



United Nations

FCCC/TRR.3/ROU



Framework Convention on  
Climate Change

Distr.: General  
23 November 2018

English only

---


## **Report on the technical review of the third biennial report of Romania**

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 Romania, 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”.

GE.18-20128(E)



\* 1 8 2 0 1 2 8 \*

Please recycle 



## Contents

	<i>Paragraphs</i>	<i>Page</i>
Abbreviations and acronyms .....		3
I. Introduction and summary .....	1–6	5
A. Introduction .....	1–3	5
B. Summary.....	4–6	5
II. Technical review of the information reported in the third biennial report .....	7–69	6
A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target .....	7–11	6
B. Assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target and related assumptions, conditions and methodologies .....	12–16	7
C. Progress made towards the achievement of the quantified economy-wide emission reduction target .....	17–68	9
D. Provision of financial, technological and capacity-building support to developing country Parties .....	69	21
III. Conclusions and recommendations .....	70–80	21
Annex		
Documents and information used during the review .....		23

## Abbreviations and acronyms

AEA	annual emission allocation
AIJ	activities implemented jointly
Annex II Party	Party included in Annex II to the Convention
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH <sub>4</sub>	methane
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
CTF	common tabular format
EF	emission factor
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
GWh	gigawatt-hour
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
IRENA	International Renewable Energy Agency
JI	joint implementation
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF <sub>3</sub>	nitrogen trifluoride
NGO	non-governmental organization
NIR	national inventory report
NO	not occurring
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N <sub>2</sub> O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol, Part II: Reporting of supplementary information under Article 7, paragraph 2”
RES	renewable energy sources
SF <sub>6</sub>	sulfur hexafluoride
TWh	terawatt-hour
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 BR3<sup>1</sup> of Romania. 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 Romania, which accepted the draft version of the report as transmitted, without providing any comments.

3. The review was conducted from 4 to 9 June 2018 in Bucharest by the following team of nominated experts from the UNFCCC roster of experts: Mr. Kari Hämeikoski (Finland), Ms. Violeta Hristova (Bulgaria), Mr. Ching Tiong Tan (Malaysia) and Ms. Sirinthornthep Towprayoon (Thailand). Ms. Hristova and Mr. Tan were the lead reviewers. The review was coordinated by Mr. Nalin Srivastava (UNFCCC secretariat).

### B. Summary

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

#### 1. Timeliness

5. The BR3 was submitted on 27 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were submitted on 27 December 2017.

#### 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 Romania in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

**Summary of completeness and transparency of mandatory information reported by Romania 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	–
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	Issue 1 in table 3
Progress in achievement of targets	Complete	Mostly transparent	Issue 1 in table 5; issue 1 in table 7; issue 1 in table 11
Provision of support to developing country Parties <sup>a</sup>	NA	NA	–

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

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

<sup>a</sup> Romania is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention.

## 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 emissions<sup>2</sup> excluding emissions and removals from LULUCF decreased by 54.4 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 61.0 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Romania.

Table 2  
Greenhouse gas emissions by sector and by gas for Romania for the period 1990–2016

	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share (%)	
	1990	2000	2010	2015	2016	1990–2016	2015–2016	1990	2016
<i>Sector</i>									
1. Energy	175 347.91	97 787.04	84 645.98	78 977.04	75 431.74	-57.0	-4.5	71.1	67.0
A1. Energy industries	70 944.12	42 684.60	35 709.22	28 805.72	25 809.61	-63.6	-10.4	28.8	22.9
A2. Manufacturing industries and construction	49 997.97	17 192.72	10 926.28	12 191.71	11 324.63	-77.3	-7.1	20.3	10.1
A3. Transport	12 438.59	9 912.57	14 236.47	15 742.02	16 828.17	35.3	6.9	5.0	15.0
A4. and A5. Other	12 530.87	9 404.37	10 691.26	10 878.57	10 836.19	-13.5	-0.4	5.1	9.6
B. Fugitive emissions from fuels	29 436.38	18 592.78	13 082.75	11 359.02	10 633.14	-63.9	-6.4	11.9	9.4
C. CO <sub>2</sub> transport and storage	NO	NO	NO	NO	NO	NA	NA	NO	NO
2. IPPU	32 154.49	19 186.62	14 446.30	12 760.70	12 942.22	-59.7	1.4	13.0	11.5
3. Agriculture	34 222.10	18 456.03	17 505.79	18 611.87	18 320.20	-46.5	-1.6	13.9	16.3
4. LULUCF	-20 590.66	-22 858.64	-23 012.24	-23 351.35	-24 292.32	18.0	4.0	-	-
5. Waste	5 023.36	5 303.93	5 584.18	5 861.71	5 848.21	16.4	-0.2	2.0	5.2
6. Other	NO	NO	NO	NO	NO	NA	NA	0.0	0.0
<i>Gas<sup>a</sup></i>									
CO <sub>2</sub>	17 1231.79	93 538.38	83 551.26	77 788.22	75 051.66	-56.2	-3.5	69.4	66.7
CH <sub>4</sub>	57 229.56	36 107.23	30 042.19	29 584.06	28 551.60	-50.1	-3.5	23.2	25.4
N <sub>2</sub> O	15 477.43	9 333.79	7 536.50	7 143.44	6 989.67	-54.8	-2.2	6.3	6.2
HFCs	0.18	70.82	982.46	1 636.76	1 894.11	1 045 258.0	15.7	0.0	1.7

<sup>2</sup> In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO<sub>2</sub> eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission, version 1.

	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share (%)	
	1990	2000	2010	2015	2016	1990–2016	2015–2016	1990	2016
	PFCs	2 808.43	1 674.72	9.13	6.57	5.44	–99.8	–17.1	1.1
SF <sub>6</sub>	0.47	8.68	60.71	52.27	49.88	10 402.7	–4.6	0.0	0.0
NF <sub>3</sub>	NO	NO	NO	NO	NO	NA	NA	0.0	0.0
<b>Total GHG emissions without LULUCF</b>	<b>246 747.86</b>	<b>140 733.62</b>	<b>122 182.25</b>	<b>116 211.32</b>	<b>112 542.36</b>	<b>–54.4</b>	<b>–3.2</b>	<b>100.0</b>	<b>100.0</b>
<b>Total GHG emissions with LULUCF</b>	<b>226 157.20</b>	<b>117 874.98</b>	<b>99 170.01</b>	<b>92 859.96</b>	<b>88 250.05</b>	<b>–61.0</b>	<b>–5.0</b>	<b>NA</b>	<b>NA</b>

Source: GHG emission data: Romania's 2018 annual submission, version 1.

<sup>a</sup>Emissions by gas without LULUCF and without indirect CO<sub>2</sub>.

