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Report on the technical review of the third biennial report of Portugal

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third 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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Contents

	<i>Paragraphs</i>	<i>Page</i>
Abbreviations and acronyms		3
I. Introduction and summary	1–6	4
A. Introduction	1–3	4
B. Summary.....	4–6	4
II. Technical review of the information reported in the third biennial report	7–108	5
A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target	7–11	5
B. Assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	12–17	7
C. Progress made towards the achievement of the quantified economy-wide emission reduction target	18–78	8
D. Provision of financial, technological and capacity-building support to developing country Parties.....	79–108	22
III. Conclusions and recommendations	109–116	29
Annex		
Documents and information used during the review		31

Abbreviations and acronyms

AEA	annual emission allocation
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
ENAAAC	National Strategy for Adaptation to Climate Change
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NF ₃	nitrogen trifluoride
NGO	non-governmental organization
NIP	not in projections
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N ₂ O	nitrous oxide
ODA	official development assistance
PALOP	Portuguese-speaking African countries
PaMs	policies and measures
PFC	perfluorocarbon
PNAC	National Climate Change Programme
PNAEE	National Action Plan for Energy Efficiency
PNAER	National Action Plan for Renewable Energy
RES	renewable energy sources
RNC 2050	Carbon Neutrality Road Map for 2050
SF ₆	sulfur hexafluoride
SNIERPA	National Inventory System of Emissions by Sources and Removals by Sinks of Air Pollutants
SPeM	National System for Policies and Measures
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the BR3¹ 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).
2. In accordance with the same decision a draft version of this report was transmitted to the Government of Portugal, which provided comments that were considered and incorporated, with revisions, into this final version of the report.
3. The review was conducted from 18 to 23 February 2019 in Lisbon by the following team of nominated experts from the UNFCCC roster of experts: Ms. Souhila Bouilouta (Algeria), Mr. Felipe De León (Costa Rica), Mr. Mwangi Kinyanjui (Kenya), Ms. Carmen Schmid (Austria), Ms. Andreja Urbancic (Slovenia) and Mr. Robin White (Canada). Mr. Kinyanjui and Ms. Urbancic were the lead reviewers. The review was coordinated by Ms. Kirsten Macey (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR3 of Portugal in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR3 was submitted on 29 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were submitted on 29 December 2017. The BR3 was resubmitted on 8 February 2018. Portugal resubmitted the CTF tables on 8 March 2019 in response to the findings made by the ERT during the review.

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

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Portugal in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

Summary of completeness and transparency of mandatory information reported by Portugal in its third biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
GHG emissions and trends	Complete	Transparent	NA
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Transparent	NA
Progress in achievement of targets	Mostly complete	Mostly transparent	Issue 2 in table 5; issues 2, 5 and 10 in table 10

¹ The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
Provision of support to developing country Parties	Mostly complete	Transparent	Issue 1 in table 11; issue 1 in table 14 and issue 1 in table 15

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

II. Technical review of the information reported in the third biennial report

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

Information on greenhouse gas inventory arrangements, emissions, removals and trends

(a) Technical assessment of the reported information

7. Total GHG emissions² excluding emissions and removals from LULUCF increased by 13.0 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF increased by 2.0 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Portugal.

Table 2

Greenhouse gas emissions by sector and by gas for Portugal for the period 1990–2016

<i>Sector</i>	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2015</i>	<i>2016</i>	<i>1990–2016</i>	<i>2015–2016</i>	<i>1990</i>	<i>2016</i>
1. Energy	41 358.00	60 723.46	48 742.82	48 294.49	47 064.44	13.8	–2.5	69.1	69.6
A1. Energy industries	16 382.91	21 647.74	14 527.37	18 393.43	17 405.75	6.2	–5.4	27.4	25.7
A2. Manufacturing industries and construction	9 745.20	12 462.93	9 164.17	7 871.87	7 422.78	–23.8	–5.7	16.3	11.0
A3. Transport	10 228.83	19 585.56	18 970.17	16 350.98	16 676.66	63.0	2.0	17.1	24.7
A4. and A5. Other	4 787.96	6 529.27	5 390.99	4 438.93	4 388.03	–8.4	–1.1	8.0	6.5
B. Fugitive emissions from fuels	213.11	497.95	690.12	1 239.29	1 171.22	449.6	–5.5	0.4	1.7
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	5 886.88	7 622.22	7 588.51	7 838.75	7 294.60	23.9	–6.9	9.8	10.8
3. Agriculture	7 143.66	7 506.95	6 614.09	6 724.99	6 788.90	–5.0	1.0	11.9	10.0
4. LULUCF	1 155.02	–5 678.39	–10 910.43	–8 465.34	–5 394.12	–567.0	–36.3	NA	NA
5. Waste	5 436.50	7 289.20	6 997.38	6 554.31	6 473.12	19.1	–1.2	9.1	9.6
6. Other (Indirect CO ₂)	106.45	220.58	197.68	164.84	154.50	45.1	–6.3	NA	NA
Gas ^a									
CO ₂	45 585.56	66 059.94	52 897.57	52 205.22	50 285.47	10.3	–3.7	76.2	74.4
CH ₄	10 392.36	12 292.80	11 529.00	11 085.88	11 081.71	6.6	0.0	17.4	16.4
N ₂ O	3 847.12	4 347.70	3 368.57	3 175.39	3 155.29	–18.0	–0.6	6.4	4.7

² In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated on the basis of the 2018 annual submission, version 3.

Sector	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2015	2016	1990–2016	2015–2016	1990	2016
HFCs	NO, NA	423.64	2 105.03	2 909.05	3 059.85	NA	5.2	NA	4.5
PFCs	NO, NA	1.13	7.93	13.89	15.29	NA	10.1	NA	0.0
SF ₆	NO, NA	16.61	34.69	23.11	23.45	NA	1.5	NA	0.0
NF ₃	NO	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions without LULUCF	59 825.04	83 141.82	69 942.80	69 412.54	67 621.06	13.0	–2.6	100.0	100.0
Total GHG emissions with LULUCF	60 980.06	77 463.43	59 032.37	60 947.21	62 226.95	2.0	2.1	NA	NA
Total GHG emissions without LULUCF, including indirect CO₂	59 931.49	83 362.40	70 140.47	69 577.38	67 775.56	13.1	–2.6	NA	NA
Total GHG emissions with LULUCF, including indirect CO₂	61 086.51	77 684.01	59 230.04	61 112.04	62 381.45	2.1	2.1	NA	NA

Source: GHG emission data: Portugal's 2018 annual submission, version 1.0.

^a Emissions by gas without LULUCF and without indirect CO₂.

8. The increase in total emissions was driven mainly by factors such as the increase in economic activity and GDP, and a reversal of the trend in transport emissions, which started to decline in 2005 but increased by 5.1 per cent between 2013 and 2016. The summary information provided on GHG emissions was consistent with the information reported in the 2017 annual submission.

9. To reflect the most recently available data, version 2 of Portugal's 2018 annual inventory submission has been used as the basis for discussion in chapter II.A of this review report. The ERT noted that the 2018 inventory information had not been subjected to a technical review at the time of the review week. The ERT also noted that there are no substantive differences between the trends presented in the latest version of the GHG inventory and those reported in the BR3. Total GHG emissions excluding LULUCF, as reported in the BR3, increased by 15.7 per cent between 1990 and 2015, while according to the latest available annual inventory submission they increased by 13.0 per cent.

10. In brief, Portugal's national inventory arrangements, implemented through SNIERPA, were established in accordance with Council of Ministers resolution 20/2015, which revised and updated the previous version of 2005. The new Council of Ministers resolution restructures and elaborates the previous legal framework on SNIERPA, specifying its four components: the calculation and archiving system, the quality assurance/quality control system, the Methodological Development Plan and the archiving system. It also identifies several outputs and formats of reporting to international bodies and specifies the functions of the entities that are part of SNIERPA. The Portuguese Environment Agency is the body responsible for the overall coordination and updating of the national emissions inventory, which is administered by the Portuguese Environment Agency Climate Change Department, in collaboration with sectoral focal points and relevant entities.

(b) Assessment of adherence to the reporting guidelines

11. The ERT assessed the information reported in the BR3 of Portugal and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

(a) Technical assessment of the reported information

12. 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 target 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.

13. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ using global warming potential values from the AR4 to aggregate the GHG emissions of the EU until 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.

14. The EU 2020 climate and energy package includes the EU ETS and the ESD. The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

15. Under the ESD, Portugal has a target of limiting its emission growth to 1.0 per cent above the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Portugal's AEAs change from 49,310.77 kt CO₂ eq in 2013 to 49,080.26 kt CO₂ eq in 2020.³

16. Portugal has established different targets for various non-ETS sectors. These targets were developed from a knowledge of sectoral emission reduction potentials and the difference between the overall non-ETS sector target and the modelled impacts of an assumed EU ETS carbon price path. The national emission target is a reduction of 18–23 per cent below the 2005 level by 2020 and 30–40 per cent below the 2005 level by 2030. Each sector has its own emission reduction target for 2020 set against the 2005 level, for example: services (–65 per cent), households (–14 per cent), transport (–14 per cent), waste including wastewater (–14 per cent) and agriculture (–8 per cent). Portugal also outlined sectoral targets for the period up to 2030.

