



United Nations

FCCC/IRR/2016/PRT



Framework Convention on  
Climate Change

Distr.: General  
5 September 2017

English only

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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 Portugal**

**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 12 to 17 September 2016 in Bonn, Germany.

GE.17-14930(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	6
IV. Questions of implementation .....	5	9
 Annexes		
I. Key relevant data for Portugal.....		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 Portugal 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 12 to 17 September 2016 in Bonn, Germany, and was coordinated by Ms. Claudia do Valle and Mr. Roman Payo (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of Portugal.

2. A draft version of this report was communicated to the Government of Portugal, which provided no comments.

Table 1

**Composition of the expert review team that conducted the review of Portugal**

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	Mr. Newton Paciornik	Brazil
	Ms. Daniela Romano	Italy
Energy	Mr. Alexey Cherednichenko	Kazakhstan
	Mr. Hiroshi Ito	Japan
	Mr. Ole-Kenneth Nielsen	Denmark
	Mr. Shengmin Yu	China
IPPU	Ms. Niculina Mihaela Balanescu	Romania
	Mr. Julien Jabot	Norway
	Ms. Eva Krtkova	Czechia
Agriculture	Mr. Paul Duffy	Ireland
	Mr. Tomas Paulaitis	Lithuania
	Mr. Braulio Pikman	Brazil
LULUCF	Ms. Tracy Johns	United States of America
	Mr. Mattias Lundblad	Sweden
	Ms. Marina Shvangiradze	Georgia
Waste	Ms. Sumaia Elsayed	Sudan
	Ms. Katja Pazdernik	Austria

<sup>1</sup> At the time of publication of this report, Portugal 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>
Lead reviewers	Mr. Ole-Kenneth Nielsen Mr. Newton Paciornik	

*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 Portugal 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 Portugal 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: 3 November and 27 December 2016
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?	Yes	For further information see FCCC/ARR/2016/PRT, annex III
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 I, 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	For further information, see ID#7 in table 3
(b) Calculation of base-year emissions	Yes	See annex I, table 4. For further information see ID#3 in table 3
(c) Calculation of the assigned amount	Yes	See annex I, table 4. For further information, see

<i>Item</i>		<i>Comment</i>
		ID#1 and ID#2 in table 3
(d) Calculation of the commitment period reserve	Yes	See annex I, table 4. For further information, see ID#4 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#6 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 and ID#2 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 8?	Yes	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	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	For further information, see ID#2 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 quinquies, and decision 1/CMP.8, paragraph 18?	Yes	See annex I, table 4. For further information, see ID#4 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?	Yes	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?	Yes	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,	Yes	See annex I, table 4

<i>Item</i>		<i>Comment</i>
paragraphs 3 and 4, of the Kyoto Protocol whether it intends to account annually or for the entire commitment period?		
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#6 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 Portugal 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 above 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 Portugal'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.	Article 4 agreement	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 and 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 Portugal, before applying Article 3, paragraph 7bis, of the Kyoto Protocol, 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>	Not a problem
2.	Calculation of the assigned amount	<p>LULUCF is a net source of GHG emissions in 1990 for Portugal. 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 greenhouse gas emissions from the conversion of forests (deforestation)</p> <p>The assigned amount reported by the Party in its report to facilitate the calculation of the assigned amount (submitted in 15 June 2016) was not 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>Portugal reported its assigned amount to be 436 424 784 t CO<sub>2</sub> eq. However, during the review, the ERT identified that the incorrect calculation was caused by a misinterpretation of paragraph 7 bis of the Doha Amendment to the Kyoto Protocol. In particular, the deforestation emissions times 8 were not multiplied by 80% before adding to the country's assigned amount allocated by the European Union for its member States for the second commitment period. The ERT's finding was accepted by Portugal but was not resolved during the review, and therefore this issue was included in the list of potential problems and further questions raised by the ERT during the review</p>	Not a problem

