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## Report of the technical review of the second biennial report of Portugal

According to decision 2/CP.17, developed country Parties are requested to submit their second biennial reports by 1 January 2016, that is, two years after the due date for submission of a full national communication. This report presents the results of the technical review of the second biennial report of Portugal, conducted by an expert review team in accordance with the “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”.

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## **I. Introduction and summary**

### **A. Introduction**

1. This report covers the centralized technical review of the second biennial report (BR2)<sup>1</sup> of Portugal. The review was organized by the secretariat in accordance with the “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”, particularly “Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” (annex to decision 13/CP.20). In accordance with the same decision, a draft version of this report was communicated to the Government of Portugal, which provided comments that were considered and incorporated into this final version of the report.

2. The review took place from 30 May to 4 June 2016 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Maryna Bereznytska (Ukraine), Mr. Nagmeldin Elhassan (Sudan), Ms. Violeta Hristova (Bulgaria), Ms. Aiyngul Kerimray (Kazakhstan), Mr. Mahendra Kumar (Fiji), Ms. Sara Moarif (France), Ms. Lilia Taranu (Republic of Moldova), Mr. Antonin Vergez (France), Mr. Vute Wangwacharakul (Thailand) and Ms. Songli Zhu (China). Ms. Bereznytska and Mr. Kumar were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene, Mr. Javier Hanna and Mr. Pedro Torres (UNFCCC secretariat).

### **B. Summary**

3. The expert review team (ERT) conducted a technical review of the information reported in the BR2 of Portugal in accordance with the “UNFCCC biennial reporting guidelines for developed country Parties” (hereinafter referred to as the UNFCCC reporting guidelines on BRs). During the review, Portugal provided the following additional relevant information: revised common tabular format (CTF) tables 1(a), 3 and 5; emission trends of the effort-sharing decision (ESD) and European Union Emissions Trading System (EU ETS) sectors for the period 2005–2013; definitions of the ‘with measures’ (WEM) and ‘with additional measures’ (WAM) scenarios; and qualitative sensitivity analyses for key underlying assumptions and variables.

#### **1. Timeliness**

4. The BR2 was submitted on 30 December 2015, before the deadline of 1 January 2016 mandated by decision 2/CP.17. The CTF tables were also submitted on 30 December 2015.

#### **2. Completeness, transparency of reporting and adherence to the reporting guidelines**

5. Issues and gaps related to the reported information identified by the ERT are presented in table 1 below. The information reported by Portugal in its BR2 is mostly in adherence with the UNFCCC reporting guidelines on BRs as per decision 2/CP.17.

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<sup>1</sup> The biennial report submission comprises the text of the report and the common tabular format (CTF) tables. Both the text and the CTF tables are subject to the technical review.

Table 1  
**Summary of completeness and transparency issues related to mandatory reported information in the second biennial report of Portugal**

<i>Chapter of the biennial report</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Paragraph(s) with recommendations</i>
Greenhouse gas emissions and trends	Complete	Mostly transparent	8
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	19
Progress in achievement of targets	Mostly complete	Partially transparent	33, 37, 58 and 63–65
Provision of support to developing country Parties	Complete	Partially transparent	89–92 and 98

*Note:* A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

## II. Technical review of the reported information

### A. All greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

6. Portugal has provided a summary of information on greenhouse gas (GHG) emission trends for the period 1990–2013 in its BR2 and CTF tables 1(a)–(d). The BR2 makes reference to the national inventory arrangements, which are explained in more detail in the national inventory report included in Portugal’s 2015 annual inventory submission (in chapter 1.2). The national inventory arrangements were established in accordance with the reporting requirements related to national inventory arrangements contained in the “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” that are required by paragraph 3 of the UNFCCC reporting guidelines on BRs.

7. Further, Portugal provided information on changes in the national inventory arrangements since its first biennial report (BR1). The changes include an increase in the number of members that are part of the National Inventory System of Emissions by Sources and Removals by Sinks of Air Pollutants (SNIERPA) and a reassignment of experts acting as national focal points.

8. The ERT noted that information in CTF table 1(a) is not transparently reported. Although Portugal has reported carbon dioxide (CO<sub>2</sub>) emissions per category in table 1(a), the total emissions per year were provided as global warming potential (GWP) values expressed in kilotonnes of carbon dioxide equivalent (kt CO<sub>2</sub> eq) instead of CO<sub>2</sub> emissions expressed in kt CO<sub>2</sub> as required by CTF table 1(a). During the review, Portugal clarified that this was caused by a software problem and provided a revised CTF table 1(a) with total CO<sub>2</sub> emissions expressed in kt CO<sub>2</sub>. The ERT recommends that Portugal include the total CO<sub>2</sub> emissions expressed in kt CO<sub>2</sub> in CTF table 1(a) in its next biennial report (BR) in order to improve transparency.

9. The information reported in the BR2 on emission trends is consistent with that reported in the 2015 annual inventory submission of Portugal, but is not consistent with that reported in the 2016 annual inventory submission owing to recalculations made for the latest submission. During the review, Portugal provided additional information on the recalculations made for its 2016 national inventory submission. The main recalculations

occurred for the industrial processes, agriculture and waste sectors and resulted in a decrease of 0.5 per cent in the estimated total GHG emissions<sup>2</sup> without land use, land-use change and forestry (LULUCF) in 2013. To reflect the most recently available data, Portugal's 2016 annual inventory submission of 27 May 2016 has been used as the basis for discussion in chapter II.A of this review report.

10. Total GHG emissions excluding emissions and removals from LULUCF increased by 6.5 per cent between 1990 and 2014, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 13.1 per cent over the same period. The increase in the total GHG emissions can be attributed mainly to CO<sub>2</sub> emissions, which increased by 4.5 per cent (excluding LULUCF) between 1990 and 2014. Over the same period, emissions of methane (CH<sub>4</sub>) increased by 5.7 per cent, while emissions of nitrous oxide (N<sub>2</sub>O) decreased by 14.5 per cent. The combined fluorinated gases (F-gases), such as perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF<sub>6</sub>), increased by 3,889.7 per cent from 45.27 kt CO<sub>2</sub> eq in 1995 to 1,806.07 kt CO<sub>2</sub> eq in 2014. Emissions of nitrogen trifluoride were reported as "NO" (not occurring).

11. During the review, Portugal provided additional information concerning the trend in N<sub>2</sub>O emissions, which is different to the CO<sub>2</sub>, CH<sub>4</sub> and F-gas trends. Portugal explained during the review that the main driver for the decrease of N<sub>2</sub>O emissions in the period 1990–2014 was the reduction in livestock and cultivated soils, even though in recent years emissions from agricultural soils have been growing due to the increasing use of fertilizers.

12. Portugal has two notably different phases in its GHG emission trend: 1990–2005 and 2006–2014. The total GHG emissions excluding LULUCF increased from 60,487.08 kt CO<sub>2</sub> eq in 1990 to a peak of 88,162.02 kt CO<sub>2</sub> eq in 2005 and then decreased to 64,394.72 kt CO<sub>2</sub> eq in 2014. The first phase reflects the evolution of the Portuguese economy, characterized by strong growth in energy demand and mobility in the 1990s and an associated increase in GHG emissions (around 3 per cent per year) driven by CO<sub>2</sub> emissions from the energy sector. In contrast, the second phase shows a decrease in GHG emissions, with a sharp decline in CO<sub>2</sub> emissions from energy industries following the economic slowdown in the second half of the 2000s.

13. The ERT noted that, during the period 1990–2014, Portugal's gross domestic product (GDP) per capita and GHG emissions per capita increased by 29.1 per cent and 2.2 per cent, respectively, while GHG emissions per GDP unit decreased by 20.8 per cent. Over the period 2006–2014, the indicators of GHG emissions per capita and GHG emissions per GDP unit followed a downward trend, while GDP per capita remained stable, which, to a certain extent, indicates a shift towards the decoupling of emission growth and economic activity.

