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## Report on the technical review of the seventh national communication of Romania

Parties included in Annex I to the Convention were requested by decision 9/CP.16 to submit their seventh national communication to the secretariat by 1 January 2018. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the seventh national communication and relevant supplementary information under the Kyoto Protocol 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” and the “Guidelines for review under Article 8 of the Kyoto Protocol.

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## 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  |
| GCOS   | Global Climate Observing System  |
| 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  |
| NMA  | National Meteorological Administration   |
| 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  |
| UNEP   | United Nations Environment Programme   |

|                                    |   |
|------------------------------------|---|
| 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 NC7 of Romania. The review was coordinated 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 V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention” (annex to decision 13/CP.20), and the “Guidelines for review under Article 8 of the Kyoto Protocol” (annex to decision 22/CMP.1 and annex I to decision 4/CMP.1).<sup>1</sup>

2. In accordance with the same decisions, 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. Sirinthornthee 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 NC7 of Romania in accordance with the UNFCCC reporting guidelines on NCs (decision 4/CP.5) and the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol (annex to decision 15/CMP.1 and annex III to decision 3/CMP.11).

#### **1. Timeliness**

5. The NC7 was submitted on 27 December 2017, before the deadline of 1 January 2018 mandated by decision 9/CP.16.

#### **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 NC7, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

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

Table 1

**Assessment of completeness and transparency of mandatory information reported by Romania in its seventh national communication, including supplementary information under the Kyoto Protocol**

| Section of NC  | Reference to description of recommendations |                    |  | Supplementary information under the Kyoto Protocol                           | Reference to description of recommendations |                    |                           |
|--|---|--------------------|--|--|---|--------------------|---------------------------|
|  | Completeness                                | Transparency       | –  |  | Completeness                                | Transparency       |                           |
| Executive summary  | Complete                                    | Transparent        | –  | National system  | Complete                                    | Mostly transparent | Issue 1 in table 5        |
| National circumstances   | Complete                                    | Transparent        | –  | National registry  | Mostly complete                             | Transparent        | Issue 1 in table 6        |
| GHG inventory  | Complete                                    | Transparent        | –  | Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 | Complete                                    | Transparent        | –                         |
| PaMs   | Complete                                    | Transparent        | –  | PaMs in accordance with Article 2  | Mostly complete                             | Transparent        | Issues 1 and 2 in table 9 |
| Projections and the total effect of PaMs                                 | Complete                                    | Mostly transparent | Issue 1 in table 13; issue 1 in table 15 | Domestic and regional programmes and/or arrangements and procedures          | Partially complete                          | Transparent        | Issues 1 and 2 in table 7 |
| Vulnerability assessment, climate change impacts and adaptation measures | Complete                                    | Transparent        | –  | Information under Article 10 <sup>a</sup>                                    | NA  | NA                 | –                         |
| Financial resources and transfer of technology <sup>b</sup>              | NA  | NA                 | –  | Financial resources <sup>c</sup>   | NA  | NA                 | –                         |
| Research and systematic observation                                      | Mostly complete                             | Transparent        | Issue 1 in table 18                      | Minimization of adverse impacts in accordance with Article 3, paragraph 14   | Complete                                    | Transparent        |                           |
| Education, training and public awareness                                 | Complete                                    | Transparent        | –  |  |   |                    |                           |

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

<sup>a</sup> The assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant to Annex II Parties only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

<sup>b</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.

<sup>c</sup> Romania is not an Annex II Party and is therefore not obliged to provide information on financial resources under Article 11 of the Kyoto Protocol, including on “new and additional” resources.

### 3. Summary of reviewed supplementary information under the Kyoto Protocol

7. The supplementary information under Article 7, paragraph 2, of the Kyoto Protocol is incorporated in different sections of the NC7, and the supplementary information under Article 7, paragraph 1, of the Kyoto Protocol is reported in the NIR of the 2018 annual submission. Table 2 provides references to where the information is reported. The technical assessment of the information reported under Article 7, paragraphs 1 and 2, of the Kyoto Protocol is contained in the relevant sections of this report.

Table 2

#### Overview of supplementary information under the Kyoto Protocol reported by Romania

| <i>Supplementary information</i>   | <i>Reference to the section of NC7</i>                    |
|--|---|
| National registry  | Chapter III.D   |
| National system  | Chapter III.C   |
| Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17                                   | Chapter V   |
| PaMs in accordance with Article 2  | Chapter IV  |
| Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures | Chapter IV.B  |
| Information under Article 10   | Chapter VII   |
| Financial resources  | Chapter VII   |
| Minimization of adverse impacts in accordance with Article 3, paragraph 14                                     | Reported in the NIR of the Party's 2018 annual submission |

## II. Technical review of the information reported in the seventh national communication, including the supplementary information under the Kyoto Protocol

### A. Information on national circumstances and greenhouse gas emissions and removals

#### 1. National circumstances relevant to greenhouse gas emissions and removals

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

8. The national circumstances of Romania explain the relationship between its historical and future emission trends and the climate change policy agenda. The changing nature of those circumstances defines the factors that affect the climate policy development and implementation of the Convention. The NC7 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater.

9. Romania is a country with an economy in transition. It experienced rapid economic growth in the period 2000–2008, before the economic recession brought on by the global financial crisis of 2008–2009. The Romanian economy has grown steadily again since 2011. The federal government and 42 local government authorities (including in Bucharest) share the responsibility of addressing climate change in Romania. The Ministry for the Environment and Climate Change coordinates Romania's response to climate change. Since the NC6, several policies have been developed, including 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, as well as Romania's Energy Strategy 2016–2030.