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

ID#	Finding classification	Description of the finding	Classification of problem
3.	Calculation of the assigned amount	<p>In response to this list of potential problems, Portugal resubmitted on 27 December 2016 its report to facilitate the calculation of the assigned amount and revised estimates using the correct formula for the calculation of the assigned amount. The revised assigned amount was 429 581 969 t CO<sub>2</sub> eq, including in this value the application of Article 3, paragraph 7 bis, of the Kyoto Protocol (deforestation) (i.e. 4 276 759 t CO<sub>2</sub> eq in 1990, or 27 371 258 t CO<sub>2</sub> eq when multiplied by 8 and 80%)</p> <p>The ERT verified the calculations and agreed with the Party's revised estimate, which is now in accordance with Article 3, paragraph 7 bis, of the Doha Amendment to the Kyoto Protocol</p> <p>Portugal reported its base year in its report to facilitate the calculation of the assigned amount (submitted on 27 December 2016) as 60 552 013 t CO<sub>2</sub> eq (chapter 9). The ERT noted that this value is not in line with decision 2/CMP.8</p> <p>Base-year as indicated in decision 2/CMP.8, annex I, paragraph 1(b), refers to 1990 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O, 1995 for HFCs, PFCs, SF<sub>6</sub> and 2000 for NF<sub>3</sub> (in the case of Portugal)</p> <p>Based on the revised emission estimates submitted by Portugal in response to the list of potential problem (see FCCC/ARR/2016/PRT), the ERT calculated the value for the base year to be equal to 65 028 094 t CO<sub>2</sub> eq, including in this value indirect emissions of CO<sub>2</sub> (153 812 t CO<sub>2</sub> eq) and deforestation (4 276 759 t CO<sub>2</sub> eq) in 1990 (see table 4)</p> <p>The revised estimates for the base-year emissions do not affect the assigned amount for Portugal because the assigned amount is determined on the basis of the allocations in the European Union decisions referenced above, and is not calculated using the base-year emission estimates for Portugal. The ERT invites Portugal to communicate the revised base-year emissions to the European Union with a view to being considered in the calculation of the joint assigned amount of the European Union, its member States and Iceland</p>	Accuracy
4.	Calculation of the commitment period reserve	<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> <p>However, due to the error identified in the calculation of the assigned amount (see ID#2 above), the value reported for the commitment period reserve (392 782 305 t CO<sub>2</sub> eq) in the report submitted on 15 June 2016 was wrong. Portugal submitted a revised report to facilitate the calculation of the assigned amount on 27 December 2016 where the Party estimated its commitment period reserve to be 386 623 773 t CO<sub>2</sub> eq. The ERT agreed with this value</p>	Not a problem
5.	Reporting pursuant to Article 3.7 ter of the Doha Amendment	<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 Kyoto Protocol 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</p>	Not a problem



ID#	Finding classification	Description of the finding	Classification of problem
		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 8. 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 including the gases and sources listed in Annex A to the Kyoto Protocol	
6.	Accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol	The forest management cap is calculated as 3.5% of the base year emissions, multiplied by the duration of the commitment period (8 years). Portugal reported its forest management cap in its report to facilitate the calculation of the assigned amount (submitted on 27 December 2016) as 16 954.564 t CO <sub>2</sub> eq (chapter 9). No values for the forest management cap were included in the CRF table “accounting”	Accuracy
		Based on the revised emissions estimates submitted by Portugal in response to the list of potential problem (see FCCC/ARR/2016/PRT), the ERT calculated the forest management cap (excluding the value of deforestation in the base year) as 2 126.297 kt CO <sub>2</sub> eq, which, multiplied by 8, totals 17 010.374 kt CO <sub>2</sub> eq	
7.	National registry	In the national inventory report, the Party reported that it will establish a previous period surplus reserve account in its national registry. The ERT noted that Portugal’s standard independent assessment report for 2016 indicates that once version EUCR v6.7.3 of the Consolidated Registry software is deployed, the previous period surplus reserve account will be established	Not a problem
8.	Adjustments	The ERT has not identified the need to apply any adjustments to the estimate for the assigned amount for the second commitment period, as reported by Portugal in its report to facilitate the calculation of the assigned amount	Not a problem

*Abbreviations:* CRF = common reporting format, 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 for 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 its instrument of ratification of the Doha Amendment and information on the joint implementation of such an amendment.

#### IV. Questions of implementation

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

## Annex I

### Key relevant data for Portugal

6. Table 4 provides key data and parameters for, and elections by, Portugal, 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 Portugal

<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
Portugal's QELRC in the second commitment period	Portugal 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>	2000
Base-year emissions, as reported by the Party	60 552 013 t CO <sub>2</sub> eq
Base-year emissions, final, as calculated by the ERT and agreed by the Party	65 028 094 t CO <sub>2</sub> eq (including indirect CO <sub>2</sub> and GHG emissions from conversion of forests (deforestation)). See also ID#3 in table 3
<i>Information related to the calculation of the assigned amount and the commitment period reserve</i>	
Assigned amount, as reported by the Party and agreed by the ERT	429 581 969 t CO <sub>2</sub> eq, including GHG emissions from conversion of forests (deforestation). See also ID#2 in table 3
Approach used to calculate the average annual emissions for the first three years of the first commitment period	This 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 emissions for the first three years of the first commitment period, multiplied by 8, as reported by	This 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

<i>Key information or parameter provided</i>	<i>Comment</i>
the Party and agreed by the ERT	Kyoto Protocol
Commitment period reserve, as reported by the Party and agreed by the ERT	386 623 773 t CO <sub>2</sub> eq (see also ID#4 in table 3)
<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: 1.0 ha Minimum tree height: 5.0 m
Elections under Article 3, paragraphs 3 and 4, of the Kyoto Protocol:	
Afforestation/reforestation	Commitment period accounting
(a) Deforestation	Commitment period accounting
(b) Forest management	Commitment period accounting
(c) Cropland management	Elected. Commitment period accounting
(d) Grazing land management	Elected. Commitment period accounting
(e) Revegetation	Not elected
(f) Wetland drainage and rewetting	Not elected
FMRL	-6.830 Mt CO <sub>2</sub> eq/year
Technical corrections to the FMRL as reported in the original submission and agreed by the ERT	3.434 Mt CO <sub>2</sub> eq/year
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	2 126.297 kt CO <sub>2</sub> eq (see ID#6 in table 3)
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO <sub>2</sub> emissions, multiplied by 8, as reported by the Party	16 954.564 kt CO <sub>2</sub> eq (see ID#6 in table 3)
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO <sub>2</sub> emissions, multiplied by 8, final value as calculated by the ERT	17 010.374 kt CO <sub>2</sub> eq (see ID#6 in table 3)
Will the Party exclude emissions from natural disturbances in accounting for:	

<i>Key information or parameter provided</i>	<i>Comment</i>
(a) Afforestation and reforestation	Yes
(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.

