.11 and its annex I.

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
	Mr. David Kuntze	

*Abbreviations:* IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry.


## II. Summary of the reporting on mandatory elements in the report to facilitate the calculation of the assigned amount

3. Table 2 provides a summary of the ERT’s assessment of the reporting of mandatory elements by Luxembourg in its report to facilitate the calculation of the assigned amount. Key data and elections by the Party are included in table 4.

Table 2

### Expert review team’s assessment of the reporting of mandatory elements by Luxembourg in its report to facilitate the calculation of the assigned amount

<i>Item</i>		<i>Comment</i>
<i>General Party information</i>		
Dates of submission		Original submission: 15 June 2016  Revised submissions: 16 November 2016, 22 January 2017 and 15 March 2017
Are there any missing categories or issues related to completeness <sup>a</sup> in the reporting of GHG emissions by sources and removals by sinks for the base year or period?	No	For further information, see document FCCC/ARR/2016/LUX
Was the GHG inventory recalculated in accordance with decision 4/CMP.7 for all years from 1990 to the most recent year available?	Yes	
Did the Party report the base year for NF <sub>3</sub> ?	Yes	See annex 1, table 4
<i>Information related to agreement by the Party under Article 4 of the Kyoto Protocol to implement commitments jointly</i>		
Has complete information been reported in accordance with decision 3/CMP.11, paragraph 11, by the Party in fulfilment of its agreement under Article 4 of the Kyoto Protocol, in relation to the following:		
(a) Application of decision 1/CMP.8, paragraphs 23–26, related to carry-over and the previous period surplus reserve account	Yes	See annex I, table 4; for further information, see ID#6 in table 3
(b) Calculation of base year emissions	Yes	See annex I, table 4; for further information, see ID#1 in table 3
(c) Calculation of the assigned amount	Yes	See annex I, table 4; for further information,

<i>Item</i>		<i>Comment</i>
		see ID#1 in table 3
(d) Calculation of the commitment period reserve	Yes	See annex I, table 4; for further information, see ID#2 in table 3
(e) Application and calculation pursuant to decision 2/CMP.7, annex, paragraph 13	Yes	See annex I, table 4; for further information, see ID#3 in table 3
<i>Information related to the assigned amount and the commitment period reserve</i>		
Was the assigned amount in the original submission calculated in accordance with Article 3, paragraph 8, of the Kyoto Protocol, Article 3, paragraphs 7 bis and 8 bis, as contained in the Doha Amendment and decision 13/CMP.1 in conjunction with decision 3/CMP.11?	Yes	See annex I, table 4; for further information, see ID#1 in table 3
Has the Party reported in the original submission the difference between the assigned amount for the second commitment period and average annual emissions for the first three years of the first commitment period, multiplied by eight?	Yes	See annex I, table 4; for further information, see ID#5 in table 3
Has the Party indicated in the original submission the approach <sup>b</sup> used to calculate average annual emissions for the first three years of the first commitment period?	Yes	See annex I, table 4; for further information, see ID#5 in table 3
Did land-use change and forestry constitute a net source of GHG emissions in the base year, and therefore did the Party include emissions from deforestation in the calculation of the assigned amount?	Yes	See annex I, table 4; for further information, see ID#1 in table 3
Was the commitment period reserve in the original submission calculated in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1, the annex to decision 13/CMP.1, paragraph 8 quinines, and decision 1/CMP.8, paragraph 18?	Yes	See annex I, table 4; for further information, see ID#2 in table 3
<i>Information related to activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol</i>		
If the Party identified activities elected under Article 3, paragraph 4, of the Kyoto Protocol, are these elections in accordance with decision 2/CMP.7, annex, paragraphs 6–8?	NA	See annex I, table 4
Do the activities elected under Article 3, paragraph 4, of the Kyoto Protocol for the second commitment period include at least those activities elected for the first commitment period?	NA	See annex I, table 4
Is information reported on how the national system under Article 5, paragraph 1, of the Kyoto Protocol will identify land areas associated with all additional elected activities and how the Party ensures that land that was accounted for in the first commitment period continues to be accounted for in the second commitment period?	Yes	
Has the Party identified for each activity under Article 3, paragraphs 3 and 4, of the Kyoto Protocol whether it intends to account annually or for the entire commitment period?	Yes	See annex I, table 4