10. The ERT noted that during the period 1990–2016 Romania’s population decreased by 15.0 per cent and GDP increased by 59.9 per cent, while GHG emissions per GDP unit and GHG emissions per capita decreased by 46.3 and 71.5 per cent, respectively. The significant decrease in Romania’s GHG emissions over the period 1989–2016 largely reflects its transition to a market economy and the influence of the global financial and economic crisis. The significant decrease in emission intensity over this period indicates some decoupling of economic growth from GHG emissions. Table 3 illustrates the national circumstances of Romania by providing some indicators relevant to emissions and removals.

Table 3  
**Indicators relevant to greenhouse gas emissions and removals for Romania for the period 1990–2016**

| <i>Indicator</i>   | <i>Change (%)</i> |             |             |             |             |                  |                  |
|--|-------------------|-------------|-------------|-------------|-------------|------------------|------------------|
|  | <i>1990</i>       | <i>2000</i> | <i>2010</i> | <i>2015</i> | <i>2016</i> | <i>1990–2016</i> | <i>2015–2016</i> |
| GDP per capita (thousands 2011 USD using purchasing power parity)  | 11.48             | 10.52       | 17.82       | 20.54       | 21.61       | 88.3             | 5.2              |
| GHG emissions without LULUCF per capita (t CO <sub>2</sub> eq)   | 10.63             | 6.27        | 6.03        | 5.86        | 5.71        | –46.3            | –2.6             |
| GHG emissions without LULUCF per GDP unit (kg CO <sub>2</sub> eq per 2011 USD using purchasing power parity) | 0.93              | 0.60        | 0.34        | 0.29        | 0.26        | –71.5            | –7.4             |

*Sources:* (1) GHG emission data: Romania’s 2018 GHG inventory submission, version 1; (2) population and GDP: World Bank.

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

11. Romania requested flexibility in accordance with Article 4, paragraphs 6 and 10, of the Convention in relation to the base year definition. In accordance with Article 4, paragraph 6, of the Convention and decision 9/CP.2, Romania, as a Party with an economy in transition, may use 1989 as its base year.

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

12. The ERT assessed the information reported in the NC7 of Romania and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. There were no issues raised during the review relating to the topics discussed in this chapter of the review report.

**2. Information on greenhouse gas inventory arrangements, emissions, removals and trends**

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

13. 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 4 illustrates the emission trends by sector and by gas for Romania.

<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.



Table 4  
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          |
| PFCs  | 2 808.43                              | 1 674.72          | 9.13              | 6.57              | 5.44              | –99.8        | –17.1       | 1.1          | 0.0          |
| 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>.

14. 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.

15. 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) owing mainly to Romania's transition to a market economy, which led to a sharp drop in the demand for electricity production from power plants, especially in the period 1989–1992. The trend in GHG emissions from fuel combustion showed a notable increase in transport (35.3 per cent or 4,389.58 kt CO<sub>2</sub> eq) and a decrease in energy use in other sectors (13.5 per cent or 1,694.67 kt CO<sub>2</sub> eq). The decreasing trend in GHG emissions from energy supply stems from a reduction in the use of coal and an increase in the share of energy from nuclear power and RES coupled with a decrease in the energy intensity of the economy. The increasing trend in GHG emissions from transport, in contrast, results from a significant increase in the number of passenger cars and a decline in the use of local public transport caused by a decrease in the number of trams and trolleybuses and their partial replacement by buses and minibuses.

16. Between 1990 and 2016, GHG emissions from IPPU decreased by 59.7 per cent (19,212.27 kt CO<sub>2</sub> eq) owing mainly to reduced production levels of minerals, metal products and, especially, chemical products. Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 46.5 per cent (15,901.90 kt CO<sub>2</sub> eq), owing mainly to decreases in livestock population, crop production (e.g. rice cultivation) and the use of synthetic nitrogen fertilizers. The LULUCF sector was a net sink of 24,292.32 kt CO<sub>2</sub> eq in Romania in 2016; net GHG removals have increased by 370.66 kt CO<sub>2</sub> eq since 1990. The trend was mainly driven by decreased forest harvesting. Between 1990 and 2016, GHG emissions from the waste sector increased by 16.4 per cent (5,848.21 kt CO<sub>2</sub> eq) owing mainly to increasing consumption linked to an improvement in living standards.

17. Between 1990 and 2016, CO<sub>2</sub> emissions (excluding LULUCF) decreased by 56.2 per cent owing to a reduction in the use of fossil fuels in the energy and manufacturing industries and construction sectors driven by the decline in economic output. Total CH<sub>4</sub> emissions decreased by 50.1 per cent between 1990 and 2016 owing mainly to decreases in fugitive emissions from fossil fuel extraction and in livestock population. Total N<sub>2</sub>O emissions (excluding LULUCF) decreased by 54.8 per cent owing mainly to the decreases in livestock population, crop production and the amount of synthetic nitrogen fertilizers applied to soils. Total emissions of F-gases decreased by 32.4 per cent from 1999 to 2016. While PFC emissions decreased by 99.8 per cent from 1990 to 2016 owing to changes in technologies used in aluminium production, HFC and SF<sub>6</sub> emissions increased by 1,045,258.0 and 10,402.7 per cent, respectively, over the same period owing to the use of F-gases as substitutes for ozone-depleting substances in refrigeration and air-conditioning systems. The contribution of F-gases to the total GHG emissions, however, is minor.

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

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

19. The ERT assessed the information reported in the NC7 of Romania and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

**3. National system for the estimation of anthropogenic emissions by sources and removals by sinks**

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

20. Romania provided in the NC7 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1. The description includes most of the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC7 also contains a reference to

the description of the national system provided in the NIR of the 2017 annual submission. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2017 annual submission of Romania.

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

21. The ERT assessed the information reported in the NC7 of Romania and identified an issue relating to transparency. The findings are described in table 5.