(b) Assessment of adherence to the reporting guidelines

17. The ERT assessed the information reported in the BR3 of Portugal and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

³ European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States' AEAs for the period from 2017 to 2020.

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

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

18. Portugal provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Portugal reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

19. Following the change of government in 2015, lead responsibility for energy was transferred to the Ministry of Economy from the Ministry of the Environment and Energy Transition, while the latter was accorded responsibility for suburban and road passenger transport. Forestry protection is a shared responsibility between the Ministry of the Environment and Energy Transition and the Ministry of Agriculture, Forestry and Rural Development. The Portuguese Environment Agency operates under the Ministry of the Environment and Energy Transition and has powers to develop and monitor environmental policies.

20. Under the direction of the Ministry of the Environment and Energy Transition, the newly created Environment Fund seeks to foster sustainable development and replaces the Portuguese Carbon Fund, the Environmental Action Fund, the Fund for the Protection of Water Resources and the Fund for the Conservation of Nature and Biodiversity.

21. The newly named Interministerial Commission for Air, Climate Change and Circular Economy, which is composed of members of various government departments and regional representatives, oversees the monitoring of climate-related policies. SPeM was established in 2016 as a legal instrument for the reporting, monitoring and implementation of climate actions. Under SPeM a new platform for information management will be developed to replace the previous and currently inactive platform.

22. Portugal's main policy framework relating to energy and climate change is the Strategic Framework for Climate Policy, approved through a Council of Ministers resolution, which includes PNAC 2020/2030 and ENAAC 2020. Following completion of its implementation of the first cycle of climate mitigation instruments under PNAC 2020/2030 and ENAAC 2020, Portugal has embarked on developing new instruments that seek to integrate climate policy into sectoral policies. The National Low Carbon Road Map 2050 provides guidelines for shifting to a low-carbon economy, while the 2015 Commitment for Green Growth established specific targets for GHG emission reductions and renewable energy, and the 2014 green tax reform introduced carbon taxation for non-ETS sectors. During the review, Portugal outlined that it had undertaken modelling of its RNC 2050.

23. Portugal provided information on a set of PaMs similar to those previously reported. The Party also provided information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target.

24. Portugal reported on its self-assessment of compliance with its emission reduction target and national rules for taking action against non-compliance. SPeM aims to streamline the assessment of progress in the implementation of sectoral mitigation PaMs and enhance the involvement and strengthen the accountability across all sectors. Under SPeM a new platform for the management of information will also be developed in order to facilitate the identification, follow-up, monitoring and reporting of the implementation of PaMs and their effects, as well as the projections and the assessment of the fulfilment of national obligations.

25. The key overarching related 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. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO₂ emissions from cars and vans, the carbon

capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package. The 2030 climate and energy package, adopted in 2014, established more stringent targets than those in the previous package for the period 2021–2030.

26. 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 N₂O emissions from chemical industries, PFC emissions from aluminium production and CO₂ emissions from some industrial processes that were not covered in the earlier phases of the EU ETS (since 2013). For the period 2021–2030 an emission reduction target of 43 per cent below the 2005 level was established.

27. 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 and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and it includes binding annual targets for each member State for 2013–2020. Member States are further subject to a 30 per cent emission reduction by 2030.

28. EU-wide mitigation actions that are under development include the pending comprehensive package of EU legislation involving changes to the fourth trading period of the EU ETS (2021–2030), further revisions to the ESD, and enhanced use of RES and energy efficiency targets for 2030. Furthermore, a 2016 European Commission legislative proposal integrates GHG emissions and removals from LULUCF into the EU 2030 emission reduction target.

29. New policies under preparation follow Portugal's political commitment to being carbon neutral by 2050. Portugal provided detailed information on new plans under development during the review. The RNC 2050 is a long-term strategy aimed at significantly increasing the level of ambition for GHG emission reduction in all sectors. The document underwent public consultation from December 2018 to the end of February 2019. In parallel, Portugal is preparing a new Integrated National Energy and Climate Plan focused on the period until 2030, following implementation of European Council regulation 2018/1999 on the governance of the energy union and climate action, which will replace PNAC, PNAEE and PNAER, among others, and integrate PaMs revised from these instruments. Both documents will be finalized in 2019.

30. Portugal introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. Under PNAC 2020/2030 Portugal implemented targets for 2020 and 2030 for non-ETS sectors (services, households, transport, agriculture and waste). The key policies reported are a carbon tax on non-ETS sectors, tax incentives for efficiency and low-carbon options, as well as a programme for urban densification and revitalization. No emission estimates were provided to evaluate which PaMs have delivered the most significant mitigation effect. Table 4 provides a summary of the reported information on the PaMs of Portugal.

Table 4

Summary of information on policies and measures reported by Portugal

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	EU ETS	NE
	Carbon tax	NE
	Tax incentives for low-carbon options	NE
	Urban greening and revitalization	NE

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Energy		
Transport	National Strategy for Sustainable Cities 2020	NE
	Strategic Plan for Transport and Infrastructure	
	Electric Mobility Programme	NE
	National Plan for the Promotion of Cycling and Other Soft Modes	NE
		NE
Renewable energy	Biomass for combustion	NE
	PNAER	NE
	Promotion of renewables in heating and cooling	NE
	Promotion of production and self-consumption of renewables	NE
Energy efficiency	PNAEE	NE
	Energy Efficiency Programme in Public Administration	NE
	System for the Management of Intensive Energy Consumption	NE
IPPU	Implementation of F-gas regulation in line with EU regulation 517/2014 on F-gases	NE
Agriculture	Livestock effluent management	NE
	Reduction in fertilizer use	NE
	Soil conservation	NE
LULUCF	Increasing forest resilience	NE
	Afforestation	NE
Waste	National Action Plan for Circular Economy	NE
	National Plan on Waste Management 2020	NE
	Strategic Plan for Industrial Waste Management	NE
	National Plan for Industrial Waste Prevention	NE
	Second National Healthcare Waste Plans	NE

31. Portugal did not provide estimates of the mitigation impact of PaMs. It is therefore not possible to assess the assumptions, methods and data used in the estimation of mitigation impacts, the plausibility of the estimates or the likelihood of a mitigation action achieving the expected impact by the date stated. During the review, Portugal clarified that efforts to finalize the package of PaMs were ongoing, as the final version of the list of PaMs to reduce GHG emissions was approved by order of the Minister of the Environment and Energy Transition on 14 September 2018. This list was jointly developed with the sectoral focal points and was subject to a formal interservices consultation process before its final approval.

(b) Policies and measures in the energy sector

32. **Energy supply.** Portugal's vision for its energy sector has three main aspects: integrated promotion of energy efficiency and the use of RES, the reduction of the degree of external dependence, and a focus on strengthening and developing European regional connections. Portugal seeks to achieve this vision by balancing environmentally sustainable energy with security of energy supply and ensuring that energy remains a promotor of economic competitiveness. EU targets for 2020 in the energy sector of a 20 per cent reduction in energy consumption, 20 per cent of RES in final energy consumption and a 20 per cent GHG emission reduction from the energy sector translate into concrete goals for Portugal of 31 per cent of RES in gross final energy consumption, 10 per cent RES in the transport sector and a 20 per cent reduction in primary energy consumption. In addition to these targets, the Government of Portugal has adopted additional goals of a 25 per cent reduction in primary energy consumption and a 30 per cent reduction in national energy consumption. EU targets for 2030 of a 32.5 per cent reduction in energy consumption, 32 per cent of RES in final

energy consumption and 14 per cent of RES in the transport sector translate into goals of a 35 per cent reduction in energy consumption, 47 per cent of RES in final energy consumption and 20 per cent of RES in the transport sector for Portugal.

33. **Renewable energy sources.** In 2015, the share of RES in gross final energy consumption in Portugal was 28.0 per cent, 1.0 per cent above the value recorded in 2014 and 2.8 per cent above the indicative path, meaning that Portugal has already reached approximately 90 per cent of its target for 2020. Portugal also highlighted the contribution of the renewable energy sector to job creation and regional development in that it generates an entirely new industrial and business strand. Portugal's PNAER 2020 sets national targets for the share of energy from renewable sources consumed in transport, electricity, and heating and cooling by 2020, as well as their penetration paths in accordance with the pace of implementation of the measures and actions envisaged for each of these sectors, bearing in mind the effects of other policies related to energy efficiency on energy consumption. Portugal also has PaMs in place to reduce or phase out the tariff for cogeneration plants using fuel oil and promotes renewable energy in the electricity sector by operationalizing origin guarantees, decentralizing the electricity network through biomass power plants and establishing offshore energy pilot zones and purchasing electricity through a 'one-stop shop'.