<i>Item</i>		<i>Comment</i>
Did the Party provide information on the forest management reference level, including, if appropriate, information on technical corrections and 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?	Yes	See annex I, table 4
Has the Party reported the quantity amounting to 3.5% of the base year GHG emissions, excluding LULUCF, in the original submission?	Yes	See annex I, table 4; for further information, see ID#1 in table 3
Did the Party indicate whether it intends to apply the provisions to exclude emissions from natural disturbances for the accounting for afforestation and reforestation and/or forest management and provide the relevant information in accordance with decision 2/CMP.7, annex, paragraph 33?	Yes	See annex I, table 4
<i>Information related to the national system and national registry</i>		
Was a description of the national system provided, in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol?	NA	This information was already reported and reviewed as part of the initial review of the report to facilitate the calculation of the assigned amount for the first commitment period and did not need to be reported
Was a description of the national registry provided, in accordance with the requirements contained in the annex to decision 13/CMP.1, the annex to decision 5/CMP.1 and the technical standards for data exchange between registry systems adopted by the CMP?	NA	This information was already reported and reviewed as part of the initial review of the report to facilitate the calculation of the assigned amount for the first commitment period and did not need to be reported

*Abbreviations:* CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable.

<sup>a</sup> Issues related to missing categories and completeness are only for those categories for which methods are available in the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories.

<sup>b</sup> Parties may elect to calculate average annual emissions for the first three years of the first commitment period by including either the gases and sources listed in Annex A to the Kyoto Protocol, or the GHGs, sectors and source categories used to calculate the assigned amount for the second commitment period.

### III. Technical assessment of the elements reviewed

4. In accordance with decision 22/CMP.1, and in conjunction with decisions 4/CMP.11 and 10/CMP.11, the review of the report to facilitate the calculation of the assigned amount

for Luxembourg has been undertaken together with the review of the inventory submission for the first year of the second commitment period.<sup>3</sup> Table 3 contains additional information, if any, to support the ERT's assessment included in table 2 of the Party's capacity to account for its emissions and the assigned amount, specifically related to: the calculation of the assigned amount for the second commitment period and any adjustments applied; information related to Article 3, paragraph 7 ter, as contained in the Doha Amendment; information related to reporting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol; calculation of the commitment period reserve; and the national system and national registry.

Table 3

**Additional findings of the expert review team, if any, related to Luxembourg's reporting of mandatory elements in its report to facilitate the calculation of the assigned amount**

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding</i>	<i>Classification of problem</i>
1.	Calculation of the assigned amount	<p>The assigned amount submitted by the Party in its report to facilitate the calculation of the assigned amount was calculated in accordance with Article 3, paragraphs 7 bis, 8 and 8 bis, of the Kyoto Protocol, the annex to decision 13/CMP.1 and annex I to decision 3/CMP.11</p> <p>LULUCF is a net source of GHG emissions in 1990 for Luxembourg. Therefore, in accordance with decision 13/CMP.1 in conjunction with decision 3/CMP.11, total base year emissions for the purpose of the calculation of the assigned amount under the Kyoto Protocol include GHG emissions from conversion of forests (deforestation). In its original submission, Luxembourg reported the emissions from conversion of forests (deforestation) in the base year as 227,296 t CO<sub>2</sub> eq. The Party submitted revised estimates on 15 March 2017, which affected the base year emissions from conversion of forests (deforestation). The ERT agreed with the revised estimate of 268,381 t CO<sub>2</sub> eq and these emissions were included in the calculation of the assigned amount</p> <p>The ERT notes that the European Union, its member States and Iceland stated that they will fulfil their reduction targets under the second commitment period jointly.<sup>a</sup> The joint assigned amount for the European Union, its member States and Iceland is calculated pursuant to the quantified emission limitation or reduction commitment listed in the third column of the table contained in Annex B to the Kyoto Protocol, while the assigned amount of each member State is determined in accordance with the terms of the joint fulfilment agreement. Specifically, the assigned amount for Luxembourg (before applying Article 7, paragraph 1 bis, of the Doha Amendment) is fixed based on Annex II to European Commission decision 2013/162/EU and as adjusted by Commission implementing decision 2013/634/EU<sup>b</sup></p> <p>The ERT concludes that the assigned amount reported by Luxembourg is in accordance with the joint fulfilment agreement by the European Union, its member States and Iceland</p>	Not a problem

<sup>3</sup> The annual review report on the 2016 inventory submission of Luxembourg is available at <<http://unfccc.int/resource/docs/2017/arr/lux.pdf>>, while the annual review report on the 2015 inventory submission of Luxembourg is available at <<http://unfccc.int/resource/docs/2016/arr/lux.pdf>>.