Table 5

**Findings on the national system for the estimation of anthropogenic emissions by sources and removals by sinks from the review of the seventh national communication of Romania**

| <i>No.</i> | <i>Reporting requirement, issue type and assessment</i>   | <i>Description of the finding with recommendation</i>  |
|------------|---|--|
| 1          | Reporting requirement specified in paragraph 30<br><br>Issue type: transparency<br><br>Assessment: recommendation | In its NC7, Romania did not include transparent information on the procedures for the official consideration and approval of the inventory and the process used for the selection of EFs and methods. The ERT noted there was no clear description of the procedures for the final approval of the inventory as well as of the sources of the EFs used.<br><br>During the review, Romania explained that the National Environmental Protection Agency prepares the national GHG inventory and sends it for approval to the Ministry of Environment and Climate Change, which grants its approval following verification and evaluation. The Party also explained that the selection of EFs is performed according to the provisions in order no. 1442/2014 of the Ministry of Environment and Climate Change regarding the procedure for the selection of the methods and EFs for the estimation of GHG emissions. In addition, Romania provided information on the other relevant legal provisions in place.<br><br>The ERT recommends that Romania include in its next NC a transparent description of the official consideration and final approval of its inventory, and the process used for the selection of the EFs. The ERT noted the importance of providing information, particularly on the procedures for the final approval of the inventory and the sources of the EFs used. |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent.

**4. National registry**

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

22. In the NC7 Romania provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2016 annual submission of Romania.

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

23. The ERT assessed the information reported in the NC7 of Romania and identified an issue relating to transparency. The findings are described in table 6.

Table 6

**Findings on the national registry from the review of the seventh national communication of Romania**

| <i>No.</i> | <i>Reporting requirement, issue type and assessment</i> | <i>Description of the finding with recommendation</i>  |
|------------|---|--|
| 1          | Reporting requirement specified in paragraph 32         | In its NC7, although Romania reported that it tests the performance, procedures and security measures of the national registry every year, it did not provide information on the results of these tests, indicating them to be confidential. |

|                               |  |
|-------------------------------|--|
| Issue type:<br>completeness   | During the review, Romania provided the ERT with information on the results of the tests performed on the national registry and on the changes introduced to the registry following regression testing and testing of new functionalities. |
| Assessment:<br>recommendation | The ERT recommends that Romania include in its next NC the results of the test procedures developed with the aim of testing the performance, procedures and security measures of the national registry.                                    |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent.

## B. Information on policies and measures and institutional arrangements

### 1. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

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

24. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Romania committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level. In 2016, the Government of Romania approved 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 Strategy, which is an update to and extension of the previous National Climate Change Strategy 2013–2020, 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 Action Plan includes actions for each sector, including their objectives, deadlines, responsible bodies, sources of funding, amounts of funding and result indicators.

25. Implementation of the Kyoto Protocol by Romania is underpinned by Law No. 3/2001. In general, the legal framework on climate change in Romania allows for a coherent application of the Convention and its Kyoto Protocol. The framework encompasses primary legislation (including specific acts on climate change), general environmental regulations (including those with climate change aspects) and specific legislation related to the energy, transport, agriculture, forestry and waste management sectors. The overall responsibility for climate change policymaking lies with the Ministry of Environment, and a number of national institutions are involved in the implementation of the policies. The Ministry coordinates the integration of climate change requirements into other sectoral policies in accordance with international and EU requirements and standards. It also supervises the National Environmental Protection Agency, which manages the national system for estimating anthropogenic GHG emissions and removals and acts as the administrator of the national registry.

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

26. The ERT assessed the information reported in the NC7 of Romania and identified issues relating to completeness. The findings are described in table 7.

Table 7

### Findings on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol from the review of the seventh national communication of Romania

| No. | Reporting requirement, issue type and assessment  | Description of the finding with recommendation  |
|-----|---|---|
| 1   | Reporting requirement specified in paragraph 37<br><br>Issue type:<br>completeness<br><br>Assessment:<br>recommendation | In its NC7, Romania did not provide a description of the provisions to make information on the legislative arrangements and enforcement and administrative procedures related to the implementation of the Kyoto Protocol publicly accessible.<br><br>During the review, Romania provided the ERT with information, including websites, on its approach to making relevant information about the development of the National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020 and its National Action Plan publicly available and the procedure put in place in 2015 for this purpose. |

| No. | Reporting requirement, issue type and assessment  | Description of the finding with recommendation   |
|-----|---|--|
| 2   | Reporting requirement specified in paragraph 38<br><br>Issue type: completeness<br><br>Assessment: recommendation | <p>The ERT recommends that Romania include in its next NC a description of any provisions to make information on the domestic and regional legislative arrangements and enforcement and administrative procedures related to the implementation of the Kyoto Protocol publicly accessible.</p> <p>In its NC7, Romania did not report information on the legislative arrangements and administrative procedures for ensuring that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources.</p> <p>During the review, Romania provided the ERT with information on two national strategies governing sustainable forest management aimed at maintaining current biological diversity, productivity, capability for regeneration and potential to perform all functions in the future, without causing harm to other ecosystems. The National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020 includes reconstruction of green forests, conservation of virgin and quasi-virgin forests, protection and restoration of aquatic ecosystems in forests and improvement in the health of forests as objectives. The National Strategy for Forestry 2018–2027 (currently under public consultation) is expected to include measures for sustainable forest management and for the conservation and improvement of biodiversity in forest ecosystems.</p> <p>The ERT reiterates the recommendation made in the previous review report that Romania include in its next NC information on legislative arrangements and administrative procedures for ensuring that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources.</p> |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent.

## 2. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

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

27. 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.

28. 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.

29. Romania gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts. Romania provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. Romania reported on how it periodically updates its PaMs to reduce greater levels of emissions and on the PaMs that have been discontinued since the previous submission.