8. The decrease in total emissions was driven mainly by factors such as migration abroad, rising mortality, declining birth rate, improvements in technology, the implementation of mitigation PaMs, and structural changes in the economy. The decline in economic activity, particularly that involving energy-intensive industries, following Romania's transition to a market economy resulted in a decrease in total emissions in the period 1989–2000. In the period 2000–2007, the revitalization of the domestic economy led to an increase in GHG emissions, which was followed by a steep decrease in emissions in the period 2008–2010 resulting from the global financial crisis. GHG emissions have been relatively constant following economic recovery since 2010.

9. The summary information provided on GHG emissions was consistent with the information reported in the 2015 annual submission.

10. In brief, Romania's national inventory arrangements were established in accordance with government decision 1570/2007. The National Environmental Protection Agency is the national entity with overall responsibility for the national GHG inventory. The changes in the arrangements since the BR2 include that since 4 July 2016, in accordance with government executive order no. 9/2016 and government decision 284/2016, the National Environmental Protection Agency is the competent authority for the administration of the national GHG inventory system, a role previously performed by the Ministry of Environment and Climate Change.

**(b) Assessment of adherence to the reporting guidelines**

11. The ERT assessed the information reported in the BR3 of Romania 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.

**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 Romania, the Convention entered into force on 6 September 1994. Under the Convention Romania 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 CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs

and SF<sub>6</sub> 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 (see para. 20 below). 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, Romania has a target of limiting its emission growth to 19 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. Romania's AEAs change following a linear path from 75,630.01 kt CO<sub>2</sub> eq in 2013 to 89,809.45 kt CO<sub>2</sub> eq in 2020.<sup>3</sup>

**(b) Assessment of adherence to the reporting guidelines**

16. The ERT assessed the information reported in the BR3 of Romania and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 3.

Table 3

**Findings on the quantified economy-wide emission reduction target from the review of the third biennial report of Romania**

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraph 5  Issue type: transparency  Assessment: recommendation	<p>Romania has 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, which uses 1990 as the base year. However, in the textual part of the BR3 and in CTF tables 2(a) and 2(b), Romania reported its base year as 1989. In addition, although Romania indicated in the textual part of the BR3 that it does not intend to use market-based mechanisms under the Convention to achieve its target, it reported in CTF table 2(e)I 559,157,617.00 kt CO<sub>2</sub> eq units carried over from the first to the second commitment period of the Kyoto Protocol and 656,059,490.00 kt CO<sub>2</sub> eq assigned amount units as the possible scale of contributions from market-based mechanisms under the Convention.</p> <p>During the review, Romania acknowledged that as a member State of the EU, the base year for the target and for all gases should be 1990. The Party also clarified that the information on the possible scale of contributions from market-based mechanisms reported in CTF table 2(e)I is incorrect and confirmed that it will not use market-based mechanisms under the Convention to achieve its target.</p> <p>The ERT reiterates the recommendation made in the previous review report that Romania, in its next BR, report 1990 as the base year in the description of its quantified economy-wide emission reduction target in the textual part of the BR and CTF tables 2(a) and 2(b), and ensure consistency of the information reported on the use of market-based mechanisms between the textual part of the BR and CTF table 2(e)I, by, for example, using notation keys or providing an explanation in a footnote.</p>

<sup>3</sup> European Commission decision 2013/162/EU of 26 March 2013 on determining member States' AEAs for the period from 2013 to 2020 pursuant to decision 406/2009/EC of the European Parliament and of the Council; and European Commission implementing decision 2013/634/EU of 31 October 2013 on the adjustments to member States' AEAs for the period from 2013 to 2020 pursuant to decision 406/2009/EC of the European Parliament and of the Council. 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.



*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.

## **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**

17. Romania 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. Romania 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.

18. Romania provided information on a set of PaMs similar to those previously reported, with a few exceptions. Romania also provided the information that no changes were 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.

19. Romania reported on its self-assessment of compliance with its emission reduction target and national rules for taking action against non-compliance. Romania stated in its BR3 that it uses the information on the national GHG inventory, PaMs and projections submitted in its BRs and NCs for the self-assessment of compliance. The Party reported that coordination among the central and local authorities and the self-assessment of compliance by estimating the effects of PaMs and emission projections are crucial for its implementation of the ESD. As such, the Ministry of Environment undertook a study to identify the most efficient institutional arrangements for the implementation of the ESD. During the review, Romania provided the ERT with additional information about the study and its conclusions. The Party also stated in its BR3 that its capacity for self-assessment of compliance is enhanced by close links with research institutes and by advice from the National Commission on Climate Change.

20. 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 CO<sub>2</sub> emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7<sup>th</sup> Environment Action Programme and the clean air policy package.

21. 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) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N<sub>2</sub>O emissions from chemical industries, PFC emissions from aluminium production and CO<sub>2</sub> emissions from industrial processes (since 2013).

22. 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 includes binding annual targets for each member State for 2013–2020.

23. Romania introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policy reported is the National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–

2020, which was approved by the Government of Romania in 2016. This Strategy aims to mobilize private and public actors and enable them to reduce GHG emissions from economic activities in line with the EU commitments for 2030. The National Strategy for Sustainable Development: Horizons 2013–2020–2030 establishes national objectives for 2020 and 2030 for all sectors, with the overarching aim of preventing climate change and its negative effects on society and the environment by limiting GHG emissions. It contains cross-sectoral mitigation actions. Other key PaMs reported are: Romania's Energy Strategy 2007–2020; the National Renewable Energy Action Plan; Law No.121/2014 on energy efficiency; Law No. 278/2013 on industrial emissions; improvement in the quality of nutrition for cattle, sheep and goats; improvement in land use (sustainable land management); the National Strategy on Waste Management 2014–2020 and the National Waste Management Plan; and improvement in the management of solid waste.

24. The mitigation effect of the National Strategy for Sustainable Development: Horizons 2013–2020–2030 is the most significant. Other policies that have delivered significant emission reductions are: Romania's Energy Strategy 2016–2030; Law No. 121/2014 on energy efficiency and Law No. 160/2016 amending and completing Law No. 121/2014; the EU ETS; regulation (EU) no. 517/2014 related to F-gases; and improvement in land use.

25. Romania highlighted the domestic mitigation actions that are under development, such as Romania's Energy Strategy 2016–2030 and order no. 352/636/2015/54/2015 for the approval of cross-compliance rules in the schemes and support measures for farmers in Romania. Romania's Energy Strategy 2016–2030 provides scenarios for the development of the energy sector in the period 2016–2030, taking into account the EU targets for CO<sub>2</sub>, and is critical for Romania to attain its 2020 emission reduction target. Table 4 provides a summary of the reported information on the PaMs of Romania.