34. **Energy efficiency.** Portugal's main PaMs in energy efficiency are PNAEE 2020, the Energy Efficiency Programme in Public Administration and the promotion of energy performance contracting for installations. These plans and policies are supported and complemented by a variety of mandatory regulatory systems, including the System for the Management of Intensive Energy Consumption, the System for the Certification of Buildings and the Regulation of Energy Consumption in Transport.

35. **Residential and commercial sectors.** GHG emissions in the residential and commercial sectors in Portugal are substantially mitigated by PaMs implemented to reduce emissions from electricity generation as well as energy efficiency improvements resulting from the use of more efficient equipment and implementation of instruments such as the System for the Certification of Buildings. The promotion of renewable energy production for own consumption, mainly from solar photovoltaic and solar thermal energy for heating water but also from heat pumps for space heating and insulation measures, was also highlighted by Portugal.

36. **Transport sector.** Portugal is one of the European countries with lower CO₂ emissions from new vehicles placed on the market, owing in no small measure to substantial subsidies and tax incentives for electric vehicles. Measures in this sector include the establishment of national targets for the incorporation of biofuels in transport, the inclusion of CO₂ in the tax on vehicles, investment in cleaner vehicles for public transport fleets and the Electric Mobility Programme. However, although electro-mobility is an effective GHG emission reduction measure, especially when the electricity is generated from renewable resources, the impacts of the transport sector on the environment and quality of life remain significant, requiring a modal shift to low-emission public transport. To this effect, Portugal's Strategic Plan for Transport and Infrastructure seeks to ensure mobility and accessibility for people and goods efficiently and according to needs, thus promoting social cohesion, including by continuing effective measures from the previous Strategic Plan for Transport and Infrastructure, including the National Plan for the Promotion of Cycling and Other Soft Modes and the National Guidelines for Mobility, which includes initiatives on transport mobility and accessibility.

37. The BR3 includes general information on Portugal's participation in efforts undertaken with the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels and on identifying the institutions in Portugal responsible for the implementation of related decisions. However, Portugal did not include information on what those national institutions are doing to promote and implement the relevant decisions of the International Civil Aviation Organization and the International Maritime Organization. Further information was provided by Portugal during the review on the work undertaken to establish the necessary measurement, reporting and verification systems.

38. **Industrial sector.** As is the case with most EU member States, the EU ETS is the main GHG emissions mitigation policy in Portugal for the industrial sector, including most energy- and process-related emissions from the sector. In Portugal, the EU ETS is complemented by a variety of energy efficiency policies.

(c) **Policies and measures in other sectors**

39. **Industrial processes.** The EU ETS is the main GHG emissions mitigation policy in Portugal for the industrial processes sector, including most energy- and process-related emissions from the sector. The two other policies reported by Portugal for the industrial processes sector are the System for the Management of Intensive Energy Consumption and the implementation of F-gas regulation in line with EU regulation 517/2014 on F-gases. During the review, Portugal provided information on additional measures led by the Portuguese Agency for Competitiveness and Innovation, which include the Industry Initiative 4.0, focusing on digital transformation, the National Action Plan for Circular Economy, and a framework of incentives for sustainable and competitive investments, which includes grants such as the “circular economy voucher”.

40. **Agriculture.** Under the EU Common Agricultural Policy beginning in 1992, successive reforms have progressively removed price support and aid to farmers in an effort to move agriculture to a more market-oriented economy. Later reforms have also sought to integrate rural development, climate and other environmental considerations into the sector. In the agriculture sector, the Rural Development Programme 2020 provides incentives for energy efficiency measures, particularly in irrigation, and promotes the production and use of biomass, solar and other renewable energies. In addition, under the National Strategy for Agricultural and Agroindustrial Effluents 2018–2025, policies are in place to reduce emissions from livestock effluents. Other policies that promote organic farming, conservation and precision farming aim to increase carbon stocks of soils and reduce emissions from nitrogen fertilizers. Sustainable grazing herds are also used to reduce fire risks related to forest regrowth on abandoned cropland.

41. **LULUCF.** Mitigation and adaptation have been embedded in forest policy since the establishment of the Forest Policy Act (1996). Forest PaMs are not specifically developed for addressing climate change, but most contribute to this aim. The LULUCF sector is expected to be a net sink up to 2050, although forest fires could continue to be a source of considerable inter-annual variation, as has been the case in recent years. To reduce this risk and ensure that forests contribute to CO₂ storage, the 2006 National Strategy for Forests (updated in 2015) and the Rural Development Programme 2020 set out measures to increase forest productivity and resilience to biotic and abiotic agents. These measures include improved forest management, in addition to initiatives to reduce soil erosion and clear forests of deadwood for use as fossil fuel substitutes. In recognition of the challenges of managing forest stands largely under fragmented private ownership, legislative reform in 2016–2017 led to the drawing up of forest management plans that bring together forest owners under associations of their choosing for forest fire prevention, development and marketing. The implementation of the aforementioned policies is part of a shift to a more integrated approach to reducing forest fire risk under the Integrated Fire Management System, aimed at the defence and sustainability of forest areas, and the protection of people and property, including settlements.

42. **Waste management.** Solid waste management in Portugal is structured around three main types of waste: municipal solid waste, industrial waste and health-care waste. Municipal solid waste is addressed through the National Plan on Waste Management, which was originally launched in 1996 as PERSU I (1996–2006), updated in 2007 as PERSU II (2007–2016) and updated again in 2014 as PERSU 2020 (2014–2020). Through the implementation of these plans, Portugal has gone from having 5 composting units, 13 controlled disposal sites and 341 illegal dumping sites, which meant that only 25 per cent of the population was served with appropriate waste management, to having a municipal solid waste infrastructure that includes 32 landfills, 6 mechanical treatment sites, 16 mechanical-biological treatment sites, 5 organic recovery sites and 2 incineration (energy recovery) sites, which receive waste from 30 sorting stations and 197 ‘ecocentres’ serving more than 40,000 waste drop-off points.

43. Industrial waste management is regulated through the Strategic Plan for Industrial Waste Management 2013–2020 and the National Plan for Industrial Waste Prevention 2015. Through these plans, industrial waste recovery has increased from around 47 per cent in 1999 to around 89 per cent in 2015. Health-care waste is addressed through the First National Healthcare Waste Plans (1999) and the Second National Healthcare Waste Plans (2011). Future waste regulations will focus on waste prevention, reducing landfilling of biodegradable municipal solid waste, increasing preparation for reuse and recycling and facilitating the transition to a circular economy.

(d) Response measures

44. Portugal did not report on the assessment of the economic and social consequences of response measures. The Party presented several initiatives aimed at minimizing adverse impacts under the Kyoto Protocol in its BR3, such as using financial resources generated within the framework of the EU ETS for climate change mitigation and adaptation in developing countries. Following the inclusion of aviation in the EU ETS, additional resources are available from auctioning for these purposes. Climate mitigation measures in developing countries include support for renewable energy development, ensuring a positive environmental, economic and social effect in those countries. In addition, some climate change mitigation measures implemented in Portugal also have a positive effect on other Parties; for example, shifting to natural gas has a positive effect on some fossil fuel exporting countries.

(e) Assessment of adherence to the reporting guidelines

45. The ERT assessed the information reported in the BR3 of Portugal and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5

Findings on mitigation actions and their effects from the review of the third biennial report of Portugal

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 8 Issue type: completeness Assessment: encouragement	Portugal did not report information on the assessment of the economic and social consequences of response measures in its BR3. During the review, Portugal highlighted that there were no differences in its reporting of response measures since the BR2. The ERT encourages Portugal to provide in its next BR, to the extent possible, detailed information on the assessment of the economic and social consequences of response measures or a reference to the information.
2	Reporting requirement specified in CTF table 3 Issue type: transparency Assessment: recommendation	Portugal did not report all the gases affected, nor did it provide any estimates of mitigation impacts in its BR3. The ERT also noted that the status of implementation of some PaMs was not transparently reported (e.g. the start date and status of implementation do not match). During the review, Portugal acknowledged that improvements could be made to its BR report in terms of reporting all the gases affected and that efforts to finalize the package of PaMs were ongoing, as the final version of the list of PaMs to reduce GHG emissions was approved only a few months before publication of the BR. The ERT recommends that Portugal include in its next BR all GHGs affected by each policy and measure and the related estimates of mitigation impacts, and ensure that the status of implementation of PaMs is consistently reported.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

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

(a) Technical assessment of the reported information

46. For 2014 Portugal reported in CTF table 4 annual total GHG emissions excluding LULUCF of 64,195.61 kt CO₂ eq. In 2014 emissions from non-ETS sectors relating to the target under the ESD amounted to 38,836.64 kt CO₂ eq.