30. Some PaMs are deferred to the regional and local level, such as the preparation of regional and county waste management plans under the National Strategy on Waste Management 2014–2020 and the National Waste Management Plan.

31. 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.

32. 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).

33. 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.

34. 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 and 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.

35. 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.

36. 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 8 provides a summary of the reported information on the PaMs of Romania.

Table 8  
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  |

| Sector            | Key PaMs   | Estimate of mitigation impact by 2020 (kt CO <sub>2</sub> eq) | Estimate of mitigation impact by 2030 (kt CO <sub>2</sub> eq) |
|-------------------|--|---|---|
|                   | National Strategy for Sustainable Development: Horizons 2013–2020–2030   | 43 157.50   | 51 413.80   |
| Energy            | EU ETS   | 7 000.00  | NE  |
|                   | 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<br>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

37. 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.

38. 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.

39. **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.

40. **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.

41. **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.

42. **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.

43. **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.

44. 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>3</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.

45. **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.

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<sup>3</sup> <https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx>.



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

46. **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.

47. **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.

48. **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.

49. **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 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) Minimization of adverse impacts in accordance with Article 2 and Article 3, paragraph 14, of the Kyoto Protocol**

50. Information on how Romania strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2018 annual submission. Romania reported on: the assessment of economic and social consequences of response measures, adverse effects of climate change, the minimization of effects on international trade, and social, environmental and economic impacts on other Parties. The reporting included information on cooperation on the development of technologies and assisting developing country Parties that are highly dependent on the export of fossil fuels in diversifying their economies. Romania reported that owing to the significant reduction in its emissions since 1989 it has participated in AIJ and JI projects, which has allowed it to upgrade old technologies and improve energy efficiency. The country has also participated in the EU ETS since 2007. As such, Romania considers that its carbon mitigation policy has no adverse impacts on other countries, particularly developing countries. The Party, however, 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, during the review, Romania explained that as a member of IRENA, it 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>4</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**

51. The ERT assessed the information reported in the NC7 of Romania and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 9.

Table 9

**Findings on policies and measures, including those in accordance with Article 2 of the Kyoto Protocol, from the review of the seventh national communication 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>b</sup> specified in paragraph 35<br><br>Issue type: completeness<br><br>Assessment: recommendation | The NC7 does not include information on the steps Romania has taken, in pursuit of Article 2, paragraph 2, of the Kyoto Protocol, to promote and implement ICAO and IMO decisions to limit or reduce emissions from aviation and marine bunker fuels.<br><br>During the review, Romania provided the ERT with information on the steps it has taken to promote and implement ICAO and IMO decisions to limit emissions from aviation and marine bunker fuels (see para. 44 above).<br><br>The ERT reiterates the recommendation made in the previous review report that Romania include in its next NC information on the steps it has taken, in pursuit of Article 2, paragraph 2, of the Kyoto Protocol, to promote and implement ICAO and IMO decisions to limit or reduce emissions from aviation and marine bunker fuels.  |
| 2          | Reporting requirement <sup>b</sup> specified in paragraph 36<br><br>Issue type: completeness<br><br>Assessment: recommendation | In its NC7, Romania did not provide information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties.<br><br>During the review, Romania provided the ERT with information, referring also to its NIR 2018, on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects on other Parties, especially developing country Parties (see para. 50 above).<br><br>The ERT reiterates the recommendation made in the previous review report that Romania include in its next NC information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. |
| 3          | Reporting requirement <sup>a</sup> specified in paragraph 18<br><br>Issue type: transparency<br><br>Assessment: encouragement  | In the NC7, the information on PaMs does not identify which ones have been updated or are new since the NC6, thus there is no brief description of the previously reported PaMs, focusing on the alterations to them.<br><br>During the review, Romania provided the ERT with information on some PaMs that have been updated since the NC6, including the National Renewable Energy Action Plan, the second National Action Plan on Energy Efficiency 2011–2020 and Law No. 121/2014 on energy efficiency.<br><br>The ERT encourages Romania to include in its next NC a clear identification and brief description of the PaMs that were reported in the previous NC, focusing on the alterations to them.  |
| 4          | Reporting requirement <sup>a</sup> specified in paragraph 21   | In its NC7, Romania reported limited information on how the progress of its PaMs in mitigating GHGs is monitored and evaluated over time.   |

<sup>4</sup> <http://e5p.eu/>.