Table 4  
Summary of information on policies and measures reported by Romania

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO<sub>2</sub> eq)</i>	<i>Estimate of mitigation impact by 2030 (kt CO<sub>2</sub> eq)</i>
Policy framework and cross-sectoral measures	National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020	NE	NE
	National Strategy for Sustainable Development: Horizons 2013–2020–2030	43 157.50	51 413.80
	EU ETS	7 000.00	NE
Energy	Romania's Energy Strategy 2007–2020	12 668.20	16 375.50
Transport	Modernization of the transport sector	214.50	845.60
Renewable energy	National Renewable Energy Action Plan	3 100.00	NE
Energy efficiency	Law No. 121/2014 on energy efficiency and Law No. 160/2016 amending and completing Law No.121/2014	18 667.30	23 421.60
IPPU	Law No. 278/2013 on industrial emissions	9 609.78 <sup>a</sup>	9 219.73 <sup>a</sup>
	Regulation (EU) no. 517/2014 related to F-gases Directive 40/2006/EC on emissions from air-conditioning systems of motor vehicles		
Agriculture	Improvement in the quality of nutrition for cattle, sheep and goats	2 320.00	3 231.30
LULUCF	Improvement in land use (sustainable land management)	3 160.77	2 761.19
Waste	Improvement in the management of solid waste	825.00	2 030.80
	Improvement in wastewater treatment	1 688.00	2 816.50

*Note:* The estimates of mitigation impact are estimates of emissions of CO<sub>2</sub> or CO<sub>2</sub> eq avoided in a given year as a result of the implementation of mitigation actions.

<sup>a</sup> The mitigation effect is the combined effect of the three PaMs in the IPPU sector.

**(b) Policies and measures in the energy sector**

26. Between 1990 and 2016, GHG emissions from the energy sector decreased by 57.0 per cent (99,916.18 kt CO<sub>2</sub> eq), mainly owing to the transition of Romania to a market economy, which led to a decrease in its economic output and consequently a sharp drop in electricity demand. Notably, emissions from energy use in the manufacturing industries and construction sector decreased by 77.3 per cent (38,673.34 kt CO<sub>2</sub> eq) from 1990 to 2016 owing to a decrease in industrial production. However, there was a significant increase in emissions related to fuel combustion from transport of 35.3 per cent (4,389.58 kt CO<sub>2</sub> eq) over the same period owing to an increase in the number of private cars.

27. Romania has implemented PaMs for the energy sector in order to meet its present and future (both medium- and long-term) energy demand at a lower price, in a manner appropriate to a modern market economy, while ensuring a civilized standard of living and food security, and consistent with the principles of sustainable development. Romania's Energy Strategy 2007–2020 and the National Strategy for Sustainable Development: Horizons 2013–2020–2030 are the main cross-sectoral PaMs that apply to the energy sector. Romania's Energy Strategy 2007–2020 aims to enhance the security of Romania's energy supply, utilize locally available primary energy resources, enhance the use of renewable energy and enact electricity market reforms. In addition, the EU ETS is a key cross-sectoral policy that covers all relevant energy installations in Romania, being responsible for an estimated national emission reduction of 7,000 kt CO<sub>2</sub> eq in 2020.

28. **Energy supply.** The total primary energy supply for Romania in 2015 consisted mostly of natural gas (28.0 per cent), oil (26.7 per cent) and coal (18.6 per cent), with the remaining energy being supplied by nuclear power (9.5 per cent) and by hydropower (4.5 per cent) and other RES (14.4 per cent). The major policy in the energy supply sector is Romania's Energy Strategy 2007–2020, which envisages: the replacement of old electricity-generating units with modern units that have superior energy efficiency; the rehabilitation of 330 MW power plant units operating on lignite coal; the promotion of high-efficiency cogeneration; and an upgrade of district heating supply systems.

29. **Renewable energy sources.** The main policy related to RES is the National Renewable Energy Action Plan. In 2016, Romania generated 28,845 GWh of electricity from RES, with hydropower and wind power generation accounting for almost the entire amount. Under the EU 2020 climate and energy package, Romania has committed to achieving a 24.0 per cent share of RES in the final energy consumption by 2020, which translates into an increase in electricity generated from RES of 7.8 TWh (from 23.6 to 31.4 TWh) in the period 2013–2020. In 2016, Romania had already achieved a 42.7 per cent share of RES in its final energy consumption.

30. **Energy efficiency.** The main policy related to energy efficiency is the second National Action Plan on Energy Efficiency 2011–2020, which focuses on primary energy saving measures and on increasing energy efficiency both in the energy supply system and in final energy consumption in the industrial, construction, services, agriculture and residential sectors. It includes measures aimed at: improving the thermal performance of buildings; modernizing district heating infrastructure for transportation and distribution of heat; and improving public lighting and buildings by using light-emitting diode technology.

31. **Residential and commercial sectors.** The second National Action Plan on Energy Efficiency 2011–2020 provides financial support for a number of projects on improving energy efficiency, urban heating and the thermal insulation of public buildings. It includes incentives for the development of projects related to 'ecological houses', 'passive houses' and 'active houses', as well as a programme for energy efficiency improvements in buildings occupied by people with low incomes.

32. **Transport sector.** Most of the PaMs in the transport sector focus on the implementation of relevant EU directives, such as: regulation (EC) no. 443/2009, which sets emission performance standards for new passenger cars; regulation (EC) no. 510/2011, which sets emission performance standards for new light commercial vehicles; and directives 2003/30/EC and 2009/29/EC, which promote the use of biofuels and bioliquids to meet the EU target of a 10.0 per cent share of RES in the final national energy consumption in the transport sector for 2020. Among the most important PaMs aimed at reducing energy

consumption and emissions from fuel combustion in the transport sector is government decision no. 666/2016, which approves the General Transport Master Plan. This Plan provides a blueprint for the development of transport infrastructure for all modes of transport (road, rail, sea, air and multimodal) in Romania over the next 15 years.

33. During the review, Romania provided the ERT with information on how it promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels. As an EU member State, Romania will participate in the pilot (2021–2026) and second (2027–2035) phases of the Carbon Offsetting and Reduction Scheme for International Aviation,<sup>4</sup> a global market-based measure that obliges airlines to offset the growth of their CO<sub>2</sub> emissions post-2020 by buying “emission units” generated by projects reducing CO<sub>2</sub> emissions in other sectors of the economy. The Party will also perform monitoring, reporting and verification of the loading and unloading of cargo and passengers by large ships (more than 5,000 gross tonnes) in accordance with EU regulation no. 2015/757 on monitoring, reporting and verification of CO<sub>2</sub> from maritime transport, as amended by delegated regulation no. 2016/2017 implementing the relevant IMO guidelines.