14. The downward emission trend since 2005 is in part related to the implementation of important measures, such as the introduction of natural gas, the installation of cogeneration power plants and combined-cycle power plants using natural gas, improvements in industrial processes and, in later years, the increase in electricity production using renewable energy sources (RES), with a particular expansion in the use of wind energy. The emission trend in the latest years (2008–2014) reflects the impact of the financial crisis and economic recession in Portugal.

15. Table 2 below illustrates the emission trends by sector and some of the economic indicators relevant to GHG emissions for Portugal.

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<sup>2</sup> In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of carbon dioxide equivalent excluding land use, land-use change and forestry, unless otherwise specified. Values herein are calculated based on the 2016 inventory submission.

Table 2  
Greenhouse gas emissions by sector and some indicators relevant to greenhouse gas emissions for Portugal for the period 1990–2014

Sector	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2013	2014	1990–2014	2013–2014	1990	2014
	1. Energy	41 318.63	60 684.57	48 838.62	44 400.64	43 978.69	6.4	–1.0	68.3
A1. Energy industries	16 343.77	21 625.30	14 514.80	15 218.51	14 495.74	–11.3	–4.7	27.0	22.5
A2. Manufacturing industries and construction	9 772.09	12 687.39	9 199.61	7 436.42	7 698.38	–21.2	3.5	16.2	12.0
A3. Transport	10 019.80	18 968.87	18 504.77	15 464.95	15 711.54	56.8	1.6	16.6	24.4
A4.–A5. Other	4 823.48	6 555.36	5 383.52	4 539.49	4 499.59	–6.7	–0.9	8.0	7.0
B. Fugitive emissions from fuels	359.50	847.66	1 235.92	1 741.27	1 573.45	337.7	–9.6	0.6	2.4
C. CO <sub>2</sub> transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	5 609.11	7 371.21	6 798.76	5 991.58	6 135.90	9.4	2.4	9.3	9.5
3. Agriculture	7 528.00	8 095.66	7 015.21	7 026.22	7 201.96	–4.3	2.5	12.4	11.2
4. LULUCF	1 748.15	–6 004.32	–11 404.62	–8 484.99	–10 298.49	–689.1	21.4	6.06	8.14
5. Waste	6 031.34	7 646.99	7 579.47	7 332.56	7 078.16	17.4	–3.5	10.0	11.0
6. Other	NO	NO	NO	NO	NO	NA	NA	6.06	8.14
Indirect CO <sub>2</sub>	157.41	176.03	131.58	132.79	127.81	–18.8	–3.8	NA	NA
<b>Total GHG emissions without LULUCF</b>	<b>60 487.08</b>	<b>83 798.44</b>	<b>70 232.06</b>	<b>64 751.01</b>	<b>64 394.72</b>	<b>6.5</b>	<b>–0.6</b>	<b>100.0</b>	<b>100.0</b>
<b>Total GHG emissions with LULUCF</b>	<b>62 235.23</b>	<b>77 794.12</b>	<b>58 827.43</b>	<b>56 266.02</b>	<b>54 096.23</b>	<b>–13.1</b>	<b>–3.9</b>	<b>NA</b>	<b>NA</b>
<b>Total GHG emissions without LULUCF, including indirect CO<sub>2</sub></b>	<b>60 644.49</b>	<b>83 974.48</b>	<b>70 363.64</b>	<b>64 883.80</b>	<b>64 522.53</b>	<b>6.4</b>	<b>–0.6</b>	<b>NA</b>	<b>NA</b>
<b>Total GHG emissions with LULUCF, including indirect CO<sub>2</sub></b>	<b>62 392.64</b>	<b>77 970.15</b>	<b>58 959.01</b>	<b>56 398.81</b>	<b>54 224.03</b>	<b>–13.1</b>	<b>–3.9</b>	<b>NA</b>	<b>NA</b>
<i>Indicators</i>									
GDP per capita (thousands 2011 USD using PPP)	20.28	26.15	27.39	25.80	26.17	29.1	1.5	NA	NA
GHG emissions without LULUCF per capita (t CO <sub>2</sub> eq)	6.06	8.14	6.64	6.19	6.19	2.2	0.0	NA	NA
GHG emissions without LULUCF per GDP unit (kg CO <sub>2</sub> eq per 2011 USD using PPP)	0.30	0.31	0.24	0.24	0.24	–20.8	–1.4	NA	NA

Sources: (1) GHG emission data: Portugal's 2016 annual inventory submission, version of 27 May 2016; (2) GDP per capita data: World Bank.

*Note:* The ratios per capita and per GDP unit as well as the changes in emissions and the shares by sector are calculated relative to total GHG emissions without LULUCF using the exact (not rounded) values and may therefore differ from the ratio calculated with the rounded numbers provided in the table.

*Abbreviations:* GDP = gross domestic product, GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring, PPP = purchasing power parity.

## **B. Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target**

16. In its BR2 and CTF tables 2(a)–(f), Portugal reported a description of its target, including associated conditions and assumptions. CTF tables 2(a)–(f) contain the required information in relation to the description of the Party's emission reduction target, such as the base year, gases and sectors covered, GWPs used, approach to counting emissions and removals from the LULUCF sector, and the use of market-based mechanisms. Further information on the target and the assumptions, conditions and methodologies related to the target is provided in chapter V of the BR2.

17. The ERT noted that the information reported by Portugal in relation to the base year for F-gases is not transparent. In its BR2, Portugal stated that the emission reduction target for the European Union (EU) and its member States is 20 per cent below the 1990 level by 2020 for all covered gases and all member States (see para. 20 below). However, emissions of F-gases were not estimated for the period 1990–1994.

18. During the review, Portugal provided additional information indicating that, because there are no estimated figures for F-gases in Portugal for the period 1990–1994, these emissions were considered to be zero in 1990 for the purpose of the EU emission reduction target under the Convention.

19. To improve transparency with regard to Portugal's target, the ERT recommends that Portugal present in its BR estimated F-gas emissions for the 1990–1994 period.

20. For Portugal, the Convention entered into force on 21 March 1994. Under the Convention, Portugal committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The EU offered to move to a 30 per cent reduction on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

21. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. This legislative package regulates emissions of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub> using GWP values from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) to aggregate the GHG emissions of the EU up to 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

22. The EU 2020 climate and energy package includes the EU ETS and the ESD (see chapter II.C.1 below). Further information on this package is provided in chapter V of the BR2. The EU ETS covers mainly point emissions sources in the energy and industry sectors, as well as emissions from aviation. For the period 2013–2020, an EU-wide cap has been put in place with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from sectors covered by the ESD (non-ETS sectors) are regulated by

targets specific to each member State, which leads to an aggregate reduction at the EU level of 10 per cent below the 2005 level by 2020.

23. Under the ESD, Portugal has a target to limit its emission growth to 1 per cent above the 2005 level by 2020 in sectors covered by the ESD. National emission targets for 2020 for sectors covered by the ESD have been translated into binding quantified annual emission allocations (AEAs) for the period 2013–2020. Portugal’s AEAs change following a linear path from 49,310.77 kt CO<sub>2</sub> eq in 2013 to 51,241.90 kt CO<sub>2</sub> eq in 2020.<sup>3</sup>

24. In chapter VI of its BR2, Portugal reported on its national emission target. Portugal adopted a national target to reduce its total emissions by 18–23 per cent and 30–40 per cent below the 2005 level by 2020 and 2030, respectively. This represents an increase of approximately 12–18 per cent above the 1990 level by 2020.

25. During the review, Portugal clarified that currently the domestic target does not include the contribution of LULUCF. LULUCF is expected to continue to be a net sink for Portugal and the National Programme for Climate Change 2020/2030 (PNAC) foresees that future adjustments to the target may be considered to account for its contribution. The ERT commends Portugal for including a description of its national targets in the BR2.