| <i>No.</i> | <i>Reporting requirement, issue type and assessment</i>   | <i>Description of the finding with recommendation or encouragement</i>  |
|------------|---|---|
|            | <p>Issue type:<br/>transparency</p> <p>Assessment:<br/>encouragement</p>  | <p>During the review, Romania explained that monitoring and evaluation of progress towards the GHG targets is governed at the EU level by the EU monitoring mechanism regulation (no. 525/2013), adopted in 2013. For the EU ETS, installation-level measurement, reporting and verification is performed, while for the ESD targets this process mainly takes place through the submission of national GHG inventories by the EU member States.</p> <p>The ERT encourages Romania to include in its next NC transparent information on how the progress of PaMs in mitigating GHGs is monitored and evaluated over time.</p>   |
| 5          | <p>Reporting requirement<sup>a</sup><br/>specified in<br/>paragraph 22</p> <p>Issue type:<br/>transparency</p> <p>Assessment:<br/>encouragement</p> | <p>In its NC7, Romania did not report information on the status of implementation of some PaMs (e.g. Romania's Energy Strategy 2016–2030) or information on funds already provided, future budget allocated and the time frame for implementation for any of the adopted and implemented PaMs. Romania also reported the type of policy instrument as “Planning” for most of its PaMs. The ERT, however, noted that the UNFCCC reporting guidelines on NCs 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”. Based on the interaction with the Party during the review, the ERT also noted that some of the information on the PaMs reported in the NC7 (i.e. information on GHGs affected and status of implementation) is not correct.</p> <p>During the review, Romania informed the ERT that information on funds already provided and future budget allocated is not available. Romania also provided the ERT with updated tables listing its PaMs with the type of policy instrument consistent with the UNFCCC reporting guidelines on NCs, together with information on the status of implementation of each policy or measure. The Party acknowledged that transcription errors had occurred in the NC7 and presented revised information to the ERT, correcting some of the inaccurate information on PaMs (i.e. information on GHGs affected and status of implementation) reported in the NC7.</p> <p>The ERT encourages Romania to report in its next NC information on the status of implementation, funds already provided, future budget allocated and the time frame for implementation for all adopted and implemented PaMs. The ERT further encourages Romania to include, to the extent possible, in its next NC accurate information on the type of policy instrument in accordance with those in the UNFCCC reporting guidelines on NCs and on PaMs (i.e. information on GHGs affected and status of implementation).</p> |
| 6          | <p>Reporting requirement<sup>b</sup><br/>specified in<br/>paragraph 23</p> <p>Issue type:<br/>transparency</p> <p>Assessment:<br/>encouragement</p> | <p>In its NC7, Romania did not report, as appropriate, quantitative estimates of the impacts of some PaMs (e.g. all PaMs relating to the transport sector except for modernization of the transport sector) either individually or collectively.</p> <p>During the review, Romania explained that it did not report the quantitative estimates of the impacts for some PaMs owing to a lack of data at the national level.</p> <p>The ERT encourages Romania to include in its next NC, as appropriate, quantitative estimates of the impacts of PaMs, either individually or collectively, or to provide a clear explanation of why this may not be possible owing to its national circumstances.</p>  |
| 7          | <p>Reporting requirement<sup>b</sup><br/>specified in<br/>paragraph 24</p> <p>Issue type:<br/>transparency</p> <p>Assessment:<br/>encouragement</p> | <p>In its NC7, Romania did not provide any information on the costs and benefits of its PaMs, or on how the PaMs interact with other PaMs at the national level.</p> <p>During the review, Romania provided the ERT with information on the costs and benefits of the National Strategy on Climate Change and Economic Growth based on Low-carbon Emissions for the Period 2016–2020.</p> <p>The ERT encourages Romania to include in its next NC information on the costs and benefits of its PaMs, and on how the PaMs interact with other PaMs at the national level.</p>  |

| No. | Reporting requirement, issue type and assessment  | Description of the finding with recommendation or encouragement  |
|-----|---|--|
| 8   | Reporting requirement <sup>a</sup> specified in paragraph 26<br><br>Issue type: transparency<br><br>Assessment: encouragement | In its NC7, Romania reported that there are no PaMs listed in previous NCs that are no longer in place. The ERT, however, noted that was not correct.<br><br>During the review, Romania explained that some PaMs are no longer in place (e.g. government decision no. 529/2013 for approval of the National Climate Change Strategy 2013–2020).<br><br>The ERT encourages Romania to include in its next NC accurate information on the PaMs no longer in place, clearly explaining why they are no longer in place. |

*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.

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

<sup>b</sup> Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information.

## C. Projections and the total effect of policies and measures, including information on complementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

### 1. Projections overview, methodology and results

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

52. 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.

53. 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.

54. 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.

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

56. 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

57. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR2 and NC6. 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.

58. 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.

59. The projections for the energy sector were developed through an integrated energy analysis using the Energy and Power Evaluation Program,<sup>5</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*.

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

61. 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 these sectors lead to only an 18 per cent change in the total projected emissions (without LULUCF).

62. 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 in scenarios S2 and S3 it may lead to net emissions.

<sup>5</sup> <https://ceesa.es.anl.gov/projects/Enpepwin.html>.

## (c) Results of projections

63. 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 10 and the figure below.

Table 10

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

|  | <i>GHG emissions<br/>(kt CO<sub>2</sub> eq per year)</i> | <i>Changes in relation to<br/>base-year<sup>a</sup> level (%)</i> | <i>Changes in relation to<br/>1990 level (%)</i> |
|--|--|---|--|
| Kyoto Protocol base year <sup>b</sup>  | 304 920.57   | 0.0   | 0.2  |
| Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020) <sup>c</sup> | 661 182.23   | NA  | NA   |
| Quantified economy-wide emission reduction target under the Convention <sup>d</sup>                      | 661 182.23   | NA  | NA   |
| Inventory data 1990 <sup>e</sup>   | 246 271.86   | –0.2  | 0.0  |
| Inventory data 2015 <sup>e</sup>   | 116 426.73   | –61.8   | –52.7  |
| WOM projections for 2020 <sup>f</sup>  | 161 367.85   | –47.1   | –34.5  |
| WEM projections for 2020 <sup>f</sup>  | 118 209.59   | –61.2   | –52.0  |
| WAM projections for 2020 <sup>f</sup>  | 116 258.47   | –61.9   | –52.8  |
| WOM projections for 2030 <sup>f</sup>  | 177 458.61   | –41.8   | –27.9  |
| WEM projections for 2030 <sup>f</sup>  | 126 330.30   | –58.6   | –48.7  |
| WAM projections for 2030 <sup>f</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 Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/ROU.