34. **Industrial sector.** The National Strategy for Sustainable Development: Horizons 2013–2020–2030 and the National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020 are the main PaMs that guide Romania’s industrial development policy to align with the general objectives of sustainable economic development and with EU industrial policies. One of the aims of the national industrial development policy is to apply the best technologies for improving the energy efficiency of industrial operators through systematic energy audits.

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

35. **Industrial processes.** Between 1990 and 2016, GHG emissions from the IPPU sector decreased by 59.7 per cent, mainly owing to Romania’s transition to a market economy. The main PaMs addressing the IPPU sector are Law No. 278/2013 on industrial emissions, regulation (EU) no. 517/2014 related to F-gases and directive 40/2006/EC on emissions from the air-conditioning systems of motor vehicles. The national industrial development policy aims to apply the best technologies for improving energy efficiency and to provide quality products at competitive prices while complying with environmental standards. To achieve this aim, the use of new technologies, the re-engineering of industrial operations, and the efficient processing of raw materials and energy resources will be required, and will lead to a reduction in GHG emissions.

36. **Agriculture.** Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 46.5 per cent, mainly owing to decreases in livestock, rice cultivation, crop production and the amount of synthetic nitrogen fertilizers applied to soils. The PaMs in this sector are framed within the National Strategy for Sustainable Development: Horizons 2013–2020–2030. This Strategy aims to promote a sustainable production model by ensuring the sustainability of food production and the reduction or elimination of imbalances in the agricultural market while protecting ecosystems. The main PaMs in the agriculture sector are: improvement in the quality of nutrition for cattle, sheep and goats under the EU Common Agricultural Policy and the Europe 2020 strategy; and improvement in manure management resulting in a decrease in CH<sub>4</sub> emissions from livestock.

37. **LULUCF.** The LULUCF sector accounted for a net removal of 24,292.32 kt CO<sub>2</sub> eq in Romania in 2016 and net GHG removals have increased by 0.2 per cent since 1990. The main PaMs related to forestry in Romania include the Forest Development Project, which aims to improve the environmentally sustainable management of forests owned by the State and those that are private property in order to increase the contribution of forests to the national and rural economy by increasing the productivity, growth and competitiveness of the wood industry.

38. **Waste management.** Between 1990 and 2016, GHG emissions from the waste sector increased by 16.4 per cent, mainly owing to increases in population, consumption and the proportion of managed waste sites. The main PaMs related to waste management are the

<sup>4</sup> <https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx>.

National Strategy on Waste Management 2014–2020 and the National Waste Management Plan (currently under public consultation) as well as improvement in the management of solid waste and in wastewater treatment.

**(d) Response measures**

39. During the review, Romania provided the ERT with the information that owing to the significant reduction in its emissions since 1989 it has participated in AIJ and JI mechanism projects, which has allowed it to upgrade old technologies and improve energy efficiency. The country has also participated in the EU ETS since 2007. Romania plans to provide fast-start finance to the Republic of Moldova for energy efficiency and transport infrastructure projects aimed at climate change mitigation and efficiency in natural resource use. Further, as a member of IRENA, Romania provides advice on developing the renewable energy sector, based on its experience with AIJ and JI projects, to other member countries. The Party also contributes to the EU Eastern Europe Energy Efficiency and Environment Partnership<sup>5</sup> fund, which supports energy efficiency and environmental sustainability projects in Armenia, Georgia, the Republic of Moldova and Ukraine as well as in Romania.

**(e) Assessment of adherence to the reporting guidelines**

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

Table 5

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

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 6  Issue type: transparency  Assessment: recommendation	In the BR3 and CTF table 3, Romania did not report information on the effects of individual mitigation actions and presented information only on the aggregated effects for sectors.  During the review, Romania explained that it reported the mitigation effects of PaMs at the sectoral level and thus the notation key “IE” (included elsewhere) should have been used for the effects of individual mitigation actions.  The ERT reiterates the recommendation made in the previous review report that Romania include in its next BR information on the effects of individual mitigation actions, or transparently indicate that the effects of mitigation actions are included elsewhere, for example, by using notation keys in the BR and the CTF tables.
2	Reporting requirement specified in paragraph 6  Issue type: transparency  Assessment: encouragement	In the BR3 and CTF table 3, Romania reported the type of policy instrument as “Planning” for several of its PaMs. The ERT, however, noted that the UNFCCC reporting guidelines on BRs (footnote c to CTF table 3) require the use, to the extent possible, of the following terms as the type of policy instrument: “economic”, “fiscal”, “voluntary/negotiated agreements”, “regulatory”, “information”, “education”, “research” or “other”.  During the review, Romania provided the ERT with updated tables listing its PaMs with the type of policy instrument consistent with the UNFCCC reporting guidelines on BRs.  The ERT encourages Romania to include in its next BR information on the type of policy instrument in accordance with those in the UNFCCC reporting guidelines on BRs, to the extent possible, for all PaMs.
3	Reporting requirement specified in paragraph 24  Issue type: transparency	In its BR3, Romania reported limited information on the domestic arrangements established for the process of self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science. Romania reported that although the Ministry of Environment has provided funding for relevant studies to identify the most efficient institutional arrangements for the implementation of the ESD,

<sup>5</sup> <http://e5p.eu/>.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
	Assessment: encouragement	<p>there was some uncertainty about the completion of the studies as well as their implications for such domestic arrangements.</p> <p>During the review, Romania provided the ERT with additional information on a study, conducted in 2014, on the application of the provisions of the ESD in Romania. This study identified the basic elements of institutional architecture needed to address medium- and long-term PaMs for reducing GHG emissions in line with Romania's GHG emission reduction targets under the ESD. As a result of the study, a law establishing the legal, institutional and procedural framework to implement the ESD is currently in the drafting and approval process.</p> <p>The ERT encourages Romania to report in its next BR, to the extent possible, on the domestic arrangements established for the process of self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science, as provided during the review. The ERT notes that the description could include an update on the legal, institutional and procedural framework which is currently in the drafting and approval process.</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. 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

41. For 2014 Romania reported in CTF table 4 annual total GHG emissions excluding LULUCF of 115,413.20 kt CO<sub>2</sub> eq, which is 53.1 per cent below the 1990 level. In 2014 emissions from non-ETS sectors relating to the target under the ESD amounted to 72,534.13 kt CO<sub>2</sub> eq.

42. For 2015 Romania reported in CTF table 4 annual total GHG emissions excluding LULUCF of 116,426.73 kt CO<sub>2</sub> eq, which is 52.7 per cent below the 1990 level. In 2015 emissions from non-ETS sectors relating to the target under the ESD amounted to 74,555.38 kt CO<sub>2</sub> eq.