26. Within the framework of the EU 2020 climate and energy package, Portugal has a target for RES of 31 per cent of final energy consumption by 2020, including 10 per cent consumption of RES in the transport sector. In addition, Portugal has a target for RES of 40 per cent of final energy consumption by 2030.

27. Portugal adopted an overall national target of a 25 per cent increase in energy efficiency, thus going beyond the 20 per cent target in the context of the EU 2020 climate and energy package, which includes a specific target of a 30 per cent increase in energy efficiency in the public administration sector by 2020. Portugal also has an energy saving target of 30 per cent below the baseline level by 2030. However, it is not clear from the BR2 which base year or scenario the increases in energy efficiency are referring to. The ERT considers that Portugal providing this information in its next BR would increase the clarity of this national target.

### **C. Progress made towards the achievement of the quantified economy-wide emission reduction target**

28. This chapter provides information on the review of the reporting by Portugal on the progress made in reducing emissions in relation to the target, mitigation actions taken to achieve its target, and the use of units from market-based mechanisms and LULUCF.

#### **1. Mitigation actions and their effects**

29. In its BR2 and CTF table 3, Portugal reported on its progress in the achievement of its target and the mitigation actions implemented and planned since its sixth national communication (NC6) and BR1. The BR2 includes a description of the framework for mitigation actions (chapter VI), and in CTF table 3 the information on mitigation actions is organized by sector and by gas.

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<sup>3</sup> European Commission decision 2013/162/EU of 26 March 2013 “on determining member States’ annual emission allocations for the period from 2013 to 2020 pursuant to Decision No. 406/2009/EC of the European Parliament and of the Council” and European Commission implementing decision 2013/634/EU of 31 October 2013 “on the adjustments to member States’ annual emission allocations for the period from 2013 to 2020 pursuant to Decision No. 406/2009/EC of the European Parliament and of the Council”.

30. In its BR2, Portugal provided information on its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. The BR2 further highlights the changes made since the submission of the Party's NC6 and BR1. The ERT commends Portugal for following the recommendation contained in the report of the technical review of the BR1 and providing more factual information on the administrative structure and institutional arrangements in place.

31. Portugal described systems for reporting on emissions and mitigation actions under the EU Monitoring Mechanism Regulation, as well as changes in domestic institutional arrangements for the monitoring of and reporting on GHG emissions and the accreditation of verifiers under the EU ETS. At the national level, Portugal described the institutional arrangements put in place to implement PNAC, which has been updated since the BR1.

32. Overseen by the Inter-ministerial Commission on Climate Change and Air Policy, Portugal's Strategic Framework for Climate Policy (QEPiC) covers policy instruments for Portugal's national response to all climate-related commitments, as well as national targets under its Green Growth Commitment. QEPiC also establishes a National System for Policies and Measures (SPeM) for the reporting, monitoring and implementation of climate actions and integrates the national system for the GHG inventory (i.e. SNIERPA).

33. The ERT noted that the information reported by Portugal on the current status of its new institutional arrangements was not fully transparent. For example, Portugal provided few details about SPeM in its BR2 and in some places it referred to SPeM as to be established in the future. During the review, Portugal explained that, while QEPiC has been operational since 2015, the previous "Cumprir Quioto" monitoring mechanism is no longer in place and SPeM is to be adopted by the Government in the near future. The monitoring of policies and measures (PaMs) at the time of the BR2 preparation was undertaken biennially, in the context of EU Monitoring Mechanism requirements, using a template to collect information on PaMs from sectoral focal points. To increase transparency, the ERT recommends that Portugal provide information on the domestic institutional arrangements that are in place at the time of the preparation of the next BR, including specific information on how these have changed since the previous BR.

34. In its BR2 and CTF table 3, Portugal provided information on mitigation actions introduced to achieve its 2020 target, which address all relevant sectors and GHGs. As described in chapter II.B above (see paras. 22 and 23 above), Portugal's GHG target is divided into GHG emissions covered by the EU ETS (approximately 38 per cent of the total GHG emissions in 2013) and GHG emissions covered by the ESD (approximately 62 per cent of the total GHG emissions in 2013). The ERT commends Portugal for responding to the recommendation made in the report of the technical review of the BR1 and including information on PaMs covering F-gases in CTF table 3.

35. However, CTF table 3 did not include complete information, as required by the UNFCCC reporting guidelines on BRs, on the implementing entity or entities for certain mitigation actions and the estimated mitigation impact for the majority of the actions. Of the 29 measures listed in CTF table 3, information on implementing entities was missing for 5 of them. The ERT noted that information reported by Portugal on the following elements in CTF table 3 was not transparent: the implementation status of two mitigation actions was indicated as planned, although their implementation date was in the past; and all mitigation actions listed in CTF table 3 were indicated as being in the WEM scenario, although in its BR2 Portugal indicated that measures included in the Green Fiscal Reform programme were not included in the projections.

36. During the review, Portugal provided additional information on implementing entities and clarified the status of the two mitigation actions for which implementation had been delayed. Portugal also provided additional updated estimates of impact for six mitigation actions listed in CTF table 3. Portugal stated that emission reduction estimates were currently not available for all measures or groups of measures owing to a change in the arrangements for monitoring and reporting on PaMs during the period between the submissions of the BR1 and the BR2. Portugal also clarified that Green Fiscal Reform measures enacted in 2015 were indeed not included in the WEM projections.

37. To improve transparency, the ERT recommends that Portugal include, to the appropriate extent, in its next submission of CTF table 3: information on the implementing entities; estimated impacts of its mitigation actions or explanations as to why it was not in a position to provide such estimates; and clearer notations regarding the status of mitigation actions between 'planned', 'adopted' and 'implemented'. The ERT encourages Portugal to clearly identify in CTF table 3 which mitigation actions are included in its reported projections and which are not.

38. The ERT considers that the transparency of Portugal's next BR would be improved if a textual explanation of the mitigation actions expected to contribute most to the achievement of Portugal's 2020 emission target, along with recent and expected progress with implementing related objectives, such as renewable energy and energy saving targets, were included. Where the implementation status of certain policies cannot be clearly demonstrated within CTF table 3, Portugal could provide an explanation for this (e.g. regarding delays in implementation).

39. The ERT noted that the PaMs listed in CTF table 3 differed significantly between the BR1 and the BR2, making comparisons difficult. During the review, Portugal explained that the reporting on PaMs was revised between the BR1 and the BR2. The ERT noted that, in its next BR, where necessary, Portugal could explain changes made in the way that mitigation actions are reported in CTF table 3 since the previous BR.

40. The cross-cutting measures reported in CTF table 3 that affect several sectors (e.g. the Energy Efficiency Action Plan and the Green Fiscal Reform) also encompass several other mitigation measures listed in CTF table 3. To improve the transparency of the information in its next BR, Portugal could list cross-cutting measures at the beginning of the table, clarifying their nature and indicating which other mitigation actions are included within their scope, including the estimated mitigation impact of the actions as applicable.

41. Given that Portugal's emission target is divided between the EU ETS and the ESD, as described in chapter II.B above (see paras. 22 and 23 above), the ERT noted that Portugal could indicate whether a mitigation action listed in CTF table 3 has an impact on emissions within the EU ETS sector, the ESD sector or both; this would facilitate understanding of how Portugal's PaMs relate to its emission reduction target.

42. Portugal provided information on the assessment of the economic and social consequences of its response measures. In its BR2, Portugal indicated that its implementation of a broad set of mitigation actions, covering all sectors of the economy, included efforts to minimize the adverse effects of such policies. It pointed to its greater use of natural gas as having a positive impact on the economies of certain fossil fuel exporters. Portugal also specified that SPeM (to be established) would address information on the economic and social consequences of climate policy measures to the extent possible.

43. Portugal reported on the domestic arrangements established for the process of self-assessment of compliance with emission reductions required by science and on the progress made in the establishment of national rules for taking action against non-compliance with emission reduction targets. Portugal provided a description of processes for compliance

with its AEAs under the ESD and the monitoring and verification of GHG emissions under the EU ETS.