47. For 2015 Portugal reported in CTF table 4 annual total GHG emissions excluding LULUCF of 68,740.82 kt CO₂ eq. In 2015 emissions from non-ETS sectors relating to the target under the ESD amounted to 40,614.06 kt CO₂ eq.⁴

48. On its use of units from LULUCF activities, Portugal reported in CTF table 4 that it would not use any units. Portugal also reported that it does not intend to use units from market-based mechanisms. Table 6 illustrates Portugal's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6

Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Portugal to achieve its target

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>Contribution of LULUCF (kt CO₂ eq)^a</i>	<i>Emissions including contribution of LULUCF (kt CO₂ eq)</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)</i>
1990	59 403.14	NA	NA	NA
2010	69 291.72	NA	NA	NA
2011	68 144.74	NA	NA	NA
2012	66 238.24	NA	NA	NA
2013	64 325.35	NA	NA	NA
2014	64 195.61	NA	NA	NA
2015	68 740.82	NA	NA	NA

Sources: Portugal's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

^a The EU's unconditional commitment to reduce GHG emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF.

49. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Portugal's emission reduction target for non-ETS sectors is 1.0 per cent above the 2005 level (see para. 15 above). As discussed above, in 2015 Portugal's annual total GHG emissions excluding LULUCF emissions from non-ETS sectors were 40,614.06 kt CO₂ eq, which is below its AEA under the ESD.

50. The ERT noted that Portugal is making progress towards its emission reduction target by implementing mitigation actions that are delivering significant emission reductions. On the basis of the results of the projections under the WEM scenario (see para. 69 below), the ERT also noted that Portugal is making progress towards achieving its target under the Convention.

51. The ERT also noted that the information provided during the review also indicates that Portugal will meet its 2030 target without contributions from LULUCF or market-based mechanisms and has made substantial progress towards its 2050 decarbonization goal.

(b) Assessment of adherence to the reporting guidelines

52. The ERT assessed the information reported in the BR3 of Portugal and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines

⁴ Information source: www.eea.europa.eu.

on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

53. Portugal reported projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. During the review, the Party provided information explaining that the reported WEM scenario includes implemented and adopted PaMs up to 1 September 2013.

54. In the NC7, Portugal used the notation key “NIP” for a projection scenario for some PaMs in table 4.2.7 but did not provide a definition of the notation key. During the review, Portugal clarified that the definition of the notation key “NIP” is “not in projections” as Portugal was still finalizing the selection of PaMs that would be included in the projections and the relevant monitoring and reporting arrangements.

55. In addition to the WEM scenario, Portugal reported the WAM scenario. During the review, the Party explained that the WAM scenario includes planned PaMs that were implemented after 1 September 2013.

56. Portugal did not provide any definitions of its WEM and WAM scenarios nor did it present the different underlying assumptions, which made it difficult for the ERT to assess compliance with the UNFCCC reporting guidelines on NCs. During the review, Portugal explained that the WAM scenario assumes a higher level of energy efficiency in buildings, industry and transport and that this is generally assuming a fuller implementation of existing policies or the deployment of new policies. The WAM scenario also integrates the effect of the EU regulation on F-gases. The difference between the WEM and the WAM scenario in the waste sector model (modelled separately from the energy sector) is accounted for by the implementation of the objectives of the National Plan on Waste Management 2020 and the continued phasing out of landfills.

57. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO₂, CH₄, N₂O, HFCs and SF₆ (treating HFCs and SF₆ collectively) for 1990–2030 (HFCs and SF₆ from 1995 onwards). During the review, Portugal explained that PFC emission projections are currently not available but will be developed under a new modelling exercise under the RNC 2050. The projections are also provided in an aggregated format for each sector as well as for a Party total using global warming potential values from the AR4.

58. Portugal did not report emission projections for indirect GHGs, such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides. During the review, Portugal outlined that these are being scoped as part of the RNC 2050.

59. Portugal reported on factors and activities affecting emissions for each sector. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately and were not included in the totals. During the review, the Party explained that such projections are not available for international transportation.

(b) Methodology, assumptions and changes since the previous submission

60. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR2. Portugal reported supporting information in the NC7, which it referenced in the BR3, further explaining some of the methodologies for the energy and industry sector, but no information was provided on the methodologies and approaches applied for the other sectors (F-gases, agriculture, waste, LULUCF). During the review, Portugal explained that projections for these sectors were based on calculations in Excel spreadsheets. Assumptions were made for both the agriculture and the forest sector regarding the main drivers for future emissions and removals based on evolution of the number of cattle and other farm animals, and land-use changes. The assumptions were made based on current trends and expectations about the impact of the EU

Common Agriculture Policy on agriculture and pasture land. In addition, some changes in manure practices were considered, as well as gains in nitrogen efficiency application.

61. To prepare its projections, Portugal relied on the following key underlying assumptions: population growth; GDP growth; international oil, gas and coal prices; EU ETS carbon price; and energy demand. These variables and assumptions were reported in CTF table 5. The assumptions were not updated on the basis of the most recent economic developments known at the time of the preparation of the projections.

62. To project the emissions generated by combustion and industrial processes, Portugal applied the TIMES_PT model. For this modelling exercise, which was completed in 2014, Portugal prepared two different socioeconomic scenarios: a high-case scenario assuming an annual GDP growth of 3 per cent and positive population growth, and a low-case scenario assuming an annual GDP growth of 1 per cent and negative population growth. During the review, Portugal explained that for reporting the WEM scenario the high-case scenario was used. These scenarios were split into two periods. For the period until 2020, economic progress is modelled by using short-term economic outlook data for the Portuguese economy, while for the period 2020–2030, the economic progress follows the long-term trend described in the National Low Carbon Road Map 2050.

63. Portugal provided information in CTF table 5 on assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios. The ERT noted that Portugal has included in table 5 of the NC7 and referenced in the BR3 information on non-energy sectors, which increases the transparency of the reporting.

64. In the BR3 Portugal has also provided information on the sectoral parameters used in the projections for the energy, agriculture and waste sectors, as well as a summary of the general economic parameters for historical and projected years.

65. Sensitivity analyses were conducted for a number of important assumptions, such as technological development of electric vehicles, production potential from renewable indigenous sources aimed at exporting, increased interconnection and maximization of photovoltaic technology in Portugal. During the review, Portugal provided additional information on the scenarios developed for the sensitivity analyses. The technological scenario on electric vehicles aimed to test the effect of increased autonomy of electric vehicles. It was assumed that an electric vehicle would be able to deliver a mobility service similar to that of a conventional internal combustion vehicle. Under this scenario, even when maintaining the cost curves for electric vehicles, the use of electric vehicles becomes competitive and induces a very significant reduction in diesel and gasoline consumption. The scenario relating to increased production from renewables was tested with the option of integrating in the system a massive amount of solar photovoltaic energy by 2030 (9 GW). The model that was run delivered full deployment of the capacity potential of solar as being the most cost-effective option for electricity generation.

66. In its BR3, Portugal mentions that the RNC 2050 is currently being prepared, including the new modelling exercise referred to in paragraph 57 above. During the review, Portugal presented the new road map and its three narratives (“off-track”, “platoon” and “yellow jersey”), which have been designed in order to identify pathways to achieve the national target of net zero GHG emissions including LULUCF by 2050. Portugal explained that the methodologies and approaches used in the preparation of the RNC 2050 are very similar to those used for the projections presented in the NC7.

(c) Results of projections

67. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and the quantified economy-wide emission reduction target are presented in table 7 and the figure below.

Table 7
Summary of greenhouse gas emission projections for Portugal

	GHG emissions (kt CO ₂ eq per year)	Changes in relation to base-year ^a level (%)	Changes in relation to 1990 level (%)
Kyoto Protocol base year ^b	65 028.09	NA	NA
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020) ^c	53 697.75	NA	NA
Quantified economy-wide emission reduction target under the Convention ^d	NA	NA	NA
Inventory data 1990 ^e	59 403.14	NA	NA
Inventory data 2015 ^e	68 740.82	6.0	15.7
WEM projections for 2020 ^f	63 048.28	–3.0	6.1
WAM projections for 2020 ^f	63 011.05	–3.0	6.1
WEM projections for 2030 ^f	55 847.12	–14.1	–6.0
WAM projections for 2030 ^f	52 163.19	–19.8	–12.2

^a “Base year” in this column refers to the base year used for the targets under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

^b The Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/PRT.