43. In its BR3, Romania reported that it does not intend to use market-based mechanisms under the Convention or a contribution from the LULUCF sector for the achievement of its target under the Convention, and noted that the joint EU target under the Convention does not include a contribution from the LULUCF sector. Table 6 illustrates Romania'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 Romania to achieve its target

Year	Emissions excluding LULUCF (kt CO <sub>2</sub> eq)	Contribution of LULUCF (kt CO <sub>2</sub> eq) <sup>a</sup>	Emissions including contribution of LULUCF (kt CO <sub>2</sub> eq)	Use of units from market-based mechanisms (kt CO <sub>2</sub> eq)
1990	246 271.86	NA	246 271.86	NA
Base year <sup>b</sup>	301 359.00	NA	301 359.00	NA
2010	120 899.59	NA	120 899.59	NA
2011	126 992.67	NA	126 992.67	NA
2012	124 418.24	NA	124 418.24	NA
2013	115 389.18	NA	115 389.18	NA

2014	115 413.20	NA	115 413.20	NA
2015	116 426.73	NA	116 426.73	NA

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

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

<sup>b</sup> Emissions and removals are reported for a base year, if a year other than 1990 is used as the base year.

44. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Romania’s emission reduction target under the Convention for non-ETS sectors is 19 per cent above the 2005 level (see para. 15 above). As discussed above, in 2015 Romania’s emissions from non-ETS sectors were 6.3 per cent (4,718.87 kt CO<sub>2</sub> eq) below the AEA under the ESD.

45. The ERT noted that Romania is making progress towards its emission reduction target by implementing and planning mitigation actions that are delivering significant emission reductions without using units from the market-based mechanisms under the Convention or through the contribution of LULUCF. On the basis of the results of the projections (see para. 60 below), the ERT also noted that the Party is making progress towards achieving its target under the Convention. The ERT further noted that the structural changes in Romania’s economy following its transition to a market economy and the effects of the global financial crisis contributed significantly to its progress towards its target.

**(b) Assessment of adherence to the reporting guidelines**

46. The ERT assessed the information reported in the BR3 of Romania and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 7.

Table 7

**Findings on estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry from the review of the third biennial report of Romania**

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraph 9  Issue type: transparency  Assessment: recommendation	In CTF table 4, for reporting on progress towards its target, Romania reported the base year as 1989. The ERT noted that the base year for the joint EU target under the Convention is 1990, which should also be the base year for Romania, an EU member State.  During the review, Romania acknowledged that as an EU member State the base year for its target under the Convention should be 1990.  The ERT recommends that Romania report, in its next BR submission, 1990 as the base year in CTF table 4.

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. Projections overview, methodology and results**

**(a) Technical assessment of the reported information**

47. Romania reported updated projections for 2020, 2025, 2030 and 2035 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by Romania includes implemented and adopted PaMs until 2016.

48. In addition to the WEM scenario, Romania reported the WAM and WOM scenarios. The WAM scenario includes planned PaMs, while the WOM scenario excludes all PaMs implemented, adopted or planned after 2005. Romania provided a definition of its scenarios, explaining that its WEM scenario includes policies such as: the National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020

and the National Action Plan for its implementation; the EU ETS; development and planning strategies at the national and sectoral level; and forecasts of macroeconomic indicators. Its WAM scenario includes policies such as: Romania's Energy Strategy 2016–2030, with perspectives for 2050; the National Renewable Energy Action Plan; improvement in various energy subsectors (e.g. oil and gas); modernization of and improvements in the industrial, transport, services, residential and agriculture sectors; the Code of Good Agricultural Practice; enhancement of the sustainable management of forests; restoration of degraded land; and improvements in solid waste and wastewater management. The definitions indicate that the scenarios were prepared according to the UNFCCC reporting guidelines on NCs.

49. 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 CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> (treating PFCs and HFCs collectively in each case) for 1990–2035. 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.

50. Party did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

51. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals. Romania reported on factors and activities affecting emissions for each sector.

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

52. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR2. The GHG projections were developed separately for the energy sector and for the non-energy sectors. For each sector, projections were developed on the basis of technological processes determining GHG emissions and the impact of the mitigation options.

53. To prepare its projections, Romania relied on the following key underlying assumptions: GDP, GDP growth rate, population, population growth, GDP per person, primary energy consumption, primary energy intensity, final energy consumption, final energy intensity, primary energy consumption per person, gross consumption of electricity, gross consumption of electricity per person, number of households, international oil price, international gas price and international coal price. Some of these variables and assumptions were reported in CTF table 5. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. In addition, expert judgment was used, especially for the agriculture and waste sectors.

54. The projections for the energy sector were developed through an integrated energy analysis using the Energy and Power Evaluation Program,<sup>6</sup> a top-down model with some bottom-up characteristics developed by the Argonne National Laboratory of the United States Department of Energy and shared with Romania by the International Atomic Energy Agency. The modelling approach involves consideration of the energy demand subsectors (industry, transport, agriculture, and household and commercial consumption) and the energy supply subsectors (primary energy resources extraction, conversion in refineries, thermoelectric power plants, thermal power plants, and transport and distribution of energy products to consumers) in order to estimate the total energy demand and energy types under three scenarios (baseline, highest economic growth, lowest economic growth) for the various sectors and subsectors (e.g. electricity and heat production, refining, transport, industry, agriculture, construction, services, residential), which allows determination of the GHG emission projections using EFs for the different fuel types. GHG projections for the non-energy sectors were developed using spreadsheet-based models that consider the activity data and production structure of subsectors together with sector-specific assumptions and EFs from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

55. The Party provided information in CTF table 5 on the assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation

<sup>6</sup> <https://ceeesa.es.anl.gov/projects/Enpepwin.html>.



of the projection scenarios. To explain the changes, the Party provided supporting documentation. The Party also provided information on sensitivity analyses.

56. Sensitivity analyses were conducted for a number of important assumptions, with a focus on the energy and LULUCF sectors. The GHG emission projections for the energy sector are based on assumptions related to macroeconomic indicators that have a high degree of uncertainty over the analysis period, stemming from the recent economic crisis, and thus economic development is the key factor influencing the projection results. As such, sensitivity analyses for the energy sector were developed for two scenarios characterized by the highest ('maximum') and the lowest ('minimum') economic growth relative to the baseline scenario (i.e. the WEM scenario). The assumptions for the energy sector in the three projection scenarios included those for GDP, primary energy consumption, final energy consumption and gross electricity consumption. For the LULUCF sector, three sensitivity scenarios were presented corresponding to different assumptions related to growth in the annual harvest: S1 (the WOM scenario), S2 (the WEM scenario) and S3 (the WAM scenario). During the review, Romania explained to the ERT that the IPPU, agriculture and waste sectors were excluded from the sensitivity analyses because deviations from the WEM scenario of as much as 50–100 per cent in the case of these sectors lead to only an 18 per cent change in the total projected emissions (without LULUCF).