7. Tables 5–7 provide an overview of total greenhouse gas emissions and removals as submitted by Portugal. 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 Portugal, base year<sup>a</sup>–2014<sup>b</sup>**  
 (kt CO<sub>2</sub> eq)

<i>Year</i>	<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 as contained in 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	62 345.68	60 597.52	62 499.49	60 751.33	4 276.76
1990	62 296.33	60 548.17	62 450.14	60 701.98	
1995	66 673.39	71 230.74	66 839.70	71 397.05	
2000	77 955.17	83 959.49	78 126.74	84 131.07	
2010	59 512.68	70 917.31	59 644.26	71 048.89	
2011	57 870.71	69 395.03	57 991.11	69 515.43	
2012	58 233.59	67 324.57	58 356.17	67 447.14	
2013	57 051.92	65 536.91	57 184.71	65 669.70	
2014	55 117.80	65 416.29	55 245.61	65 544.10	

*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, 1995 for HFCs, PFCs and SF<sub>6</sub> and 2000 for 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 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 Portugal, excluding land use, land-use change and forestry, 1990–2014<sup>a</sup>**(kt CO<sub>2</sub>eq)

<i>Year</i>	<i>CO<sub>2</sub><sup>b</sup></i>	<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	46 112.85	10 599.48	3 989.65	NO, NA	NO, NA	NO, NA	NO, NA	NO
1995	55 329.27	11 863.02	4 155.41	35.42	NO	NO	13.93	NO
2000	66 783.14	12 639.44	4 409.53	281.22	1.13	NO	16.61	NO
2010	53 430.39	12 108.02	3 557.75	1 910.10	7.93	NO	34.69	NO
2011	51 984.80	12 123.97	3 289.28	2 078.09	9.05	NO	30.24	NO
2012	50 100.22	11 798.73	3 288.15	2 216.48	10.18	NO	33.38	NO
2013	48 340.13	11 560.47	3 340.19	2 382.56	11.36	NO	35.00	NO
2014	48 182.27	11 374.16	3 409.62	2 534.82	12.59	NO	30.65	NO
<b>Per cent change 1990–2014</b>	<b>4.5</b>	<b>7.3</b>	<b>-14.5</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</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> CO<sub>2</sub> emissions include indirect CO<sub>2</sub> emissions reported in common reporting format table 6.

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

<i>Year</i>	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
1990	41 610.52	6 254.57	6 806.45	1 748.15	6 030.44	NO
1995	50 728.97	6 542.99	6 954.30	–4 557.35	7 170.78	NO
2000	61 106.19	7 960.82	7 419.53	–6 004.32	7 644.54	NO
2010	49 197.32	7 833.32	6 442.76	–11 404.62	7 575.48	NO
2011	48 324.68	6 999.55	6 389.37	–11 524.32	7 801.84	NO
2012	46 807.05	6 717.08	6 429.93	–9 090.98	7 493.09	NO
2013	44 716.71	7 172.41	6 452.19	–8 484.99	7 328.39	NO
2014	44 295.38	7 558.55	6 616.76	–10 298.49	7 073.40	NO
<b>Per cent change</b>						
<b>1990–2014</b>	<b>6.5</b>	<b>20.8</b>	<b>–2.8</b>	<b>–689.1</b>	<b>17.3</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> Totals do include indirect CO<sub>2</sub> emissions reported 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#page=15>.

“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#page=56>.

“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>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf#page=6>.

“Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, Part I: Implications related to accounting and reporting and other related issues”. Decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=5>.

“Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, Part II: Implications related to review and adjustments and other related issues”. Decision 4/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=30>.

Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

Intergovernmental Panel on Climate Change. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. Available at <http://www.ipcc-nggip.iges.or.jp/public/kpsg>.

Intergovernmental Panel on Climate Change. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. Available at <http://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html>.

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

Responses to questions during the review were received from Ms. Teresa Costa Pereira (Climate Change department, Portuguese Environmental Agency), including additional material on the methodology and assumptions used.



## 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
CRF	common reporting format
ERT	expert review team
FMRL	forest management reference level
GHG	greenhouse gas
ha	hectare
HFC	hydrofluorocarbon
IPPU	industrial processes and product use
kt	kilotonne
LULUCF	land use, land-use change and forestry
m	metre
Mt	megatonne
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
t	tonne
UNFCCC	United Nations Framework Convention on Climate Change

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