44. The key overarching cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. This package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO<sub>2</sub> emissions from cars and vans, the carbon capture and storage directive and the general programmes for environmental conservation, namely the 7<sup>th</sup> Environment Action Programme and the Clean Air Policy Package (see table 3 below).

45. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities), which produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N<sub>2</sub>O emissions from chemical industries, PFC emissions from aluminium production and CO<sub>2</sub> emissions from industrial processes (since 2013).

46. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture, waste and other sectors, together accounting for 55–60 per cent of the GHG emissions of the EU. The ESD aims to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and includes binding annual targets for each member State for 2013–2020, which are underpinned by the national policies and actions of the member States (see paras. 23–27 above).

47. At the national level, Portugal has introduced policies to achieve its targets under the ESD and to support emission reductions in EU ETS sectors through QEPiC. It is implementing measures under the Renewable Energy Action Plan to meet its target of achieving a 31 per cent share of RES in final energy consumption by 2020, and under the Energy Efficiency Action Plan to achieve a 25 per cent reduction in energy consumption against the projected level for 2020, with a specific 30 per cent target for the public administration sector. The majority of the mitigation actions listed in CTF table 3 are linked to the implementation of EU directives and comprise regulatory measures that have been implemented. Several other measures provide economic incentives to encourage the deployment of efficient and low-carbon products and practices as part of Portugal's vision of a new paradigm for green growth.

48. In chapter IV of the BR2 and in its NC6, Portugal indicated that certain actions have had a significant impact on reducing GHG emission levels over the past 10 years: fuel switching towards natural gas; expanded use of RES in electricity production and transportation; improved energy efficiency and technology in industry; improved vehicle efficiency; and the installation of heat and power cogeneration units. In addition, the economic crisis has affected economic activity and associated GHG emissions (particularly during 2009–2012). Given these drivers, along with Portugal's GHG emission profile and projections, the key policies reported in the BR2 for Portugal to meet its 2020 target are: the improvement of energy efficiency in the buildings, industry, transport and public administration sectors; the deployment of renewable energy; the EU ETS; and the changes in price signals through the Green Fiscal Reform to encourage efficiency, technological change and fuel switching.

49. The mitigation effects of most measures listed in CTF table 3 were not reported; however, Portugal provided additional and updated estimates during the review (see paras. 35 and 36 above), which are listed in table 3 below. The mitigation actions with the greatest

impact are “Energy efficiency in commercial and residential buildings” and “Energy efficiency in the public administration sector”, as estimated under the Energy Efficiency Action Plan (Resolution No. 20/2013 of the Council of Ministers). “Reducing GHG emissions in the waste sector”, implemented under PNAC, is also expected to deliver significant emission reductions through various policy instruments addressing GHG emissions from waste and wastewater.

50. The BR2 highlights domestic mitigation actions adopted since the BR1, such as the Green Fiscal Reform, which includes a number of measures, including a carbon tax for non-ETS sectors that is linked to the average price of EU ETS allowances, and various tax incentives for efficient and low-carbon transport and the use of renewable energy in buildings.

51. Table 3 below provides a concise summary of the key mitigation actions and estimates of their mitigation effects reported by Portugal to achieve its target.

Table 3  
**Summary of information on mitigation actions and their impacts reported by Portugal**

<i>Sector affected</i>	<i>List of key mitigation actions</i>	<i>Estimate of mitigation impact by 2020 (kt CO<sub>2</sub> eq)</i>
<i>Policy framework and cross-sectoral measures</i>	Green Fiscal Reform	NE
	Implementation of the European Union Emissions Trading System	NE
<i>Energy:</i>		
Transport	Energy efficiency in the transport sector	422.44
Renewable energy	Electricity generation from renewable energy	NE
Energy efficiency	Energy efficiency in commercial and residential buildings	2 543.74
	Energy efficiency in the public administration sector	1 108.72
IPPU	Energy efficiency in industry	890.77
Agriculture	Reducing energy intensity of the agriculture sector	123.54
LULUCF	Promoting carbon sequestration in forest land	NE
Waste	Reducing GHG emissions in the waste sector	918.44

*Note:* The estimates of mitigation impact are estimates of emissions of carbon dioxide or carbon dioxide equivalent avoided in a given year as a result of the implementation of mitigation actions.

*Abbreviations:* GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NE = not estimated.

52. Significant emission reductions are expected from the implementation of energy efficiency measures. The majority of mitigation actions are being implemented, and most are linked to the implementation of EU directives, subject to oversight by European institutions. Other mitigation actions, such as the Green Fiscal Reform, are also linked to broader strategic policy objectives such as Portugal's Green Growth Commitment and the QEPiC vision to develop a competitive, resilient and low-carbon economy. It is therefore likely that Portugal will achieve complete implementation of its mitigation actions by 2020.

53. As described in chapter II.C.2 below, Portugal's ESD emissions in 2013 were 18 per cent below its 2013 AEA. In addition, primary energy consumption in 2013 was already below Portugal's 2020 target under the EU Energy Efficiency Directive, and Portugal's share of RES in final energy consumption reached 82 per cent of its 2020 target in 2013.<sup>4</sup>

54. While the economic crisis led to reduced energy consumption and corresponding lower GHG emissions, continued implementation of mitigation actions is needed, particularly for Portugal to meet its 2030 domestic targets for GHG emissions (reductions of 30–40 per cent below the 2005 level), its targeted share of renewable energy (40 per cent of the total energy consumption in 2030) and its energy saving target (30 per cent reduction below the baseline level by 2030).

## 2. Estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry

55. Portugal reported in its BR2 and CTF tables 4 and 4(a) on its use of units from market-based mechanisms under the Convention and other mechanisms and the contribution of LULUCF to achieving its target. This information was provided for the base year and each reported year from 2010 to 2013. Further relevant information on emissions and removals and the use of units from market-based mechanisms is provided in chapter VI.B of the BR2.

56. For 2013, Portugal reported in CTF table 4 annual total GHG emissions excluding LULUCF of 65,071.46 kt CO<sub>2</sub> eq, or 7.7 per cent above the 1990 level. On the contribution of the LULUCF sector to achieving the target, Portugal reported in a footnote to CTF table 4 that it is not applicable because the LULUCF sector is not included in the EU 2020 target under the Convention.

57. In CTF table 4(b), Portugal did not provide any information on the use of units from market-based mechanisms for making progress towards its target. Portugal explained in its BR2 that the use of market-based mechanisms is possible under the EU ETS and the ESD. Under the EU ETS, the use of credits was decided by the operators to be at an overall limit<sup>5</sup> of 50 per cent of the EU reduction below the EU ETS 2005 emission level. Under the ESD, the annual use of credits is limited to 3 per cent of the 2005 ESD emission level. In its BR2, Portugal explained that, although market-based mechanisms could be used under the ESD, their use could not be quantified at the time of the preparation of the BR2 as the EU compliance assessment for the first year (2013) will be determined in 2016.

58. To improve transparency, the ERT recommends that Portugal provide information on the use of units from market-based mechanisms in CTF table 4(b), for example by including a footnote with an explanation when the number of units cannot be reported.

<sup>4</sup> European Environment Agency (EEA). 2015. *Trends and Projections in Europe 2015 — Tracking Progress Towards Europe's Climate and Energy Targets*. EEA Report No. 4/2015. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

<sup>5</sup> Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 (amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community).

59. Table 4 below illustrates Portugal's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 4

**Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry as part of the reporting on the progress made by Portugal towards the achievement of its target**

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Contribution from LULUCF (kt CO<sub>2</sub> eq)<sup>a</sup></i>	<i>Emissions including contribution from LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Use of units from market-based mechanisms (kt CO<sub>2</sub> eq)</i>
1990	60 425.62	NA	NA	NA
2010	70 338.99	NA	NA	0
2011	68 944.15	NA	NA	0
2012	66 955.92	NA	NA	0
2013	65 071.46	NA	NA	0

*Sources:* Portugal's second biennial report and common tabular format tables 1, 4, 4(a)I and 4(b).