ID#	Finding classification	Description of the finding	Classification of problem
		<p>In response to the list of potential problems and further questions raised by the ERT (see document FCCC/ARR/2016/LUX), the Party submitted revised estimates, which affected the estimates of base year emissions. The ERT invites Luxembourg to communicate the revised base year emissions to the European Union, with a view to them being considered in the calculation of the joint assigned amount of the European Union, its member States and Iceland</p>	
2.	<p>Calculation of the commitment period reserve</p>	<p>The commitment period reserve was calculated in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision 1/CMP.8, paragraph 18</p>	Not a problem
3.	<p>Accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol</p>	<p>According to decision 6/CMP.9, paragraph 12, Luxembourg shall include in its report to facilitate the calculation of the assigned amount the value that is 3.5 per cent of the base year GHG emissions. The ERT notes that the earlier decision 2/CMP.7, annex, paragraph 13, indicates that the additions to the assigned amount of a Party are equal to 3.5 per cent of the base year GHG emissions, excluding LULUCF, multiplied by the duration of the commitment period. Luxembourg reported a value of 3,604,402 t CO<sub>2</sub> eq estimated as the base year × 3.5 per cent × 8</p>	Not a problem
4.	<p>Accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol</p>	<p>The Party did not include in its original report to facilitate the calculation of the assigned amount (submitted on 1 August 2016) the quantity amounting to 3.5 per cent of the base year GHG emissions, excluding LULUCF, multiplied by eight. The Party submitted an update to its initial report on 15 March 2017, in which it indicated (annex 2) that the quantity amounting to 3.5 per cent of the base year GHG emissions, excluding LULUCF, multiplied by eight, is 3,604,402 t CO<sub>2</sub> eq. The ERT agrees with this value</p>	Not a problem
5.	<p>Reporting pursuant to Article 3, paragraph 7 ter, of the Doha Amendment</p>	<p>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, and as described in the report to facilitate the calculation of the assigned amount of the European Union, Article 3, paragraph 7 ter, of the Doha Amendment is applied to the joint assigned amount of the European Union, its member States and Iceland for the second commitment period. In its report, the European Union includes the value for the difference between the joint assigned amount for the second commitment period and average annual emissions for the first three years of the first commitment period for the member States and Iceland, multiplied by eight. The report of the European Union also clarifies that the approach used to calculate average annual emissions for the first three years of the first commitment period is the gases and sources listed in Annex A to the Kyoto Protocol</p>	Not a problem
6.	<p>National registry</p>	<p>The ERT notes that the 2016 standard independent assessment report for Luxembourg indicates that, as the Union Registry software used by the national registry of Luxembourg needs to be adapted to enable the creation and use of a previous period surplus reserve account, Luxembourg has not yet established a previous period surplus reserve account in its national registry</p>	Transparency
7.	<p>Adjustments</p>	<p>The ERT has not identified the need to apply any adjustments to the estimate for the assigned amount for the second commitment period, as</p>	Not a problem



ID#	Finding classification	Description of the finding	Classification of problem
		reported by Luxembourg in its report to facilitate the calculation of the assigned amount	

*Abbreviations:* Annex A sources = source categories included in Annex A to the Kyoto Protocol, Article 8 review guidelines = “Guidelines for review under Article 8 of the Kyoto Protocol”, ERT = expert review team, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

<sup>a</sup> The report to facilitate the calculation of the assigned amount of the European Union is available at <[http://unfccc.int/national\\_reports/initial\\_reports\\_under\\_the\\_kyoto\\_protocol/second\\_commitment\\_period\\_2013-2020/items/9499.php](http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/second_commitment_period_2013-2020/items/9499.php)>.

<sup>b</sup> At the time of publication of this report, the European Union had not yet submitted the instrument of ratification of the Doha Amendment, including information on the joint implementation of such an amendment.

#### IV. Questions of implementation

5. No questions of implementation were identified by the ERT during the review.

## Annex I

### Key relevant data for Luxembourg

1. Table 4 provides key data and parameters for, and elections by, Luxembourg, relevant for the implementation of the second commitment period of the Kyoto Protocol. The information included in table 4 is as given by the Party in its report to facilitate the calculation of the assigned amount, unless otherwise specified.