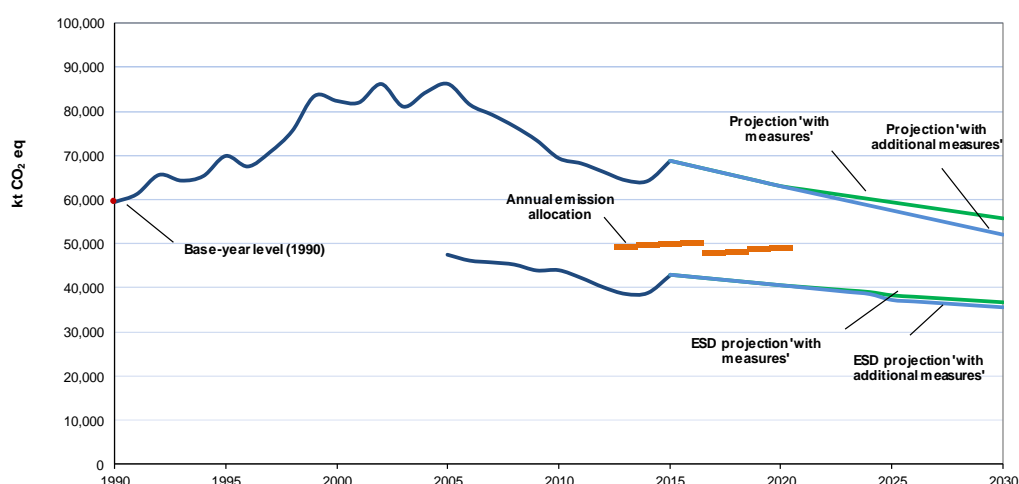
^c The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is 1 per cent above the 2005 level by 2020 for Portugal under the ESD. The value presented in this line is based on annex II to European Commission decision 2013/162/EU and as adjusted by Commission implementing decision 2013/634/EU that established the assigned amount for the EU member States and divided by eight (years) to calculate the annual emission level.

^d The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its 28 member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020.

^e From Portugal’s BR3 CTF table 6.

^f From Portugal’s NC7 and BR3.

Greenhouse gas emission projections reported by Portugal



Sources: (1) data for 1990–2015: Portugal’s 2017 annual inventory submission, version 2; total GHG emissions excluding LULUCF; (2) data for 2015–2030: Portugal’s NC7 and BR3; total GHG emissions excluding LULUCF.

68. Portugal’s total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 63,048.28 and 55,847.12 kt CO₂ eq, respectively, under the WEM scenario, which represents an increase of 6.1 per cent and a decrease of –6.0 per cent, respectively, in relation

to the 1990 level. Under the WAM scenario, emissions in 2020 are projected to be higher than those in 1990 by 6.1 per cent, while emissions in 2030 are projected to be lower by 12.2 per cent than those in 1990, and amount to around 63,011.05 and 52,163.19 kt CO₂ eq, respectively. The 2020 projections suggest that Portugal will continue contributing to the achievement of the EU target under the Convention.

69. Portugal's target for sectors covered by the ESD is 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 non-ETS sectors, change from 49,310.77 kt CO₂ eq in 2013 to 49,080.26 kt CO₂ eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 40,519 kt CO₂ eq by 2020. Under the WAM scenario, Portugal's emissions from non-ETS sectors in 2020 are projected to be 40,482 kt CO₂ eq. The projected level of emissions under the WEM and WAM scenarios is 17.4 and 17.5 per cent, respectively, below the AEAs for 2020. The ERT noted that this suggests that Portugal expects to meet its target under the WEM scenario.

70. In addition to the EU target for the non-ETS sectors, Portugal committed itself to achieving a domestic target of an 18–23 per cent reduction in emissions below the 2005 level by 2020 within the context of PNAC 2020/2030. The projections indicate that Portugal expects to meet its domestic target. In addition, Portugal provided information in its NC7 on national emission reduction targets for the non-ETS sectors, namely for services (–65 per cent), households (–14 per cent), transport (–14 per cent), waste including wastewater (–14 per cent) and agriculture (–8 per cent), compared with the 2005 level by 2020. The ERT could not compare the progress made to meet these targets because no ESD data were provided in the NC7 for 2005.

71. There is also a national target for 2030 under PNAC 2020/2030 which is expressed as an emission reduction of 30–40 per cent by 2030 compared with the 2005 level. The sectoral targets for the non-ETS sectors are –69 per cent for services, –15 per cent for households, –26 per cent for transport and –11 per cent for waste including wastewater within the period 2005–2030.

72. Portugal presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 8.

Table 8

Summary of greenhouse gas emission projections for Portugal presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	2020		2030			1990–2020		1990–2030	
	1990	WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	31 147	25 007	25 007	20 902	18 272	–19.7	–19.7	–32.9	–41.3
Transport	10 075	15 044	15 044	14 747	14 737	49.3	49.3	46.4	46.3
Industry/industrial processes	5 839	6 588	6 550	5 970	5 086	12.8	12.2	2.2	–12.9
Agriculture	6 981	8 142	8 142	7 241	7 241	16.6	16.6	3.7	3.7
LULUCF	1 842	–7 567	–7 567	–8 316	–8 316	–510.9	–510.9	–551.6	–551.6
Waste	5 361	8 267	8 267	6 987	6 827	54.2	54.2	30.3	27.4
Total GHG emissions without LULUCF	59 403	63 049	63 011	55 847	52 163	6.1	6.1	–6.0	–12.2

Source: Portugal's BR3 CTF table 6.

73. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy and LULUCF sectors, amounting to projected reductions of 6,140.00 kt CO₂ eq (–19.7 per cent) and 9,409.00 kt CO₂ eq (–510.9 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario changes slightly for the waste, energy

and LULUCF sectors. The ERT notes that it is very difficult to understand the reasons for the trends and changes in trends of the projections because the results of the projections are not described in a transparent manner in the BR3.

74. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector and by gas remain the same. For 2030 there are slight changes in the WAM scenario compared with the WEM scenario, which is owing to additional measures applied in the energy, industry and waste sectors, as explained by the Party during the review.

75. Portugal presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 9.

Table 9

Summary of greenhouse gas emission projections for Portugal presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	2020		2030			1990–2020		1990–2030	
	1990	WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO ₂	45 371	42 243	42 243	38 332	35 801	–6.9	–6.9	–15.5	–21.1
CH ₄	10 201	13 203	13 202	11 132	10 921	29.4	29.4	9.1	7.1
N ₂ O	3 831	4 613	4 614	4 640	4 583	20.4	20.5	21.1	19.6
HFCs	0	2 876	2 837	1 515	631	NA	NA	NA	NA
PFCs	0	NA	NA	NA	NA	NA	NA	NA	NA
SF ₆	0	114	114	227	227	NA	NA	NA	NA
NF ₃	0	0	0	0	0	NA	NA	NA	NA
Total GHG emissions without LULUCF	59 403	63 048	63 011	55 847	52 163	6.1	6.1	–6.0	–12.2

Source: Portugal's BR3 CTF table 6.

76. For 2020 the most significant reductions are projected for CO₂ emissions: 3,128.00 kt CO₂ eq (–6.9 per cent per cent) between 1990 and 2020; and 7,039.00 kt CO₂ eq (–15.5 per cent per cent) between 1990 and 2030. On the other hand, sharp increases are projected for HFC emissions: 2,876 kt CO₂ eq between 1995 and 2020, with a reversal in the trend to a decline between 2020 and 2030.

77. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector and by gas remain the same for 2020, but change slightly by 2030 owing to the implementation of the EU regulation on F-gases and the further promotion of renewables.

(d) Assessment of adherence to the reporting guidelines

78. The ERT assessed the information reported in the BR3 of Portugal and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 10.

Table 10

Findings on greenhouse gas emission projections reported in the third biennial report of Portugal