*Abbreviations:* LULUCF = land use, land-use change and forestry, NA = not applicable.

<sup>a</sup> The European Union's unconditional commitment to reduce greenhouse gas emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF.

60. To assess the progress towards the achievement of the 2020 target, the ERT noted that Portugal's emission reduction target under the ESD is to limit its emission growth to 1 per cent above the 2005 level (see para. 23 above). In 2013, emissions from ESD sectors totalled 40,429.46 kt CO<sub>2</sub> eq, 18 per cent lower than its AEA. The ERT considers that Portugal is making progress towards its emission reduction target by implementing mitigation actions that are delivering significant emission reductions.

61. The ERT also considers that the transparency of the BR could be further improved if Portugal provided information on emission estimates and trends under the ESD in future submissions.

### 3. Projections

62. Portugal reported in its BR2 and CTF table 6(a) updated projections for 2020 and 2030 relative to actual inventory data for 2013 under the WEM scenario. Projections are presented on a sectoral basis, using the same sectoral categories as used in the chapter on mitigation actions, and on a gas-by-gas basis for the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a Party total, using GWP values from the IPCC AR4. Further information on the projections is provided in chapter VII of the BR2.

63. CTF table 6(a) does not include information on emission projections related to fuel sold to ships and aircraft engaged in international transport. However, in the BR2 (table V, section VII), Portugal reported emission projections related to international aviation and navigation as "NE" (not estimated). During the review, Portugal informed the ERT that it is considering calculating such projections in the next projection exercise in the context of SPeM. The ERT commends Portugal for this effort. To improve transparency, the ERT recommends that Portugal report, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport but not include such estimates in the totals.

64. The BR2 did not report information on factors and activities for each sector for the understanding of emission trends in the years 1990–2020. During the review, Portugal

provided additional information in tabular format, elaborating on factors and activities used for projections for some sectors, such as fuel prices, gross and final energy/electricity consumption, and agricultural, transport and waste parameters. Furthermore, Portugal clarified that the slight increase in the N<sub>2</sub>O emission projections from 2020 to 2030 was driven by the use of biofuels in transport, technology improvements in wastewater treatment and discharge, and the impact of economic growth on the chemical industry. The ERT noted the relevance of the information provided. To improve completeness, the ERT recommends that Portugal present relevant information on factors and activities for each sector in its next BR.

65. Information reported by Portugal is not transparent on the definition of the WEM scenario, making it difficult for the ERT to assess whether the WEM scenario is consistent with the WEM projection pursuant to the UNFCCC reporting guidelines on BRs. During the review, Portugal provided additional information on the definition of the WEM projection, clarifying that the projected trajectory under WEM follows the previous trend of stabilization/decarbonization of the economy from 2005 up to 2020, and that QEPiC and PNAC, approved in 2015, confirm Portugal's commitment to continuing this path. The ERT noted that this definition is consistent with the WEM projection definition in the UNFCCC reporting guidelines on BRs. To improve transparency, the ERT recommends that Portugal provide textual information on its definition of the WEM scenario in future BRs.

66. In addition to the WEM scenario, Portugal reported in CTF table 6(c) a WAM scenario. The projections are presented by sector and by gas in the same way as for the WEM scenario for the years 1990–2030. The BR2 does not include a definition of the WAM scenario. During the review, Portugal provided additional information, elaborating on the definition of WAM projections and clarifying that the WAM scenario builds on the WEM scenario and includes differences in uptake of new and more efficient technologies, penetration rates of RES for electricity production and final consumption, and full implementation of the objectives for 2020 of the Strategic Plan for Urban Waste 2014–2020 and of the EU F-gas phasing-out regulation. The ERT noted that the definition of the WAM scenario is in accordance with that in the UNFCCC reporting guidelines on BRs. Portugal did not report a 'without measures' (WOM) scenario.

67. The ERT encourages Portugal to include in its next BR textual information on the definition of its WAM projection and a WOM projection.

68. In its BR2, Portugal reported that no changes were made to the methodologies, models and approaches used since the submission of its NC6 and BR1. However, the ERT noted some differences in the key variables and assumptions reported in CTF table 5, such as GDP growth rate and population growth, from the BR1. The ERT also noted that the historical data in CTF table 5 were not updated to the most recent year (2013).

69. During the review, Portugal clarified that it reported in the BR2 a projection with a GDP growth rate of 3.0 per cent in 2020, whereas for the projection in the BR1 the growth rate was assumed to be 1.8 per cent in 2020. Portugal explained that this is also one of the main reasons for the difference in the 2020 projection under the WEM scenario between the BR1 (59,631.69 kt CO<sub>2</sub> eq) and the BR2 (63,048.58 kt CO<sub>2</sub> eq). During the review, Portugal provided a revised CTF table 5 with updated data for 2013 and 2014.

70. The ERT noted the usefulness of the information provided during the review and encourages Portugal to report in its next BR the main differences in assumptions, methods employed and results for the projections made since its previous BR and to update the historical data in CTF table 5 to those contained in the latest GHG inventory.

71. The BR2 does not include information on the sensitivity of the projections to underlying assumptions. During the review, Portugal elaborated qualitatively on the

sensitivity analysis, clarifying that the GDP growth rate has a significant influence on the electricity production, industry and transport profiles. Furthermore, some sensitivity analysis scenarios showed that solar power has great potential for cost-effective deployment. The ERT encourages Portugal to include information on sensitivity analysis in its future BRs and, where possible, to discuss it quantitatively.

Overview of projection scenarios

72. The WEM scenario reported by Portugal includes implemented and adopted PaMs contained in QEPiC and PNAC up to 2030. Portugal also reported a WAM scenario up to 2030 (see para. 66 above). The scope of both scenarios is consistent with the UNFCCC reporting guidelines on BRs.

Methodology and changes since the previous submission

73. The methodologies used for the BR2 are identical to those used for the preparation of the emission projections in the NC6 and BR1. Portugal reported supporting information explaining the methodologies, describing the gases and sectors covered and the models used, together with their original purposes, strengths and weaknesses.

74. To prepare its projections, Portugal relied on the following key underlying assumptions: population and population growth rate, GDP growth rate and international fuel prices. These variables and assumptions are reported in CTF table 5. The assumptions were updated on the basis of the most recent economic developments known at the time of the reporting of the projections.

Results of projections

75. Portugal's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 63,048.58 kt CO<sub>2</sub> eq and 55,847.11 kt CO<sub>2</sub> eq, respectively, under the WEM scenario, which represents an increase of 4.3 per cent and a decrease of 7.6 per cent above and below the 1990 level, respectively. Under the WAM scenario, emissions in 2020 are projected to be higher than those in 1990 by 4.1 per cent, and emissions in 2030 are projected to be lower than those in 1990 by 13.9 per cent, amounting to around 62,910.67 kt CO<sub>2</sub> eq and 52,056.15 kt CO<sub>2</sub> eq in 2020 and 2030, respectively. Although the projected emissions in 2020 are expected to increase above the 1990 level, under both the WEM and WAM scenarios, the downward trend since 2005 is significant. Therefore, the 2020 projections suggest that Portugal will continue contributing to the achievement of the EU target under the Convention.

76. Portugal's target for emissions from sectors covered by the ESD is to limit its emission growth to 1 per cent above the 2005 level by 2020 (see para. 23 above). Portugal's AEAs, which correspond to its national emission target under the ESD, change linearly from 49,310.77 kt CO<sub>2</sub> eq in 2013 to 51,241.90 kt CO<sub>2</sub> eq in 2020. According to the projections under the WEM scenario, emissions from ESD are estimated to reach 40,519.34 kt CO<sub>2</sub> eq by 2020. Under the WAM scenario, Portugal's emissions from ESD sectors in 2020 are projected to be 40,381.45 kt CO<sub>2</sub> eq.<sup>6</sup> The projected levels of emissions under the WEM and WAM scenarios are 20.9 and 21.2 per cent, respectively, below the AEAs allocated for 2020. The ERT noted that this suggests that Portugal expects to meet its target under the WEM and WAM scenarios.