Table 4

#### Key relevant data for Luxembourg<sup>a</sup>

<i>Key information or parameter provided</i>	<i>Comment</i>
<i>General Party information</i>	
Did the Party have a QELRC in the first commitment period?	Yes
Luxembourg's QELRC in the second commitment period	Luxembourg will implement its reduction target under the second commitment period jointly with the European Union, its member States and Iceland as described in ID#1, table 3). The QELRC for the European Union, its member States and Iceland is 80% of the base year emissions
Has the Party reached an agreement under Article 4 of the Kyoto Protocol to fulfil its commitments jointly with other Parties?	Yes
Base year	1990
Base year for HFCs, PFCs and SF <sub>6</sub>	1995
Base year for NF <sub>3</sub>	1995
Base year emissions, as reported by the Party	Not reported in the original submission
Base-year emissions, final, as calculated by the ERT and agreed by the Party	13 141 245 t CO <sub>2</sub> eq, including GHG emissions from conversion of forests (deforestation) of 268 381 t CO <sub>2</sub> eq
<i>Information related to the calculation of the assigned amount and the commitment period reserve</i>	
Assigned amount, as reported by the Party	72 555 204 t CO <sub>2</sub> eq, including GHG emissions from conversion of forests (deforestation)
Assigned amount, final, as reported by the Party and agreed by the ERT	72 454 473 t CO <sub>2</sub> eq, including GHG emissions from conversion of forests (deforestation)
Approach used to calculate the average annual emissions for the first three years of the first commitment period	This difference is calculated on the basis of the joint assigned amount of the European Union, its member States and Iceland and is based on the gases and sources listed in Annex A to the Kyoto Protocol
Difference between the assigned amount for the second commitment period and average annual	This difference is calculated on the basis of the joint assigned amount of the European Union,

<i>Key information or parameter provided</i>	<i>Comment</i>
emissions for the first three years of the first commitment period, multiplied by eight, as reported by the Party, and agreed by the ERT	its member States and Iceland and is based on the gases and sources listed in Annex A to the Kyoto Protocol
Commitment period reserve, as reported by the Party	62 299 684 t CO <sub>2</sub> eq
Commitment period reserve, final value, as reported by the Party and agreed by the ERT	65 209 026 t CO <sub>2</sub> eq
<i>Information related to activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol</i>	
LULUCF parameters	Minimum tree crown cover: 10% Minimum land area: 0.5 ha Minimum tree height: 5 m
Elections under Article 3, paragraphs 3 and 4, of the Kyoto Protocol:	
(a) Afforestation/reforestation	Commitment period accounting
(b) Deforestation	Commitment period accounting
(c) Forest management	Commitment period accounting
(d) Cropland management	Not elected
(e) Grazing land management	Not elected
(f) Revegetation	Not elected
(g) Wetland drainage and rewetting	Not elected
FMRL	-0.418 Mt CO <sub>2</sub> eq/year
Technical corrections to the FMRL as reported in the original submission	Not reported in the original submission
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO <sub>2</sub> emissions, as reported by the Party	Not reported in the original submission
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO <sub>2</sub> emissions, final value, as calculated by the ERT	450.550 kt CO <sub>2</sub> eq
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO <sub>2</sub> emissions, multiplied by eight, as reported by the Party in the original submission	Not reported in the original submission
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO <sub>2</sub> emissions, multiplied by eight, final value, as reported by the Party and agreed by the ERT	3 604.402 kt CO <sub>2</sub> eq
Will the Party exclude emissions from natural disturbances in accounting for:	
(a) Afforestation and reforestation	Yes

<i>Key information or parameter provided</i>	<i>Comment</i>
(b) Forest management	Yes

*Abbreviations:* ERT = expert review team, FMRL = forest management reference level, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, QELRC = quantified emission limitation and reduction commitment.

2. Tables 5–7 provide an overview of total greenhouse gas emissions and removals, as submitted by Luxembourg. Where a Party has decided to voluntarily report indirect carbon dioxide emissions, this is noted in the relevant table.

Table 5  
**Total greenhouse gas emissions for Luxembourg, base year<sup>a</sup>–2014<sup>b</sup>**  
 (kt CO<sub>2</sub>eq)

	<i>Total GHG emissions excluding indirect CO<sub>2</sub> emissions</i>		<i>Total GHG emissions including indirect CO<sub>2</sub> emissions<sup>c</sup></i>		<i>Land-use change (Article 3.7 bis of the Doha Amendment<sup>d</sup>)</i>
	<i>Total including LULUCF</i>	<i>Total excluding LULUCF</i>	<i>Total including LULUCF</i>	<i>Total excluding LULUCF</i>	
Base year	12 925.00	12 872.86	12 925.00	12 872.86	268.38
1990	12 906.58	12 854.45	12 906.58	12 854.45	
1995	9 508.96	10 072.21	9 508.96	10 072.21	
2000	9 019.28	9 721.13	9 019.28	9 721.13	
2010	12 062.59	12 215.56	12 062.59	12 215.56	
2011	11 810.68	12 085.66	11 810.68	12 085.66	
2012	11 402.93	11 765.81	11 402.93	11 765.81	
2013	10 669.11	11 207.73	10 669.11	11 207.73	
2014	10 313.00	10 773.44	10 313.00	10 773.44	

*Abbreviations:* GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

<sup>a</sup> Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O, and 1995 for HFCs, PFCs SF<sub>6</sub> and NF<sub>3</sub>.