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement ^a specified in paragraph 28 Issue type: completeness	Portugal reported projections of GHG emissions under the WEM and WAM scenarios. However, the ERT noted that GHG emissions under the WOM scenario were not provided. During the review, Portugal explained that WOM projections are not available.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
	Assessment: encouragement	The ERT reiterates the encouragement from the previous review report that Portugal in its next NC estimate and report GHG emission projections under a WOM scenario in addition to those under the WEM and WAM scenarios.
2	Reporting requirement ^a specified in paragraph 29 Issue type: transparency Assessment: recommendation	<p>The ERT noted that the information in the BR3 on the definition of scenarios and the assumptions considered for each projections scenario, including information on PaMs, is not transparent; for example, some WAM scenarios include PaMs that are listed as “implemented”.</p> <p>During the review, Portugal explained that the cut-off date for PaMs to be considered in the WEM scenario was September 2013. All PaMs implemented after this date were considered in the WAM scenario. In addition, Portugal explained that the WAM scenarios assume a higher level of energy efficiency in buildings, industry and transport and that this is generally in line with a fuller implementation of existing policies or the deployment of new policies, including additional PaMs for F-gases and waste.</p> <p>The ERT reiterates the recommendation from the previous report that Portugal include planned PaMs in its reporting of WAM scenarios in accordance with the definitions of the UNFCCC reporting guidelines on BRs.</p>
3	Reporting requirement ^a specified in paragraph 32 Issue type: transparency Assessment: encouragement	<p>The ERT noted that Portugal reported 2017 inventory data in CTF table 6, but projections were based on inventory data from the 2013 GHG inventory submission (for 2011), while for the agriculture and LULUCF sectors the base-year data were based on the 2011 inventory submission (for 2009). The ERT noted that according to the UNFCCC reporting guidelines on NCs, the starting point should generally be the latest year for which inventory data are available in the NC.</p> <p>During the review, Portugal explained that at the time of the submission of the NC7 a new modelling exercise under the RNC 2050 was ongoing and therefore the projections were not updated.</p> <p>The ERT encourages Portugal to provide, in its next BR, projections with the starting point being the latest year for which inventory data are available in the BR.</p>
4	Reporting requirement ^a specified in paragraph 35 Issue type: completeness Assessment: encouragement	<p>Portugal has not reported projections of the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.</p> <p>During the review, Portugal explained that projections for indirect GHGs are not currently available. However, in the new modelling exercise, projections for other pollutants such as nitrogen oxides, non-methane volatile organic compounds and sulfur oxides will be prepared.</p> <p>The ERT encourages Portugal to provide in its next NC on projections for the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.</p>
5	Reporting requirement ^a specified in paragraph 36 Issue type: completeness Assessment: recommendation	<p>Portugal did not provide emission projections related to fuel sold to ships and aircraft engaged in international transport in the NC7.</p> <p>During the review, Portugal explained that no projections for international transportation are available.</p> <p>The ERT reiterates the recommendation from the previous review report that Portugal include emission projections related to fuel sold to ships and aircraft engaged in international transport separately in its next NC.</p>
6	Reporting requirement ^a specified in paragraph 42 Issue type: transparency Assessment: encouragement	<p>Portugal provided in its NC7 information on the models and/or approaches used to compile projections. However, this information was not considered to be sufficient as it addressed only the energy and industry sectors and not the agriculture, waste, LULUCF and IPPU sectors.</p> <p>During the review, Portugal provided some general information explaining that the non-energy/industry sectors are modelled based on Excel spreadsheets.</p> <p>In order to increase transparency and allow the reader to obtain a basic understanding of the models and/or approaches used, the ERT encourages Portugal</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		in its next NC to provide sufficient information on those models and approaches. The ERT notes the importance of Portugal providing such information for all sectors.
7	Reporting requirement ^a specified in paragraph 43 Issue type: transparency Assessment: encouragement	<p>In its NC7, Portugal reported on the models and approaches applied for the energy and industry sectors; however, it did not provide any information on the strengths and weaknesses of the model used, or an explanation of how the model or approach used accounts for any overlap or synergies that may exist between different PaMs.</p> <p>During the review, Portugal provided an additional document describing the modelling exercise on which the projections reported in the NC7 are based (Agência Portuguesa do Ambiente, 2012).</p> <p>The ERT encourages Portugal to provide in its next NC for each model or approach used the information required by paragraph 43(a)–(e) of the UNFCCC reporting guidelines.</p>
8	Reporting requirement ^a specified in paragraph 44 Issue type: completeness Assessment: encouragement	<p>Portugal comprehensively explained the modelling approach for the TIMES_PT model. However, the ERT noted that no references for a more detailed explanation were provided in the NC7.</p> <p>During the review, Portugal provided a reference to the modelling exercises conducted within the framework of the National Low Carbon Road Map 2050, which provides additional information on the methodologies applied for the projections.</p> <p>The ERT encourages Portugal to provide references for more detailed information related to paragraph 43(a)–(e) of the UNFCCC reporting guidelines on NCs in its next NC.</p>
9	Reporting requirement ^a specified in paragraph 46 Issue type: transparency Assessment: encouragement	<p>In the NC7 Portugal provided the quantitative results of a sensitivity analysis in tabular format for total GHG emissions as well as a split between emissions under the EU ETS and under the ESD. Furthermore, Portugal explained in the NC7 that two technology scenarios were analysed for this exercise. However, it is not clear to which scenarios the results in the table are referring.</p> <p>During the review, Portugal clarified that the table shows the results of the low-case and the high-case socioeconomic scenarios. In addition, Portugal provided further information on the sensitivity analysis, including qualitative and quantitative information on both the assumptions of the technological scenarios and the results of the sensitivity analysis.</p> <p>The ERT encourages Portugal to transparently present the results of its sensitivity analysis by, for example, being specific as to which scenario these results apply.</p>
10	Reporting requirement ^a specified in paragraph 48 Issue type: transparency Assessment: recommendation	<p>While Portugal reported in CTF table 5 the key variables for most sectors. However, owing to the absence of any description related to the results of the projections of the WEM and WAM scenarios, the ERT found it difficult to understand the emission trends in the periods 1990–2020 and 2020–2030 for each sector.</p> <p>During the review, Portugal provided relevant information on factors and activity data for all sectors.</p> <p>In order to increase transparency, the ERT reiterates the recommendation from the previous review reports that Portugal include in the projections chapter a description of the underlying emission trends and patterns for each sector for the WEM and WAM scenarios.</p>

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs.

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

1. Approach and methodologies used to track support provided to non-Annex I Parties

(a) Technical assessment of the reported information

79. In the BR3 Portugal reported information on the provision of financial, technological and capacity-building support required under the Convention for the period 2015–2016.

80. The Party indicated that it does not use a conventional definition of what is “new and additional”; instead, it has adopted a framework on how it distributes financing in 2006. The funding aims to support the shift towards a low-carbon competitive economy through funding measures which contribute to meeting Portugal’s climate commitments. In 2010, Portugal decided that the Portuguese Carbon Fund (now restructured into the Environment Fund) would be an additional source of funding complementary to ODA to support development cooperation projects in the field of climate change.

81. Portugal provided details of financial flows to developing countries that illustrate a declining trend of bilateral support in the period 2013–2016. During the review, Portugal explained that the decreasing trend was due to the completion of the projects initiated in 2012 and to the declining national economy at that time. During the review, Portugal provided information on the new and additional support provided in the period post 2016 and explained that the newly created Environment Fund provides a variety of avenues for new and additional funding.

82. Portugal reported the financial support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and recognizing the capacity-building elements of such support. Portugal’s main support goes to Portuguese-speaking least developed countries, for example, capacity-building projects for developing strategies on low-carbon climate-resilient development in Cabo Verde, Mozambique and Sao Tome and Principe. Portugal has provided support to Cabo Verde to implement a road map for waste management and provided support through the Community of Portuguese Language Countries on activities related to climate change.

83. The BR3 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked. Portugal included information on how it has refined its approach to tracking climate support and methodologies. It explained how it tracks finance for adaptation and mitigation projects using the Rio markers and specified that tracking is done only for projects providing financial support and not for international cooperation. The Party has categorized projects on the basis of their alignment with the Rio markers as having a “principal” objective (score 2), a “significant” objective (score 1) and a “non-targeting” objective (score 0).

84. Portugal described the methodology and underlying assumptions used for collecting and reporting information on financial support. The Institute for Cooperation and Language (Camões) has an online integrated information system that stores and displays all data on Portuguese cooperation.⁵ Such information includes aggregate amounts of funding and amounts per project, as well as the time frames of the projects.

(b) Assessment of adherence to the reporting guidelines

85. The ERT assessed the information reported in the BR3 of Portugal and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 11.

⁵ https://www.instituto-camoes.pt/activity/o-que-fazemos/cooperacao/atuacao/reportamos/reportamos-2_

Table 11

Findings on the approach and methodologies used to track support provided to non-Annex I Parties from the review of the third biennial report of Portugal

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 14 Issue type: completeness Assessment: recommendation	<p>Although Portugal provided information on the tracking of financial support to non-Annex I Parties, the ERT noted that Portugal did not describe a national approach for tracking of the provision of technological and capacity-building support to non-Annex I Parties in its BR3, including information on indicators and delivery mechanisms used and allocation channels tracked.</p> <p>During the review, Portugal explained that projects providing financial support, technology transfer and capacity-building in developing countries are anchored on existing local platforms and rely on the local monitoring and evaluation systems for tracking progress as a method for ensuring their integration in national priority programmes. The Party therefore does not use its own independent tracking methods.</p> <p>The ERT recommends that Portugal report in its BR on the tracking of technological and capacity-building support and information on indicators and delivery mechanisms used and allocation channels tracked.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

2. Financial resources

(a) Technical assessment of the reported information

86. Portugal reported information on the provision of financial support required under the Convention and its Kyoto Protocol, including on financial support provided, committed and pledged, allocation channels and annual contributions. The Party reported on its commitment to mobilize 0.15–0.20 per cent of its gross national income as ODA allocated to the least developed countries by 2030. In line with the Strategic Concept of Portuguese Cooperation for 2014–2020, the Party identified PALOP countries and Timor-Leste as beneficiaries for the 2015–2016 period.

87. Portugal described how its resources address the adaptation and mitigation needs of non-Annex I Parties. The Party also described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures and contribute to technology development and transfer and capacity-building related to mitigation and adaptation. Portugal described the evolution of its ODA related to climate change for the period 2013–2016 assigned to each of the beneficiary developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects.

88. As part of efforts to meet its obligations under the Kyoto Protocol, Portugal has provided information in its BR3 on amounts of financial support disbursed to developing countries for the period 2012–2016, classifying it under either mitigation (table 7.2.1) or adaptation (table 7.2.2).

89. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Portugal reported that its climate finance has been allocated on the basis of supporting low-carbon competitive economies. This is outlined in the Strategic Concept of Portuguese Cooperation for 2014–2020. During the review, Portugal explained that it has demonstrated its commitment to this objective through the restructuring of the financing instrument under the current Environment Fund and the identification of new partner developing countries in the future. Table 12 includes some of the information reported by Portugal on its provision of financial support.