57. For the energy sector, the variation from the baseline scenario (68,864.49 kt CO<sub>2</sub>) ranges from –4,543.49 kt CO<sub>2</sub> (–6.6 per cent) in the 'minimum' scenario to 2,914.01 kt CO<sub>2</sub> (4.2 per cent) in the 'maximum' scenario. The sensitivity analysis for the LULUCF sector indicates that it is likely to remain a sink in the S1 scenario, whereas scenarios S2 and S3 may lead to net emissions.

### (c) Results of projections

58. 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 8 and the figure below.

Table 8

#### Summary of greenhouse gas emission projections for Romania

	<i>GHG emissions (kt CO<sub>2</sub> eq per year)</i>	<i>Changes in relation to base-year<sup>a</sup> level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Quantified economy-wide emission reduction target under the Convention <sup>b</sup>	661 182.23	NA	NA
Inventory data 1990 <sup>c</sup>	246 271.86	–0.2	0.0
Inventory data 2015 <sup>c</sup>	116 426.73	–61.8	–52.7
WOM projections for 2020 <sup>d</sup>	161 367.85	–47.1	–34.5
WEM projections for 2020 <sup>d</sup>	118 209.59	–61.2	–52.0
WAM projections for 2020 <sup>d</sup>	116 258.47	–61.9	–52.8
WOM projections for 2030 <sup>d</sup>	177 458.61	–41.8	–27.9
WEM projections for 2030 <sup>d</sup>	126 330.30	–58.6	–48.7
WAM projections for 2030 <sup>d</sup>	122 853.89	–59.7	–50.1

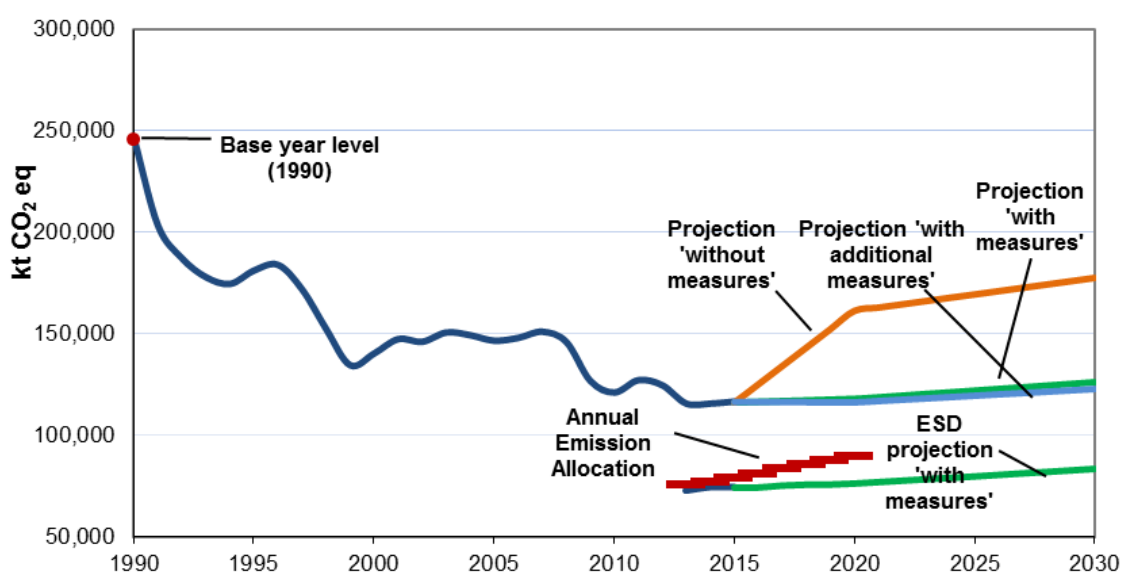
<sup>a</sup> "Base year" in this column refers to the base year used for the target under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

<sup>b</sup> 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.

<sup>c</sup> From Romania's BR3 CTF table 6.

<sup>d</sup> From Romania's BR3.

## Greenhouse gas emission projections reported by Romania



Sources: (1) data for the years 1990–2015: Romania’s 2017 annual inventory submission, version 1; total GHG emissions excluding LULUCF; (2) data for the years 2016–2030: Romania’s BR3; total GHG emissions excluding LULUCF.

59. Romania’s total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 118,209.59 and 126,330.30 kt CO<sub>2</sub> eq, respectively, under the WEM scenario, which represents a decrease of 52.0 and 48.7 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 52.8 and 50.1 per cent and amount to 116,258.47 and 122,853.89 kt CO<sub>2</sub> eq, respectively. The 2020 projections suggest that Romania will continue contributing to the achievement of the EU target under the Convention (see para. 12 above).

60. Romania’s target for non-ETS sectors is to limit its emission growth to 19 per cent above the 2005 level by 2020 (see para. 15 above). Romania’s AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 83,080.51 kt CO<sub>2</sub> eq in 2013 to 96,302.51 kt CO<sub>2</sub> eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 76,533.88 kt CO<sub>2</sub> eq by 2020. The projected level of emissions under the WEM scenario is 17.3 per cent below the AEAs for 2020. The ERT noted that this suggests that Romania expects to meet its target under the WEM scenario.

61. Romania presented the WEM and WAM scenarios by sector for 2020, 2025, 2030 and 2035, as summarized in table 9 (for 2020 and 2030).

Table 9

## Summary of greenhouse gas emission projections for Romania presented by sector

Sector	GHG emissions and removals (kt CO <sub>2</sub> eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	176 586.28	81 028.26	79 958.06	85 280.02	83 934.84	–54.1	–54.7	–51.7	–52.5
Transport	12 438.59	17 762.03	17 435.50	20 254.96	19 854.02	42.8	40.2	62.8	59.6
Industry/ industrial processes	30 440.12	12 710.01	12 710.01	14 779.93	14 779.93	–58.2	–58.2	–51.4	–51.4
Agriculture	34 222.10	19 249.35	18 376.65	21 948.93	19 861.50	–43.8	–6.3	–35.9	–42.0
LULUCF	–19 382.45	–16 998.30	–16 038.90	–16 460.80	–9 916.24	–12.3	–17.3	–15.1	–48.8

Waste	5 023.36	5 222.08	5 213.71	4 321.18	4 277.55	4.0	3.8	-14.0	-14.8
Other (specify)	0.00	0.00	0.00	0.00	0.00	-	-	-	-
<b>Total GHG emissions without LULUCF</b>	<b>258 710.45</b>	<b>135 971.73</b>	<b>133 693.93</b>	<b>146 585.02</b>	<b>142 707.84</b>	<b>-47.4</b>	<b>-48.3</b>	<b>-43.3</b>	<b>-44.8</b>

Source: Romania's BR3 CTF table 6.

62. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy (excluding transport), industry/industrial processes and agriculture sectors, amounting to projected reductions of 95,558.02 kt CO<sub>2</sub> eq (54.1 per cent), 17,730.11 kt CO<sub>2</sub> eq (58.2 per cent) and 14,972.75 kt CO<sub>2</sub> eq (43.8 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario remains the same, with projected reductions in the energy (excluding transport), industry/industrial processes and agriculture sectors amounting to 91,306.26 kt CO<sub>2</sub> eq (51.7 per cent), 15,660.19 kt CO<sub>2</sub> eq (51.4 per cent) and 12,273.17 kt CO<sub>2</sub> eq (35.9 per cent), respectively, between 1990 and 2030.

63. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector remain the same.

64. Romania presented the WEM and WAM scenarios by gas for 2020, 2025, 2030 and 2035, as summarized in table 10 (for 2020 and 2030).

Table 10  
Summary of greenhouse gas emission projections for Romania presented by gas

Gas	GHG emissions and removals (kt CO <sub>2</sub> eq)					Change (%)			
	2020		2030		1990–2020		1990–2030		
	1990	WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO <sub>2</sub>	170 747.62	80 415.89	79 539.88	86 289.41	85 152.25	-52.9	-53.4	-49.5	-50.1
CH <sub>4</sub>	57 237.02	27 699.25	26 964.75	28 187.75	26 877.50	-51.6	-52.9	-50.8	-53.0
N <sub>2</sub> O	15 478.14	8 334.76	7 994.15	10 371.00	9 342.00	-46.2	-48.4	-33.0	-39.6
HFCs	0.18	1 688.10	1 688.10	1 448.15	1 448.15	937 733.3	937 733.3	804 427.8	804 427.8
PFCs	2 808.43	6.25	6.25	6.81	6.81	-99.8	-99.8	-99.8	-99.8
SF <sub>6</sub>	0.47	65.34	65.34	27.18	27.18	13 802.1	13 802.1	5 683.0	5 683.0
NF <sub>3</sub>	NO	NO	NO	NO	NO	-	-	-	-
<b>Total GHG emissions without LULUCF</b>	<b>246 271.86</b>	<b>118 209.59</b>	<b>116 258.47</b>	<b>126 330.30</b>	<b>122 853.89</b>	<b>-52.0</b>	<b>-52.8</b>	<b>-48.7</b>	<b>-50.1</b>

Source: Romania's BR3 CTF table 6.

65. For 2020 the most significant reductions are projected for CO<sub>2</sub> and CH<sub>4</sub> emissions: 90,331.73 kt CO<sub>2</sub> eq (52.9 per cent) and 29,537.77 kt CO<sub>2</sub> eq (51.6 per cent), respectively, between 1990 and 2020. For 2030, the pattern of emission reductions by gas remains the same as for 2020, with the most significant reductions being projected for CO<sub>2</sub> and CH<sub>4</sub> emissions: 84,458.21 kt CO<sub>2</sub> eq (49.5 per cent) and 29,049.27 kt CO<sub>2</sub> eq (50.8 per cent), respectively between 1990 and 2030.

66. If additional measures are considered (i.e. in the WAM scenario), the patterns of emission reductions by 2020 presented by gas remain the same.

67. The EU 2030 climate and energy framework sets a target of at least a 40 per cent reduction in GHG emissions from the 1990 level by 2030, which is also the target in the nationally determined contribution of the EU. The EU effort-sharing regulation translates this

common EU target into EU ETS and non-ETS targets of 43 and 30 per cent reductions, respectively, below the 2005 levels by 2030, and further into binding annual GHG emission targets for each EU member State. Under the effort-sharing regulation, Romania's target is 2 per cent below the 2005 level (with 1.7 per cent flexibility allowed in the LULUCF sector). Under the WEM scenario, although Romania's overall projected emission reduction by 2030 is 48.7 per cent below the 1990 level, the projected emissions from non-ETS sectors may exceed the 2 per cent target. This implies that Romania needs to put in place a more robust medium- to long-term mitigation strategy, including additional PaMs, to achieve its target under the effort-sharing regulation.

**(d) Assessment of adherence to the reporting guidelines**

68. The ERT assessed the information reported in the BR3 of Romania and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 11.

Table 11

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

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement <sup>a</sup> specified in paragraph 29  Issue type: transparency  Assessment: recommendation	The ERT noted that it is not clear from Romania's BR3 whether the projection scenarios provided encompass currently implemented and adopted PaMs (WEM scenario) and planned PaMs (WAM scenario). The ERT noted that the information on projections methodology detailed in the chapter on projections does not clarify how the modelling approach considers currently implemented and adopted PaMs (WEM scenario) and planned PaMs (WAM scenario) in developing the projections. The ERT also noted that there are no differences in the assumptions regarding electricity production and thermal energy in the WEM and WAM scenarios for the energy sector projections.  During the review, Romania explained that the energy sector projections relate mainly to PaMs whereas projections for the other sectors, especially the waste and agriculture sectors, were developed using expert judgment.  The ERT recommends that Romania ensure, in its next NC, that its projections encompass implemented and adopted PaMs (WEM scenario) and planned PaMs (WAM scenario). The ERT notes the importance of Romania providing a description of how implemented, adopted and planned PaMs are linked to projections for the WEM and WAM scenarios, if provided.
2	Reporting requirement <sup>a</sup> specified in paragraph 30  Issue type: transparency  Assessment: encouragement	In its BR3, Romania reported a sensitivity analysis for the LULUCF sector for the WOM, WEM and WAM scenarios. However, the ERT noted that it was unclear how the sensitivity analysis relates to those projections and the underlying inventory data.  During the review, Romania explained that it plans to strengthen the sensitivity analysis for the LULUCF sector.  The ERT encourages Romania to include in its next NC transparent information on how the sensitivity analysis for the LULUCF sector relates to the projections and the underlying inventory data.
3	Reporting requirement <sup>a</sup> specified in paragraph 35  Issue type: completeness  Assessment: encouragement	In its BR3, Romania did not provide projections for indirect GHGs.  During the review, Romania explained that it was making efforts to report projections for indirect GHGs.  The ERT encourages Romania to include in its next NC projections for indirect GHGs.
4	Reporting requirement <sup>a</sup> specified in paragraph 43	In its BR3, Romania did not summarize the strengths and weaknesses of the models or approaches used for the preparation of its projections.

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
	Issue type: completeness	During the review, Romania provided the ERT with limited information on the strengths and weaknesses of the models and approaches used.
	Assessment: encouragement	The ERT encourages Romania to summarize, in its next NC, the strengths and weaknesses of the models and approaches used for the preparation of its projections.

*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 on BRs.

<sup>a</sup> Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs as referred to in the UNFCCC reporting guidelines on BRs.