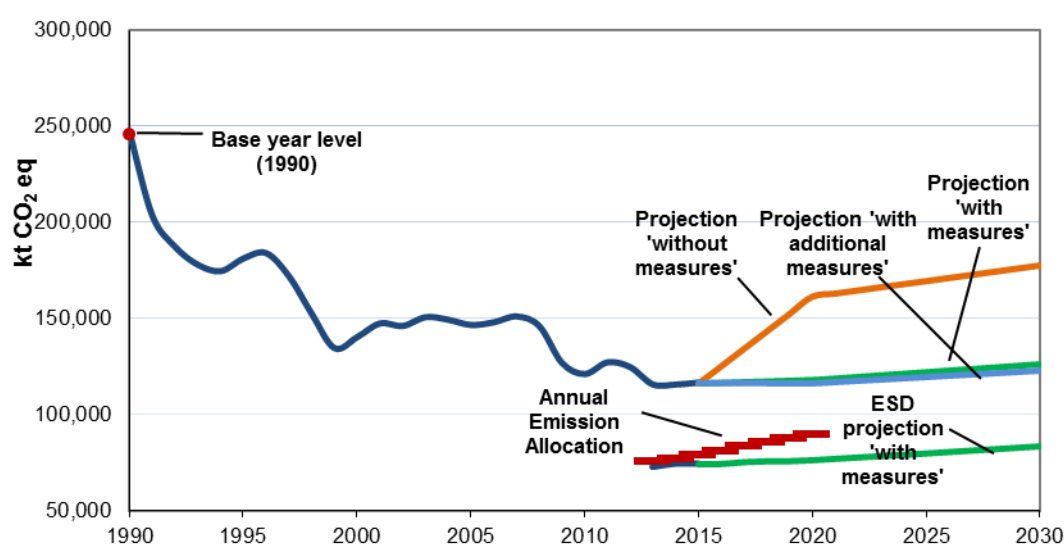
<sup>c</sup> The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is 19 per cent for Romania 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 8 years to calculate the annual emission level.

<sup>d</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>e</sup> From Romania’s BR3 CTF table 6.

<sup>f</sup> From Romania’s NC7 and 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 NC7 and BR3; total GHG emissions excluding LULUCF.

64. 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.

65. Romania’s target for non-ETS sectors is to limit its emission growth to 19 per cent above the 2005 level by 2020. 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.

66. Romania presented the WEM and WAM scenarios by sector for 2020, 2025, 2030 and 2035, as summarized in table 11 (for 2020 and 2030).

Table 11  
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<br>(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.

67. 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), respectively, between 1990 and 2020. 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.

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

69. Romania presented the WEM and WAM scenarios by gas for 2020, 2025, 2030 and 2035, as summarized in table 12 (for 2020 and 2030).

Table 12

**Summary of greenhouse gas emission projections for Romania presented by gas**

| Gas                                       | 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          |
| 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.

70. 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.

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

72. 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**

73. The ERT assessed the information reported in the NC7 of Romania and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 13.

Table 13

**Findings on greenhouse gas emission projections reported in the seventh national communication 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<br><br>Issue type: transparency<br><br>Assessment: recommendation | <p>The ERT noted that it is not clear from Romania's NC7 whether the projection scenarios provided encompass currently implemented and adopted PaMs (WEM scenario) and planned PaMs (WAM scenario) consistent with the definitions provided in the NC reporting guidelines. 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.</p> <p>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.</p> <p>The ERT recommends that Romania ensure, in its next NC, that its projections encompass implemented and adopted PaMs (WEM 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.</p> |
| 2          | Reporting requirement <sup>a</sup> specified in paragraph 30<br><br>Issue type: transparency<br><br>Assessment: encouragement  | <p>In its NC7, 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.</p> <p>During the review, Romania explained that it plans to strengthen the sensitivity analysis for the LULUCF sector.</p> <p>The ERT encourages Romania to include in its next NC transparent information on the sensitivity analysis for the LULUCF sector. The ERT notes the importance of Romania providing transparent information on how the sensitivity analysis presented relates to the projections and the underlying inventory data.</p>   |
| 3          | Reporting requirement <sup>a</sup> specified in paragraph 35<br><br>Issue type: completeness<br><br>Assessment: encouragement  | <p>In its NC7, Romania did not provide projections for indirect GHGs.</p> <p>During the review, Romania explained that it was making efforts to report projections for indirect GHGs.</p> <p>The ERT encourages Romania to include in its next NC projections for indirect GHGs.</p>  |
| 4          | Reporting requirement <sup>a</sup> specified in paragraph 43   | <p>In its NC7, Romania did not summarize the strengths and weaknesses of the models or approaches used for the preparation of its projections.</p>  |

| 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.

## 2. Assessment of the total effect of policies and measures

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

74. In the NC7 Romania presented the estimated and expected total effect of implemented and adopted PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO<sub>2</sub> eq basis), in 2020 and 2025. It also presented relevant information on factors and activities for each sector for 1990–2035.

75. Romania reported that the total estimated effect of its adopted and implemented PaMs is 43,158.14 kt CO<sub>2</sub> eq in 2020 and 51,128.31 kt CO<sub>2</sub> eq in 2030. According to the information reported in the NC7, as well as the analysis of the ERT, PaMs implemented in the energy sector will deliver the largest emission reductions, followed by PaMs implemented in the industrial processes and agriculture sectors. Table 14 provides an overview of the total effect of PaMs, as calculated by the ERT.

Table 14

#### Projected effects of Romania's planned, implemented and adopted policies and measures by 2020 and 2030

| Sector                       | 2020   |  | 2030   |  |
|------------------------------|--|--|--|--|
|                              | <i>Effect of implemented and adopted measures (kt CO<sub>2</sub> eq)</i> | <i>Effect of planned measures (kt CO<sub>2</sub> eq)</i> | <i>Effect of implemented and adopted measures (kt CO<sub>2</sub> eq)</i> | <i>Effect of planned measures (kt CO<sub>2</sub> eq)</i> |
| Energy (without transport)   | 26 877.15  | 27 620.82  | 31 270.1   | 32 214.30  |
| Transport                    | 410.59   | 737.12   | 1 104.82   | 1 505.76   |
| Industrial processes         | 9 609.78   | 9 609.78   | 9 219.73   | 9 219.73   |
| Agriculture                  | 3 676.56   | 4 549.26   | 4 866.82   | 6 954.25   |
| Land-use change and forestry | -3 160.8   | -4 120.2   | -2 761.2   | -9 305.76  |
| Waste management             | 2 583.45   | 2 591.82   | 4 952.32   | 4 995.95   |
| <b>Total</b>                 | <b>43 158.26</b>   | <b>45 109.38</b>   | <b>51 128.31</b>   | <b>54 604.72</b>   |

*Source:* Romania's NC7 and BR3.