90. Portugal made contributions through multilateral channels amounting to USD 9.62 million in 2013. Those contributions declined in 2014 and 2015 but increased to USD 14.29 million in 2016, illustrating Portugal's commitment to increasing financial support for

climate financing. In terms of bilateral support to developing countries, the Party committed USD 21.21 million in 2013 but this amount decreased to USD 2.23 million in 2016, which Portugal explained during the review was owing to the completion of most of the projects initiated in 2012.

91. As part of its multilateral financing for climate-resilience activities, Portugal reported on its involvement, together with other EU member States, in the implementation of projects in the form of delegated cooperation (on behalf of the EU). For example, since 2013 Portugal has been implementing a programme with the EU in Timor-Leste aiming at capacity-building in rural communities that are vulnerable to climate change through the sustainable management of natural resources. Table 12 includes some of the information reported by Portugal on its provision of financial support.

Table 12

Summary of information on provision of financial support by Portugal in 2015–2016

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>	
	<i>2015</i>	<i>2016</i>
Official development assistance	308.03	343.07
Climate-specific contributions through multilateral channels, including:	4.28	14.29
Global Environment Facility	0.18	0.07
Least Developed Countries Fund	0	0
Special Climate Change Fund	0	0
Adaptation Fund	0	0
Green Climate Fund	2.22	0
Trust Fund for Supplementary Activities	0	0
Financial institutions, including regional development banks	4.30	14.17
United Nations bodies	0	0.13
Other	0	0
Climate-specific contributions through bilateral, regional and other channels	4.69	2.32
Other	0	0

Sources: (1) Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>; (2) BR3 CTF tables.

92. Although Portugal uses the Rio markers to track climate finance, it explained that no universal system exists for tracking financial, technological and capacity-building support to developing countries. To ensure the integration of financial, technological and capacity-building support provided in the priority projects of the supported countries, Portugal relies on local monitoring and evaluation measures to track progress. Therefore, Portugal does not use independent tracking systems. The ERT noted that, with the recent development of an integrated online system for tracking finance, the Party will be able to provide such information and compare progress among supported countries and types of support (adaptation or mitigation).

93. Portugal reported on its climate-specific public financial support, totalling USD 8.97 million in 2015 and USD 16.62 million in 2016. With regard to the future financial pledges aimed at enhancing the implementation of the Convention by developing countries, Portugal committed itself to mobilizing 0.15 to 0.2 per cent of its gross national income as ODA allocated to the least developed countries by 2030. During the reporting period 2015–2016, Portugal placed a focus on PALOP countries and Timor-Leste. The ERT noted that Portugal reported in CTF table 7(b) its bilateral support allocated to non-Annex I Parties in 2015 and

2016. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by priority is presented in table 13.

Table 13

Summary of information on channels of financial support used in 2015–2016 by Portugal

(Millions of United States dollars)

Allocation channel of public financial support	Year of disbursement				Share (%)	
	2015	2016	Difference	Change (%)	2015	2016
Support through bilateral and multilateral channels allocated for:						
Mitigation	3.76	2.11	–1.68	–43.6	42.2	12.7
Adaptation	0.35	0.22	–0.13	–37.6	3.9	1.3
Cross-cutting	4.84	14.29	9.46	195.4	54.0	86.0
Other	0.00	0.00	0.00	0.00	0.00	0.00
Total	8.95	16.62	7.65	85.23	100.0	100.0
Detailed information by type of channel						
Multilateral channels						
Mitigation	0.00	0.00	0.00	0.00	0.00	0.00
Adaptation	0.00	0.00	0.00	0.00	0.00	0.00
Cross-cutting	4.28	14.29	10.01	234	100	100
Other						
Total	4.28	14.29	10.01	234	100.0	100.0
Bilateral channels						
Mitigation	3.79	2.11	–1.68	–44.36	80.8	90.7
Adaptation	0.35	0.22	–0.13	–37.86	7.4	9.3
Cross-cutting	0.56	0.00	–0.56	–100	11.8	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00
Total	4.69	2.32	–2.36	–50.32	100.0	100.0
Multilateral compared with bilateral channels						
Multilateral	4.28	14.29	10.01	233.66	47.8	86.0
Bilateral	4.69	2.33	–2.36	–50.47	52.2	14.0
Total	8.97	16.62	7.65	85.28	100.0	100.0

Source: CTF tables 7, 7(a) and 7(b) of the BR3 of Portugal.

94. The BR3 includes detailed information on the financial support provided through multilateral, bilateral and regional channels in 2015 and 2016. More specifically, Portugal contributed through multilateral channels, as reported in the BR3 and in CTF table 7(a), USD 4.28 and 14.29 million for 2015 and 2016, respectively. The contributions were made to specialized multilateral climate change funds, such as multilateral financial institutions, including regional development and specialized United Nations bodies (e.g. the United Nations Environment Programme and the United Nations Development Programme).

95. The BR3 and CTF table 7(b) also include detailed information on the total financial support provided through bilateral channels, totalling USD 4.69 and 2.32 million in 2015 and 2016, respectively.

96. The BR3 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2015, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 42.2, 3.9 and 54.0 per cent, respectively. In addition, 47.8 per cent of the total public financial support was allocated through multilateral channels and 52.2 per cent through bilateral,

regional and other channels. In 2016, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects were 12.7, 1.3 and 86.0 per cent, respectively. Furthermore, 86.0 per cent of the total public financial support was allocated through multilateral channels and 14.0 per cent through bilateral, regional and other channels.

97. The ERT noted that in 2015 a majority of financial contributions made through multilateral channels were allocated to multilateral financial institutions and regional development banks such as the World Bank, the African Development Bank and the Asian Development Bank. All the funds were allocated for activities that are cross-cutting across mitigation and adaptation and other, as reported in CTF table 7(a). The corresponding allocations for 2016 (CTF table 7(b)) were similarly directed to multilateral financial institutions and regional development banks in projects that are mostly cross-cutting across mitigation and adaptation and other.

98. CTF tables 7(a) and 7(b) include information on the type of financial instrument used in the provision of assistance to developing countries. The ERT noted that grants accounted for the totality of the public financial support provided in 2015 and 2016.

99. In the BR3 Portugal did not provide information on private finance mechanisms, noting the difficulty in reporting and tracking such finance. However, during the review, the Party clarified that under the newly formed Environment Fund and the integrated online finance reporting system, such financial flows will be easily reported. The ERT noted that all finance to NGOs that mainly receive funding from the Institute for Cooperation and Language (Camões) (through the Environment Fund) is available in the integrated online finance reporting system and can be tracked in the future.

(b) Assessment of adherence to the reporting guidelines

100. The ERT assessed the information reported in the BR3 of Portugal and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 14.

Table 14

Findings on financial resources from the review of the third biennial report of Portugal

<i>Reporting</i>		<i>Description of the finding with recommendation or encouragement</i>
<i>No.</i>	<i>requirement, issue type and assessment</i>	
1	<p>Reporting requirement specified in paragraph 16</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>Portugal reported that support to non-Annex 1 Parties, in particular PALOP countries (Portuguese-speaking African countries) and Timor-Leste, is based on the Strategic Concept of Portuguese Cooperation for 2014–2020. However, the Party did not describe how it seeks to ensure that the resources it provides effectively address the needs of non-Annex I Parties with regard to climate change adaptation and mitigation.</p> <p>During the review, Portugal explained that with each priority beneficiary country it establishes a Bilateral Strategic Cooperation Programme with a duration of five years, where both countries define their sectoral priorities and needs. In this regard, the bilateral projects financed by Portugal are submitted by the partner country according to the priorities and needs identified in the strategic document. The project documents are also designed by the beneficiary country and include information on how the planned activities address the gaps identified in their national action plans or national strategies. This information is thoroughly assessed and cross-checked with the priorities and needs identified by the beneficiary country in the context of the respective Bilateral Strategic Cooperation Programme.</p> <p>The ERT recommends that Portugal describe in its next BR, to the extent possible, how it seeks to ensure that the resources it provides effectively address the needs of non-Annex I Parties with regard to climate change adaptation and mitigation.</p>
2	<p>Reporting requirement specified in paragraph 19</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Portugal did not report on PaMs that promote the scaling up of private investments in mitigation and adaptation activities in developing countries.</p> <p>During the review, Portugal explained that it was currently working, and would continue to work, on public support schemes.</p> <p>The ERT encourages Portugal to include in its next BR information on the PaMs it has put in place to promote the scaling up of private investments in mitigation and adaptation activities in developing countries.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

3. Technology development and transfer

(a) Technical assessment of the reported information

101. Portugal provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. Portugal provided examples of support directed towards adaptation activities (e.g. disaster reduction and prevention, and sustainable agriculture) and also for mitigation activities (e.g. energy generation, renewable energy, heating and cooling, water and sanitation). Most of this support is targeted to public institutions.