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

69. Romania is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Romania provided information in the BR3 on its provision of support to developing country Parties. The ERT noted that Romania reported climate-specific public financial support of USD 36,702 and USD 812,106 in 2015 and 2016, respectively. While most of the Party's contribution was to specialized multilateral climate change funds and United Nations bodies, in 2016, it included USD 51,734 for adaptation activities in Georgia. The ERT commends Romania for reporting this information and suggests that it continue to do so in future BRs.

### **III. Conclusions and recommendations**

70. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Romania 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 the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; progress made by Romania in achieving its target; and the Party's provision of support to developing country Parties.

71. Romania's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 54.4 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 61.1 per cent below its 1990 level in 2016. Emission decreases were driven mainly by Romania's transition to a market economy and the influence of the global financial and economic crisis. The upward trend in emissions after 1999 reflects economic development. In the period 2000–2007, the revitalization of the domestic economy led to an increase in GHG emissions, which was followed by a steep decrease in emissions in the period 2008–2010 resulting from the global financial crisis. GHG emissions have been relatively constant following economic recovery since 2010.

72. Under the Convention, Romania 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. The target covers all sectors and CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>, expressed using global warming potential values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

73. Under the ESD, Romania has a target of limiting its emission growth to 19.0 per cent above the 2005 level by 2020. The 2015–2020 linear progression in Romania's AEAs (its national emission target for non-ETS sectors) is 75,630.01 to 89,809.45 kt CO<sub>2</sub> eq.

74. Romania's main policy framework relating to energy and climate change is the National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020, which is supported by the National Strategy for Sustainable Development: Horizons 2013–2020–2030 and Romania's Energy Strategy 2007–2020. Key legislation supporting Romania's climate change goals includes Law No. 121/2014 on energy efficiency and Law No. 160/2016 amending and completing Law No. 121/2014. The mitigation effect of the National Strategy for Sustainable Development: Horizons 2013–2020–2030 is the most significant. Other policies that have delivered significant emission reductions are: Romania's Energy Strategy 2016–2020; Law No. 121/2014 on energy efficiency and Law No. 160/2016 amending and completing Law No. 121/2014; the EU ETS; regulation (EU) no. 517/2014 related to F-gases; and improvement in land use.

75. For 2015 Romania reported in CTF table 4 total GHG emissions excluding LULUCF of 116,426.73 kt CO<sub>2</sub> eq. Romania reported that it does not intend to use units from market-based mechanisms to achieve its target. In 2015, Romania's emissions from non-ETS sectors were 6.3 per cent (4,718.87 kt CO<sub>2</sub> eq) below the AEA under the ESD. The ERT noted that Romania is making progress towards its emission reduction target by implementing and planning mitigation actions that are delivering significant emission reductions without using units from the market-based mechanisms under the Convention or through the contribution of LULUCF.

76. The GHG emission projections provided by Romania in the BR3 correspond to the WOM, WEM and WAM scenarios. Under these scenarios, emissions are projected to be 34.5, 52.0 and 52.8 per cent below the 1990 level by 2020, respectively. On the basis of the reported information, the ERT concludes that Romania expects to meet its 2020 target under the WEM scenario for non-ETS sectors. The projected level of emissions under the WEM scenario is 17.3 per cent (13,275.45 kt CO<sub>2</sub> eq) below the AEA for 2020, which suggests that Romania expects to meet its target under the WEM scenario.

77. The ERT noted that Romania is making progress towards its emission reduction target by implementing mitigation actions that deliver some emission reductions.

78. On the basis of the results of the projections for 2020 under the WEM scenario, the ERT noted that Romania may achieve its emission reduction target by 2020 under the ESD.

79. Romania is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Romania provided information in the BR3 on its provision of support to developing country Parties. The ERT noted that Romania contributed financial support of USD 36,702.27 and USD 812,106.08 in 2015 and 2016, respectively. In 2016, the contribution included a climate-specific financial contribution of USD 51,734.00 for adaptation activities in Georgia.

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

To improve the transparency of its reporting by:

- (i) Reporting 1990 as the base year in the description of its quantified economy-wide emission reduction target in the textual part of the BR and CTF tables 2(a) and 2(b), and ensuring consistency of the information reported on the use of market-based mechanisms between the textual part of the BR and CTF table 2(e)I, by, for example, using notation keys or providing an explanation in a footnote (see issue 1 in table 3);
- (ii) Providing information on the effects of individual mitigation actions, or transparently indicating the effects of mitigation actions are included elsewhere, for example, by using notation keys in the BR and CTF tables (see issue 1 in table 5);
- (iii) Reporting 1990 as the base year in CTF table 4 (see issue 1 in table 7);
- (iv) Ensuring that its WEM scenario projections encompass implemented and adopted PaMs (see issue 1 in table 11).

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

## Annex

### Documents and information used during the review

#### A. Reference documents

2017 GHG inventory submission of Romania. Available at <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/submissions/national-inventory-submissions-2017>.

2018 GHG inventory submission of Romania. Available at <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018>.

BR3 of Romania. Available at [http://unfccc.int/files/adaptation/application/pdf/3178045\\_romania-br3-1-br3-romania.pdf](http://unfccc.int/files/adaptation/application/pdf/3178045_romania-br3-1-br3-romania.pdf).

BR3 CTF tables of Romania. Available at <https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/third-biennial-reports-annex-i>.

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

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex III to decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf>.

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

“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 Romania. Available at [https://unfccc.int/sites/default/files/resource/258913076\\_Romania-NC7-2-Romania%20Seventh%20National%20Communication%20Final.pdf](https://unfccc.int/sites/default/files/resource/258913076_Romania-NC7-2-Romania%20Seventh%20National%20Communication%20Final.pdf).

Report on the individual review of the annual submission of Romania submitted in 2016. FCCC/ARR/2016/ROU. Available at <https://unfccc.int/sites/default/files/resource/docs/2017/arr/ita.pdf>.

Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of Romania. FCCC/IRR/2016/ROU. Available at <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-kyoto-protocol/second-commitment-period/initial-reports>.

Report of the technical review of the second biennial report of Romania. FCCC/TRR.2/ROU. Available at <https://unfccc.int/resource/docs/2016/trr/rou.pdf>.

Report on the technical review of the sixth national communication of Romania.  
FCCC/IDR.6/ROU. Available at  
<https://unfccc.int/sites/default/files/resource/docs/2015/idr/rou06.pdf>.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to  
decision 4/CMP.11. Available at  
<http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf>.

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

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

Responses to questions during the review were received from Ms. Gherghița Nicodim (Ministry of Environment), including additional material. The following documents<sup>1</sup> were provided by Romania:

European Climate Assessment & Dataset. Available at <http://www.ecad.eu/>.

---

---

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