*Note:* The total effect of implemented and adopted PaMs is defined as the difference between the WOM and the WEM scenario; the total effect of planned PaMs is defined as the difference between the WOM and the WEM scenario.

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

76. The ERT assessed the information reported in the NC7 of Romania and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 15.

Table 15

**Findings on the assessment of the total effect of policies and measures from the review of the seventh national communication 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 39<br><br>Issue type: transparency<br><br>Assessment: recommendation | In the NC7, Romania erroneously reported that the difference in GHG emissions between the WEM and the WOM scenario gives the estimated and expected total effect of its planned PaMs, instead of the estimated and expected total effect of its implemented and adopted PaMs.<br><br>During the review, Romania acknowledged the error and confirmed that the information presented refers to the total effect of its implemented and adopted PaMs.<br><br>The ERT recommends that Romania include in its next NC correct information regarding the estimation of the total effect of its PaMs. |
| 2   | Reporting requirement specified in paragraph 39<br><br>Issue type: completeness<br><br>Assessment: encouragement  | In its NC7, Romania did not present the total effect of planned PaMs.<br><br>During the review, Romania explained that it is making an effort to estimate and report the total effect of planned PaMs for future submissions.<br><br>The ERT encourages Romania to include in its next NC the total effect of its planned PaMs.   |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. 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.

### **3. Supplementary relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol**

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

77. In the NC7 Romania provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. The ERT noted that Romania does not plan to use the market-based mechanisms to meet its Kyoto Protocol target.

78. In the NC7, Romania reports that, during the first commitment period of the Kyoto Protocol, it signed 10 memorandums of understanding with Parties included in Annex I to the Convention (Austria, Denmark, Finland, France, Italy, Netherlands, Norway, Sweden and Switzerland) as well as with the World Bank for the Prototype Carbon Fund,<sup>6</sup> which establishes the legal framework for developing JI projects. Under these memorandums, 23 JI projects have received letters of approval and are currently at various stages of development. Romania did not renew these memorandums of understanding for the second commitment period of the Kyoto Protocol.

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

79. The ERT assessed the information reported in the NC7 of Romania 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.

### **D. Provision of financial and technological support to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol**

80. 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,

<sup>6</sup> <https://wbcarbonfinance.org/Router.cfm?Page=PCF&ft=About>.

Romania provided information in the NC7 on its provision of support to developing country Parties. The ERT noted that Romania reported climate-specific<sup>7</sup> 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 NCs.

## **E. Vulnerability assessment, climate change impacts and adaptation measures**

### **1. Technical assessment of the reported information**

81. In the NC7, Romania provided the required information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Romania provided a description of climate change vulnerability and impacts on various sectors and areas and highlighted the adaptation response actions taken and planned at different levels of government. The vulnerable sectors and areas include agriculture, biodiversity, construction and urban planning, energy, forestry, health, infrastructure, insurance and industry, recreational activity, transport, tourism and water resources. The key vulnerabilities include increasing temperature, decreasing precipitation and expanding snowmelt area resulting in a higher risk of flooding and drought, particularly in the southern and south-eastern regions of the country. The key impacts of climate change include a reduction in agricultural production, an imbalance in water demand and supply, heat island effects in urban areas, and increased risk of flood and drought in some areas. Romania provided information on the adaptation measures planned for these vulnerable areas as part of the National Strategy for Climate Change and Economic Growth based on Low Carbon Emissions for the Period 2016–2020, approved in 2013 by government decision 529/2013 and updated in 2016.

82. Impetus has been given to addressing adaptation matters with the adoption of the updated National Strategy for Climate Change and Economic Growth based on Low Carbon Emissions for the Period 2016–2020 and the National Action Plan for its implementation. These two policies have provided further direction to government agencies on enhancing preparedness for climate change, including adaptation. The National Action Plan includes: State-funded adaptation actions for the agriculture and rural development sector consistent with those of the EU Common Agricultural Policy; measures to better integrate climate change considerations into the design and contents of urban and infrastructure plans; actions aimed at increasing the use of insurance against industrial losses from climate events, including the establishment of climate risk insurance funds; and measures aimed at ensuring the conservation of biodiversity.

83. Romania reported on the expected change in climate variables, including precipitation and temperature, based on data collected from 124 meteorological stations over the period 1961–2016. Projections were made for the period 2021–2050 that are consistent with the IPCC representative concentration pathway scenarios RCP 4.5 and RCP 8.5, and scenarios A1 and B2 from the IPCC special report *Emissions Scenarios*. The results of regional climate modelling and dynamic downscaling indicate that Romania's climate will undergo significant changes over the coming decades, including an increase in average monthly temperature of up to 3° C and a decrease in rainfall of 8–9 per cent in summer, which will cause declines in agricultural production and water supply. There will also be increases in the number of extreme events such as floods (especially in mountain areas) resulting from the increase in precipitation intensity, and heatwaves (especially in the southern, south-eastern and westernmost parts of the country) resulting from the increase in average temperature. Table 16 summarizes the information on vulnerability and adaptation to climate change presented in the NC7 of Romania.