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<sup>6</sup> European Environment Information and Observation Network Central Data Repository, available at <<http://cdr.eionet.europa.eu/>>.

77. In addition to its target for emissions under the ESD, Portugal committed itself to achieving a domestic target of an 18–23 per cent reduction of total emissions below the 2005 level by 2020, a limit of 67,804.24–72,207.11 kt CO<sub>2</sub> eq by 2020. The projections indicate that Portugal also expects to meet its domestic target.

78. According to the projections reported for 2020 under the WEM scenario, the most significant emission increases are expected to occur in the transport and waste management sectors, amounting to 5,024.82 kt CO<sub>2</sub> eq (50.1 per cent) and 2,048.98 kt CO<sub>2</sub> eq (33.0 per cent) between 1990 and 2020, respectively. On the other hand, energy emissions (excluding transport) are expected to decrease by 6,361.98 kt CO<sub>2</sub> eq (0.3 per cent) between 1990 and 2020.

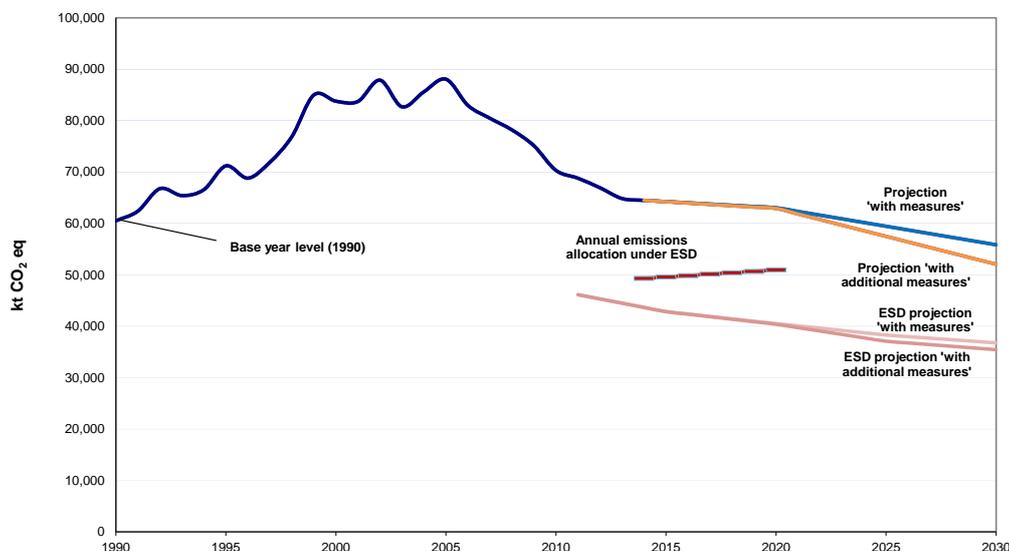
79. The pattern of projected emissions reported for 2030 under the same WEM scenario shows a more noticeable reduction in emissions from the energy sector (excluding transport) and the agriculture sector, amounting to projected decreases of 10,466.72 kt CO<sub>2</sub> eq (33.4 per cent) and 331.98 kt CO<sub>2</sub> eq (4.4 per cent) between 1990 and 2030, respectively, because climate and energy PaMs will be mutually reinforced to achieve the national targets for 2030 (30 per cent increase in energy efficiency, particularly in the building and commercial sectors, and 40 per cent share of RES in final energy consumption). On the other hand, transport emissions are projected to increase by 47.2 per cent (4,726.98 kt CO<sub>2</sub> eq) over the same period (1990–2030), even though there are mitigation actions implemented and planned, such as a carbon tax, promotion of public transport and electric mobility.

80. By 2020, the most significant emission increases are projected for F-gases (2,989.87 kt CO<sub>2</sub> eq, an increase of 6,504.5 per cent between 1995 and 2020) and CH<sub>4</sub> emissions (1,863.36 kt CO<sub>2</sub> eq, 16.4 per cent between 1990 and 2020). Emissions of CO<sub>2</sub> are expected to decrease by 2,653.55 kt CO<sub>2</sub> eq (5.9 per cent) between 1990 and 2020.

81. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission growth by 2020 presented by sector and by gas remain basically the same as under the WEM scenario, with a slight difference due to a further reduction in F-gas emissions from the waste and industrial sectors.

82. The projected emission levels under the different scenarios and Portugal's quantified economy-wide emission reduction target are presented in the figure below.

### Greenhouse gas emission projections by Portugal



Sources: (1) Data for the years 1990–2014: Portugal’s 2016 annual inventory submission, version of 27 May 2016; total GHG emissions excluding land use, land-use change and forestry; (2) Data for the years 2014–2030: Portugal’s second biennial report common tabular format tables; total GHG emissions excluding land use, land-use change and forestry; and European Environment Agency. 2015. *PT Projections 2015, Greenhouse Gas Monitoring Mechanism*, available at <[http://cdr.eionet.europa.eu/pt/eu/mmr/art04-13-14\\_lcds\\_pams\\_projections/envvcoj5g/](http://cdr.eionet.europa.eu/pt/eu/mmr/art04-13-14_lcds_pams_projections/envvcoj5g/)>; (3) Data for the years 2013–2020: European Commission decisions 2013/634/EU and 2013/162/EU.

Abbreviations: ESD = effort-sharing decision, GHG = greenhouse gas.

#### D. Provision of financial, technological and capacity-building support to developing country Parties

83. In its BR2 and CTF tables, Portugal reported information on the provision of financial, technological and capacity-building support to Parties not included in Annex I to the Convention (non-Annex I Parties), for the years 2013 and 2014, required under the Convention. Provision of resources is classified by channel (bilateral and multilateral), goal (mitigation, adaptation and cross-cutting) and recipient country.

84. Portugal provided details on what new and additional support it has provided and clarified how this support is new and additional. Portugal established the Portuguese Carbon Fund (FPC) in 2006, initially designed to meet its obligations under the Convention and its Kyoto Protocol. Since 2010 Portugal has allocated funds from FPC to developing countries and it regards the financial flow from FPC to developing countries as being new and additional.

85. The financial contribution of FPC counts towards official development assistance (ODA), but is an independent source relying entirely on the fund’s autonomous income. FPC accounted for 17 and 28 per cent of ODA for mitigation activities in 2013 and 2014, respectively, and 100 and 80 per cent of ODA for adaptation in the same years.

86. Portugal regards most of its assistance for mitigation and adaptation projects as including the provision of technological and capacity-building support to non-Annex I Parties. It classifies its bilateral climate change related ODA as having mitigation or

adaptation as either a ‘principal’ or ‘significant’ objective, referring to the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) guidance for applying the Rio Markers to identify ODA targeting the objectives of the Convention by marking aid flows according to their ‘principal’ or ‘significant’ policy objectives.

87. According to CTF table 7, most of the bilateral funds, approximately 95 per cent on average in 2013 and 2014, target mitigation, while for adaptation the attributed funds are approximately 5 per cent. Given the flexibility to interpret the Rio Markers in the national context, the ERT encourages Portugal to clarify, to the extent possible, its definition of ‘principal’ and ‘significant’ objectives and how it reflects the amount of support provided under ‘principal’ and ‘significant’ objectives when reporting its CTF tables.

88. Portugal provided in its BR2 a short description of its approach to tracking climate support. Its climate finance is channelled through ODA. FPC was designated as the new source of climate change development cooperation in 2010. With regard to technological and capacity-building support provided to non-Annex I Parties, Portugal explained, in response to questions raised during the review, that it does not have specific pre-set indicators for technology transfer and capacity-building, that information on technology transfer and capacity-building is required at project document level and that the relevance and adequacy of the information provided is checked in detail in the appraisal process for recipient countries.