<sup>b</sup> Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions.

<sup>c</sup> The Party has not reported indirect CO<sub>2</sub> emissions in common reporting format table 6.

<sup>d</sup> The value reported in this column refers to 1990.

Table 6

**Greenhouse gas emissions by gas for Luxembourg, excluding land use, land-use change and forestry, 1990–2014<sup>a</sup>**(kt CO<sub>2</sub> eq)

	<i>CO<sub>2</sub></i> <sup>b</sup>	<i>CH<sub>4</sub></i>	<i>N<sub>2</sub>O</i>	<i>HFCs</i>	<i>PFCs</i>	<i>Unspecified mix of HFCs and PFCs</i>	<i>SF<sub>6</sub></i>	<i>NF<sub>3</sub></i>
1990	11 945.00	619.80	288.77	0.00	NO	NO	0.88	NO
1995	9 156.75	610.77	285.39	17.90	NO	NO	1.39	NO
2000	8 796.97	605.30	287.95	28.98	NO	NO	1.93	NO
2010	11 280.63	605.39	270.34	52.33	NO	NO	6.87	NO
2011	11 166.14	579.16	277.86	55.19	NO	NO	7.31	NO
2012	10 867.96	567.56	265.07	57.53	NO	NO	7.68	NO
2013	10 297.56	571.51	269.44	61.17	NO	NO	8.05	NO
2014	9 824.06	578.85	296.01	66.08	NO	NO	8.44	NO
<b>Per cent change 1990–2014</b>	<b>-17.8</b>	<b>-6.6</b>	<b>2.5</b>	<b>92 414 848.2</b>	<b>NA</b>	<b>NA</b>	<b>863.3</b>	<b>NA</b>

*Abbreviations:* NA = not applicable, NO = not occurring.

<sup>a</sup> Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

<sup>b</sup> Luxembourg did not report indirect carbon dioxide emissions in common reporting format table 6.

Table 7  
**Greenhouse gas emissions by sector for Luxembourg, 1990–2014<sup>a, b</sup>**  
 (kt CO<sub>2</sub>eq)

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
1990	10 393.69	1 648.46	716.21	52.13	96.08	NO
1995	8 242.27	1 037.03	699.41	-563.24	93.50	NO
2000	8 154.28	782.33	697.30	-701.85	87.22	NO
2010	10 802.75	672.53	670.42	-152.97	69.86	NO
2011	10 665.53	690.52	664.26	-274.98	65.35	NO
2012	10 429.87	631.40	644.81	-362.88	59.73	NO
2013	9 878.55	609.68	660.55	-538.62	58.94	NO
2014	9 396.38	645.78	672.72	-460.44	58.56	NO
<b>Per cent change 1990–2014</b>	<b>-9.6</b>	<b>-60.8</b>	<b>-6.1</b>	<b>-983.2</b>	<b>-39.1</b>	<b>NA</b>

*Abbreviations:* IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

<sup>a</sup> Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

<sup>b</sup> Luxembourg did not report indirect carbon dioxide emissions in common reporting format table 6.

## Annex II

### Documents and information used during the review

#### A. Reference documents

“Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol”. Annex to decision 19/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf>>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex to decision 15/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf>>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Annex to decision 22/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex I to decision 24/CP.19. Available at <<http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=4>>.

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**B. Additional information provided by the Party**

Responses to questions during the review were received from Mr. Marc Schuman (Environment Agency), including additional material on the methodology and assumptions used.



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## Annex III

### Acronyms and abbreviations

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
CO <sub>2</sub> eq	carbon dioxide equivalent
ERT	expert review team
FMRL	forest management reference level
GHG	greenhouse gas
HFC	hydrofluorocarbon
IPPU	industrial processes and product use
kt	kilotonne
LULUCF	land use, land-use change and forestry
NA	not applicable
NF <sub>3</sub>	nitrogen trifluoride
NO	not occurring
N <sub>2</sub> O	nitrous oxide
PFC	perfluorocarbon
QELRC	quantified emission limitation and reduction commitment
SF <sub>6</sub>	sulphur hexafluoride
UNFCCC	United Nations Framework Convention on Climate Change

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