102. The ERT took note of the information provided in CTF table 8 on recipient countries, target areas, measures and focus sectors of technology transfer programmes. Portugal presented in its BR3 examples of technology transfer activities such as supporting the use of low-carbon technologies (Cabo Verde), technologies for water and waste management (Cabo Verde), technologies for bioenergy exploitation (Sao Tome and Principe) and technologies for sustainable energy (Mozambique). During the review, Portugal explained how such support focuses on the development of the endogenous capacities and technologies of non-Annex I Parties as all the projects financed by Portuguese cooperation involve experts from the institutions of the beneficiary countries who often actively participate in the project design and on-the-job training.

103. The ERT noted that Portugal reported on its PaMs as well as success stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance

the transfer and deployment of climate-friendly technologies. For example, the bioenergy project in Sao Tome and Principe has succeeded because it has equipped rural communities and the technical staff of the National Directorate for the Environment with capacity to build and operate small-scale anaerobic digesters. During the review, the Party provided further information on how monitoring and evaluation reports are used to identify lessons learned for each technology transferred.

(b) Assessment of adherence to the reporting guidelines

104. The ERT assessed the information reported in the BR3 of Portugal and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 15.

Table 15

Findings on technology development and transfer from the review of the third biennial report of Portugal

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 21 Issue type: completeness Assessment: recommendation	Portugal did not report information on the support for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties in its BR3. During the review, Portugal explained that participants from the partner countries are involved in all stages of project design, empowering them in replicating implementation of such projects. The participants also benefit from targeted training that enhances some of their skills. The ERT recommends that in its next BR Portugal report on the support for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

4. Capacity-building

(a) Technical assessment of the reported information

105. In the BR3 and CTF table 9 Portugal supplied information on how it has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. Portugal described individual measures and activities related to capacity-building support in textual and tabular format. Examples include equipping 50 remote towns across all provinces of Mozambique with solar photovoltaic systems in schools, health centres and associated homes. This has allowed basic access to electricity, lighting systems, vaccine refrigerators and water pumping systems. Another example in Sao Tome and Principe describes the ‘hard’ and ‘soft’ capacity-building support which involves promoting sustainable access to energy using RES in rural communities through the use of waste produced in agriculture, implementation of anaerobic digestion through the construction and installation of small-scale anaerobic digesters and empowering the communities to continue implementing such improved technologies.

106. Portugal reported that it has supported climate-related capacity development activities relating to adaptation and mitigation sectors. The Party also reported that it has responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership and country-driven demand. The Party stated that it intends partners to lead and control activities and uses national systems only for the implementation of aid. Such an approach avoids creating a parallel structure for monitoring capacity-building and allows for the identification of priority areas based on partner demand.

107. Portugal has provided examples of capacity-building activities which include the development of an atlas for renewable energy in Mozambique, integration of climate change adaptation into development in Cabo Verde, Mozambique and Sao Tome and Principe and development of a road map for waste management in Cabo Verde.

(b) Assessment of adherence to the reporting guidelines

108. The ERT assessed the information reported in the BR3 of Portugal and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

109. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Portugal in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to Portugal'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 Portugal's provision of support to developing country Parties.

110. Total GHG emissions excluding emissions and removals from LULUCF increased by 13.0 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF increased by 2.0 per cent over the same period. Emission increases were driven mainly by factors such as an increase in economic activity and GDP and a reversal of the trend in transport emissions, which started to decline in 2005 but increased by 5.1 per cent from 2013 to 2016, and substantial increases in F-gases used for refrigeration and air conditioning. Those factors outweighed improvements in energy efficiency, growth in RES, including in the transport sector, and important efforts in waste management.

111. Under the Convention, Portugal committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. Portugal's main policy framework relating to energy and climate change is the Strategic Framework for Climate Policy, approved through a Council of Ministers resolution, which includes PNAC 2020/2030 and ENAEC 2020. Portugal also set a target to be carbon neutral by 2050. The mitigation actions with the most significant mitigation impact are the EU ETS, the carbon tax, the tax incentives for low-carbon options and urban greening and revitalization at the cross-sectoral level. Portugal's key mitigation policies include the Strategic Plan for Transport and Infrastructure, PNAER and PNAEE. Portugal's RNC 2050 and a new Integrated National Energy and Climate Plan are under preparation.

112. Under the ESD, Portugal has a target of limiting its emission growth to 1 per cent above the 2005 level by 2020. The 2013–2020 path of Portugal's AEAs (its national emission target for non-ETS sectors) is 49,310.77 kt CO₂ eq to 49,080.26 kt CO₂ eq. In addition, Portugal committed itself to achieving a domestic target of an 18–23 per cent reduction in emissions below the 2005 level by 2020. The projections indicate that Portugal expects to meet its domestic target.

113. For 2015 Portugal reported in CTF table 4 total GHG emissions excluding LULUCF of 68,740.82 kt CO₂ eq. Portugal does not intend to use units from market-based mechanisms since the country is expected to achieve its target through domestic measures alone.

114. The GHG emission projections provided by Portugal in the BR3 correspond to the WEM and WAM scenarios. Under both scenarios, emissions are projected to be 6.1 per cent above the 1990 level by 2020. On the basis of the reported information, the ERT concludes that Portugal expects to meet its 2020 ESD target under the WEM and WAM scenarios. The ERT noted that Portugal is making progress towards its emission reduction target by implementing mitigation actions that deliver significant emission reductions. 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 emission reduction target by 2020.

115. Portugal continues to provide climate financing to developing countries in line with its climate finance programmes such as the Strategic Concept of Portuguese Cooperation for 2014–2020 and the restructuring of the Carbon Fund into the Environment Fund. Portugal

has reduced the level of its financial support since the BR2, and its public financial support in 2013 and 2016 totalled USD 30.84 and 16.62 million per year, respectively. Portugal explained during the review that the downward trend was owing to the completion of the project cycles for projects initiated in 2012 in developing countries. For those years, Portugal's support provided for mitigation action was higher than its support provided for adaptation. The biggest share of financial support went to projects in the energy sector in 2013 and 2014. In 2016, more finance was directed to multilateral financial institutions, including regional development banks. Portugal has clearly illustrated how it integrates its support for technology transfer into existing development programmes to ensure ownership and sustainability of implementation, which are monitored using local monitoring and evaluation procedures. Portugal provided information on its capacity-building activities classified as 'hard' and 'soft' and the opportunities to enhance the endogenous capacities and technologies of developing countries through mitigation and adaptation activities.

116. 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:

- (a) To improve the completeness of its reporting by:
 - (i) Including emission projections related to fuel sold to ships and aircraft engaged in international transport separately (see issue 5 in table 10);
 - (ii) Providing information on the tracking of technological and capacity-building support and information on indicators and delivery mechanisms used and allocation channels tracked (see issue 1 in table 11);
 - (iii) Describing how it seeks to ensure that the resources it provides effectively address the needs of non-Annex I Parties with regard to climate change adaptation and mitigation, to the extent possible (see issue 1 in table 14);
 - (iv) Reporting on the support for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties (see issue 1 in table 15);
- (b) To improve the transparency of its reporting by:
 - (i) Including all GHGs affected by each policy and measure, the related estimates of mitigation impacts and ensuring that the status of implementation of PaMs is consistently reported (see issue 2 in table 5);
 - (ii) Including planned PaMs in its reporting of WAM scenarios in accordance with the definitions of the UNFCCC reporting guidelines on BRs (see issue 2 in table 10);
 - (iii) Including in the projections chapter a description of the underlying factors and activities to allow an understanding of the emission trends for each sector of the WEM and WAM scenarios (see issue 10 in table 10).

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Portugal. Available at https://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/prt-2017-nir-26may17.zip.

2018 GHG inventory submission of Portugal. Available at <https://unfccc.int/documents/65569>.

BR3 of Portugal. Available at http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/5296041_portugal-br3-nc7-1-pt7cn3brfinal.pdf.

BR3 CTF tables of Portugal. Available at http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/vnd.openxmlformats-officedocument.spreadsheetml.sheet/5296041_portugal-br3-nc7-1-pt7cn3brfinal.pdf.

“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>.

“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>.

NC7 of Portugal. Available at http://unfccc.int/files/national_reports/annex_i_natcom/application/pdf/28410365_portugal-nc7-1-pt7cn3brfinal.pdf.

Report of the technical review of the second biennial report of Portugal. FCCC/TRR.2/PRT. Available at https://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600009162#beg.

Report on the technical review of the sixth national communication of Portugal. FCCC/IDR.6/PRT. Available at https://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600008058#beg.

“UNFCCC biennial reporting guidelines for developed country Parties”. FCCC/SBSTA/2014/INF.6. Annex I to decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention. Available at <https://unfccc.int/topics/mitigation/workstreams/pre-2020-ambition/compilation-of-economy-wide-emission-reduction-targets-to-be-implemented-by-parties-included-in-annex-i-to-the-convention>.

B. Additional information provided by Portugal

Responses to questions during the review were received from Mr. José Paulino (Climate Change Department), including additional material. The following documents¹ were provided by Portugal:

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