89. The ERT recommends that Portugal enhance the transparency of its reporting by providing information on its national approach for tracking the provision of technology and capacity-building support to non-Annex I Parties in its next BR.

90. Although Portugal uses the Rio Markers to produce information on finance, it does not provide a description of the underlying assumptions and methodologies used to produce such information. To enhance transparency, the ERT recommends that Portugal report in a rigorous, robust and transparent manner the underlying assumptions and methodologies used to produce information on finance, including a definition of ‘climate-specific’ funds, in its next BR.

## 1. Finance

91. Portugal described how its resources address the adaptation and mitigation needs of non-Annex I Parties given that the initiative of proposing projects is left to developing country partners. Portugal classifies the majority of mitigation funds under ODA as either meeting the ‘principal’ or ‘significant’ objectives in accordance with the Rio Markers. Similarly, adaptation as part of ODA is derived from its classification as a ‘principal’ or ‘significant’ objective. The ERT recommends that Portugal further elaborate, to the extent possible, on how it seeks to ensure that the financial resources provided address the needs of non-Annex I Parties in its next BR.

92. In its BR2 and CTF tables 7, 7(a) and 7(b), Portugal reported information on the provision of financial support required under the Convention, including on financial support provided, committed and pledged, allocation channels and annual contributions, in textual and tabular format. Portugal reported its financial support as part of its ODA for the years 2013 and 2014. The ERT recognizes that projects often span more than one reporting period. For example, a reference to the “Atlas of the renewable energy” project was also made in the BR1. The ERT recommends that Portugal enhance the transparency of its reporting by providing, in textual format, the lengths of projects and the support attributable to particular reporting periods.

93. For Portugal, bilateral support is the main delivery mechanism for climate-specific finance. Portugal reported on its climate-specific public financial support provided in 2013

and 2014 in CTF table 7, with contributions through bilateral and regional channels of USD 21.21 million in 2013 and USD 12.23 million in 2014 (see table 5 below). There was a significant decrease (by 42.3 per cent) in the financial contribution below the 2013 level in 2014, which Portugal attributes to its financial situation. During the reporting period, Portugal placed a particular focus on the promotion of economic development and welfare in Angola, Cabo Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe and Timor-Leste, which were the recipients of its bilateral finance flows.

94. Portugal's ODA through multilateral channels also decreased between 2013 and 2014, owing largely to the economic situation in the country. From USD 9.62 million in 2013 it went down to USD 4.60 million in 2014, representing a decrease of 52 per cent. Portuguese ODA is mainly directed towards African countries and Timor-Leste, which use Portuguese as their official language. The ERT commends Portugal for its enhanced emphasis on adaptation financing.

Table 5

**Summary of information on provision of financial support in 2013–2014 by Portugal**  
(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>	
	<i>2013</i>	<i>2014</i>
Official development assistance <sup>a</sup>	547.76	488.28
Climate-specific contributions through bilateral, regional and other channels	21.21	12.23

<sup>a</sup> Source: Query Wizard for International Development Statistics, available at <<http://stats.oecd.org/qwids/>>.

95. The BR2 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2013, the share of total public financial support allocated for mitigation and adaptation corresponding to these channels was 67.2 and 1.6 per cent, respectively. The remaining 31.2 per cent in 2013 was allocated to non-climate-specific channels. In 2014 the shares of total public financial support allocated for mitigation and adaptation were 65.9 and 6.7 per cent, respectively. The remaining 27.4 per cent in 2014 was allocated to non-climate-specific channels.

96. Portugal reported that it began to collect data and report on private financial flows in 2014. No information on its private financial flows from bilateral sources directed towards mitigation and adaptation activities in non-Annex I Parties was provided in the BR2. It did not report on any PaMs that will promote the scaling up of private investment in mitigation and adaptation activities in developing country Parties. The ERT reiterates its encouragement of Portugal to report, to the extent possible, on private financial flows leveraged by bilateral climate finance and PaMs that promote the scaling up of private investment in its next BR.

97. CTF tables 7(a) and 7(b) include information on the types of financial instrument used in the provision of assistance to developing countries, which include grants and loans. The ERT noted that the shares of concessional loans and grants provided in 2013 were approximately 80.3 and 20.7 per cent, respectively. The corresponding figures for 2014 were 63.6 and 36.4 per cent, respectively.

## 2. Technology development and transfer

98. In its BR2 and CTF table 8, Portugal provided information on measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors.

Most of the activities were funded by the public sector. It was not clear, from the list of measures to promote, facilitate and implement technology transfer, what support Portugal provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties. The ERT recommends that Portugal enhance the transparency of its reporting on the support that it provides for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties in its future BRs. The ERT encourages Portugal to provide information on success and failure stories in its next BR.

99. The BR2 and CTF table 8 include information required by the UNFCCC reporting guidelines on BRs on technology transfer. Portugal provided information on recipient countries, target areas of mitigation or adaptation and the sectors involved. It alluded to projects and actions (PPAs) implemented under the 'Portuguese Cooperation' programme, under its ODA, involving technology transfer, particularly in the energy sector and for RES. Portugal did not qualify elements of technology transfer under these projects and stated in the BR2 that the OECD DAC does not currently have a marker that allows it to do so. The ERT commends Portugal for providing this information as per the recommendation contained in the report of the technical review of the BR1.

### **3. Capacity-building**

100. In its BR2 and CTF table 9, Portugal supplied information on how it provided capacity-building support for mitigation, adaptation and technology transfer. The BR2 and CTF table 9 include information describing a number of individual capacity-building measures and activities carried out during the reporting period. Examples include: the "Atlas of the renewable energy" (in Mozambique), the "Implementation of Pilot Projects Local Adaptation Program of Action in Mozambique", the "Plan for Urban Drainage from the perspective of Emission Reduction and Adaptation to Climate Change", the "Waste Roadmap of Cape Verde" and "Bioenergy Use in São Tomé and Príncipe". Two projects involving Cabo Verde, Mozambique and Sao Tome and Principe are "Capacity Building for Low Carbon Resilient Development Strategies" and "Integrating Adaptation to Climate Change into Development".

101. Portugal reported that it has supported capacity-building at the institutional level, especially in Portuguese-speaking African countries and Timor-Leste. PPA support under the 'Portuguese Cooperation' programme has a strong technical component and a strong focus on the development of national capacities. Portugal also reported that it responded to the existing and emerging capacity-building needs of non-Annex I Parties and allied its aid to the principles espoused in the Aid Effectiveness Declarations of Paris, Accra and Busan.

## **III. Conclusions**

102. The ERT conducted a technical review of the information reported in the BR2 and CTF tables of Portugal in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information is mostly in adherence with the UNFCCC reporting guidelines on BRs and provides an overview of: emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; progress made by Portugal in achieving its target; and the Party's provision of support to developing country Parties.

103. Portugal's total GHG emissions excluding LULUCF related to its quantified economy-wide emission reduction target were estimated to be 6.5 per cent above its 1990 level for 2014, whereas total GHG emissions including LULUCF were 13.1 per cent below its 1990 level for 2014. Emissions peaked in 2005 and were on a decreasing trend thereafter.

The emission increase (without LULUCF) was driven mainly by the growth in CO<sub>2</sub> emissions from the energy sector, which reflected the economic growth in the 1990s and early 2000s.

104. Under the Convention, Portugal is committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and the gases CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

105. Under the ESD, Portugal has a target to limit its emission growth to 1 per cent above the 2005 level by 2020. Portugal's AEAs, which correspond to its national emission target for emissions from ESD sectors, change linearly from 49,310.77 kt CO<sub>2</sub> eq in 2013 to 51,241.90 kt CO<sub>2</sub> eq in 2020.

106. In addition to its target under the ESD, Portugal committed itself to achieving a domestic target of an 18–23 per cent reduction of total emissions below the 2005 level by 2020, roughly equal to an increase of 12–18 per cent above the 1990 level.

107. Portugal's main policy framework relating to energy and climate change is QEPiC, which integrates policy instruments for up to 2020 and 2030. Key legislation supporting Portugal's climate change goals is PNAC, which covers all sectors; while other significant national policy instruments include the Green Growth Commitment and Green Fiscal Reform. Portugal provided both corrected and additional information on estimated mitigation impact for a limited number of PaMs. Among those listed, "Energy efficiency in commercial and residential buildings" and "Energy efficiency in the public administration sector" are expected to deliver significant mitigation impacts by 2020.

108. Other mitigation actions that correspond to previously identified drivers of emission reductions in Portugal include the Renewable Energy Action Plan, the Energy Efficiency Action Plan and continued implementation of the EU ETS. New fiscal and other pricing measures have been introduced to facilitate the shift to a low-carbon economy under Green Fiscal Reform measures.

109. For 2013, Portugal reported in CTF table 4 total GHG emissions excluding LULUCF of 65,071.46 kt CO<sub>2</sub> eq. Portugal did not report on its use of units from market-based mechanisms to achieve its target because the data were not available when the BR2 was drafted, although it explained that market-based mechanisms could be used under the ESD.

110. The GHG emission projections provided by Portugal in its BR2 include those for the WEM and WAM scenarios. Under the two scenarios, emissions are projected to be 4.3 and 4.1 per cent above the 1990 level in 2020, respectively. On the basis of the reported information, the ERT concluded that Portugal expects to meet its 2020 national target under the WEM and WAM scenarios. Under the scenarios, emissions from ESD sectors in 2020 are projected to be 20.9 per cent and 21.2 per cent, respectively, below the AEAs allocated for 2020. On the basis of the reported information, the ERT concluded that Portugal expects to meet its target under the ESD.

111. The ERT noted that Portugal is making progress towards its emission reduction target by implementing mitigation actions that deliver significant emission reductions; reduced GHG emissions resulting from the economic crisis are also contributing to this

progress. Installations covered by the EU ETS can make use of units from the market-based mechanisms under the Convention subject to quantitative and qualitative limits; in the past, Portugal made use of units from the market-based mechanisms under the Kyoto Protocol and the contribution of LULUCF to meet its Kyoto Protocol commitment. On the basis of the results of the projections for 2020 under the WEM and WAM scenarios, the ERT noted that Portugal may overachieve its ESD emission reduction target by 2020.

112. Portugal continues to allocate climate financing through its ODA and in line with climate finance programmes such as FPC in order to assist developing country Parties in implementing the Convention. It has reduced the level of its financial support by 52 per cent since its NC6 and BR1, and its public financial support in 2013 and 2014 totalled USD 21.21 million and USD 12.22 million per year, respectively. In those years, Portugal's support provided for mitigation action was a lot higher than the support provided for adaptation, although the share of funding for adaptation has seen a significant increase in line with Portugal's renewed emphasis on integrating adaptation into its development cooperation policy. The highest level of financial support went to projects in the energy sector, followed by the water and sanitation sectors. Technology transfer and capacity-building, particularly at the institutional level in Portuguese-speaking countries, are core considerations for projects and activities under Portuguese development cooperation.

113. In the course of the review, the ERT formulated the following recommendations for Portugal to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:<sup>7</sup>

- (a) Improve the completeness of its reporting by providing information on factors and activities used for making projections for each sector (see para. 64 above);
- (b) Improve the transparency of its reporting by:
  - (i) Including the total CO<sub>2</sub> emissions per year, expressed in kt CO<sub>2</sub>, in CTF table 1(a) (see para. 8 above);
  - (ii) Estimating emissions of F-gases for the period 1990–1994 and including the estimates in its next BR (see para. 19 above);
  - (iii) Providing information on changes in its domestic institutional arrangements (see para. 33 above);
  - (iv) Providing information on implementing entities and estimated impacts of its mitigation actions or explanations as to why it was not in a position to provide such estimates and clearer notations regarding their status of implementation (see para. 37 above);
  - (v) Providing information on the use of units from market-based mechanisms (see para. 58 above);
  - (vi) Providing projections related to fuel sold to ships and aircraft engaged in international transport, to the extent possible (see para. 63 above);
  - (vii) Providing information on the definition of the WEM scenario (see para. 65 above);
  - (viii) Providing information on its national approach for tracking the provision of technology and capacity-building support to non-Annex I Parties (see para. 89 above);

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<sup>7</sup> The recommendations are given in full in the relevant chapters of this report.

- (ix) Reporting in a rigorous, robust and transparent manner the underlying assumptions and methodologies used to produce information on finance, including an explanation of the definition of ‘climate-specific’ funds (see para. 90 above);
- (x) Describing how financial resources meet the needs of non-Annex I Parties (see para. 91 above);
- (xi) Providing descriptions of the timelines for projects and support attributable to reporting periods (see para. 92 above);
- (xii) Clarifying the information on support provided for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties (see para. 98 above).

## Annex

### Documents and information used during the review

#### A. Reference documents

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex to decision 2/CP.17. Available at

<<http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4>>.

“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 to decision 24/CP.19. Available at

<<http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=2>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”.

FCCC/CP/1999/7. Available at <<http://unfccc.int/resource/docs/cop5/07.pdf>>.

“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>>.

FCCC/ARR/2014/PRT. Report on the individual review of the annual submission of Portugal submitted in 2014. Available at <<http://unfccc.int/resource/docs/2015/arr/prt.pdf>>.

FCCC/IDR.6/PRT. Report of the technical review of the sixth national communication of Portugal. Available at <<http://unfccc.int/resource/docs/2014/idr/prt06.pdf>>.

FCCC/TRR.1/PRT. Report of the technical review of the first biennial report of Portugal. Available at <<http://unfccc.int/resource/docs/2014/trr/prt01.pdf>>.

2015 greenhouse gas inventory submission of Portugal. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/8812.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8812.php)>.

2016 greenhouse gas inventory submission of Portugal. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/9492.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/9492.php)>.

Sixth national communication of Portugal. Available at

<[http://unfccc.int/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/items/7742.php](http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/7742.php)>.

First biennial report of Portugal. Available at

<[http://unfccc.int/files/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/application/pdf/prt\\_6cn\\_2ressubmission\\_final.pdf](http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/prt_6cn_2ressubmission_final.pdf)>.

Common tabular format tables of the first biennial report of Portugal. Available at

<[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/prt\\_2014\\_v2.0\\_formatted.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/prt_2014_v2.0_formatted.pdf)>.

Second biennial report of Portugal. Available at

<[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/portugal\\_ii\\_biennialreport\\_2016.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/portugal_ii_biennialreport_2016.pdf)>.

Common tabular format tables of the second biennial report of Portugal. Available at <[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/copy\\_of\\_prt\\_2016\\_v1\\_0\\_formatted.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/copy_of_prt_2016_v1_0_formatted.pdf)>.

## **B. Additional information used during the review**

Responses to questions during the review were received from Mr. José Paulino (Portuguese Environmental Agency), including additional material and the following documents<sup>1</sup> provided by Portugal:

European Environment Agency (EEA). 2015. *PT Projections 2015, Greenhouse Gas Monitoring Mechanism*. Available at <[http://cdr.eionet.europa.eu/pt/eu/mmr/art04-13-14\\_lcds\\_pams\\_projections/envvcoj5g/](http://cdr.eionet.europa.eu/pt/eu/mmr/art04-13-14_lcds_pams_projections/envvcoj5g/)>.

European Environment Agency (EEA). EEA Report No 4/2015. *Trends and projections in Europe 2015; tracking progress towards Europe's climate and energy targets*. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

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<sup>1</sup> Reproduced as received from the Party.