Table 16  
**Summary of information on vulnerability and adaptation to climate change reported by Romania**

| <i>Vulnerable area</i>                          | <i>Examples/comments/adaptation measures reported</i>  |
|---|--|
| Agriculture and food security                   | <p><i>Vulnerability:</i> The agriculture sector in Romania will face the negative impacts of drought and floods, especially in the southern and south-eastern parts of the country. Both past trends and future models predict an increase in the frequency and intensity of droughts and floods, which have the associated risks of soil erosion, desertification, loss of agricultural productivity and economic losses.</p> <p><i>Adaptation:</i> Measures for agriculture include: promoting risk management schemes as an essential tool for restoring production potential and compensating for economic losses associated with weather-related events; using the “greening” payment for sustainable agricultural practices (through the European Agricultural Guarantee Fund); and implementing measures under the National Rural Development Programme 2014–2020 by which farmers adapt to climate change through managing their lands sustainably.</p>  |
| Biodiversity and natural ecosystems             | <p><i>Vulnerability:</i> The five biogeographical regions in Romania (Alpine, Continental, Pannonian, Pontic (including the Black Sea Marine Region) and steppe) are vulnerable to: modifications in species’ behaviour; modifications in distribution and composition of native habitats resulting from changes in species structure; an increase in the frequency of invasion of exotic species into natural habitat; threats to wild animals due to an increase in the frequency of forest fires; and an increase in the risk of soil erosion in the Carpathian mountains, with resulting extinctions of flora and fauna.</p> <p><i>Adaptation:</i> Measures for biodiversity include: assessing the vulnerability of natural habitats and protected species to climate change; controlling alien invasive species; and promoting the value of ecosystem services and adaptive management in decision-making systems.</p>   |
| Energy  | <p><i>Vulnerability:</i> The energy sector is vulnerable to: changes in seasonal demand for electricity (lower in winter and higher in summer); a reduction in hydroelectricity production capacity resulting from a decrease in water resources; damage to transmission and distribution infrastructure after extreme weather events; and interruptions to electricity supply resulting from supply–demand imbalances.</p> <p><i>Adaptation:</i> Measures for energy include: developing measures for supply and demand in the energy strategy for the period 2016–2035; and addressing existing knowledge gaps through capacity-building and training.</p>   |
| Forestry  | <p><i>Vulnerability:</i> The key vulnerabilities in the forestry sector include: a decrease in forest productivity and health resulting from high temperatures and pest infestations; an increase in the frequency and intensity of forest fires resulting from increases in temperature and long periods of drought; and modification of forest structure (especially in hilly areas) and forest migration from steppes to plains.</p> <p><i>Adaptation:</i> Measures in forestry focus on: improving the management of forests in order to support their adaptive capacity; adapting forest regeneration practices (e.g. updating technical guidelines for forest regeneration and strengthening capacity-building); and minimizing risks to forests by improving monitoring and observation systems for forest fires, pests and invasive species, and investing in the management of risks from extreme weather events.</p>   |
| Industry  | <p><i>Vulnerability:</i> Vulnerabilities in the industrial sector include: higher operational and maintenance costs in several industries resulting from the increase in frequency of extreme weather events; infrastructure degradation due to high temperatures, precipitation, floods and extreme weather phenomena; restricted access to industrial sites and associated impacts on the supply of fuels and raw materials; and higher insurance premiums for industrial raw materials and production due to uncertainty in risk profiling for national disaster insurance.</p> <p><i>Adaptation:</i> Measures in industry support two strategic objectives: to increase protection from and preparedness for climate-related emergency situations in key industries; and to increase the awareness of industrial enterprises on the need for measures for climate change adaptation. The measures include increasing the use of insurance against industrial losses due to climate events, including developing insurance solutions and climate risk insurance funds for industry.</p> |
| Infrastructure, construction and urban planning | <p><i>Vulnerability:</i> Infrastructure in Romania is vulnerable to extreme weather events, such as heatwaves, abundant snowfall, storms and floods, as well as an increase in the instability of slopes and the modification of certain geophysical features.</p> <p><i>Adaptation:</i> Measures for this sector include: supporting holistic infrastructure and urban planning by integrating climate change constraints into the design and contents of plans;</p>  |

| Vulnerable area   | Examples/comments/adaptation measures reported  |
|---|---|
| Insurance   | <p>promoting new development in areas with lower vulnerability; and enhancing the physical robustness of vulnerable structures.</p> <p><i>Vulnerability:</i> The insurance sector will be affected by climate change owing to an increase in sectoral risks, but could also play a decisive role in the process of adapting to climate change.</p> <p><i>Adaptation:</i> Measures for insurance include: increasing the use of and access to insurance products for climate change related extreme events, including by developing new insurance products targeting the impacts of climate change; and increasing the capacity of the insurance sector, including through better collaboration between public authorities and private insurance providers.</p>  |
| Public health and response services in emergency situations | <p><i>Vulnerability:</i> Public health in Romania is vulnerable to both the direct effects of extreme weather events and the indirect effects of climate change, such as changing patterns of infectious diseases and emerging diseases caused by new pathogens, the disruption of agricultural systems, massive urbanization, population migration and heatwaves in urban areas.</p> <p><i>Adaptation:</i> Measures in public health include: developing capacity for the surveillance of events that have impacts on public health; and safeguarding the health of citizens from the impacts of disasters by strengthening the Romanian emergency management system.</p>  |
| Transport   | <p><i>Vulnerability:</i> The transport sector is vulnerable to extreme weather events, fluctuations in river flows, infrastructure degradation and reduced passenger comfort due to rising temperatures.</p> <p><i>Adaptation:</i> Measures for transport include increasing the resilience of Romania’s transport infrastructure and services by conducting vulnerability assessments to identify the relative vulnerability to the impacts of climate change of both assets and services and to define short-, medium- and long-term responses.</p>   |
| Tourism and recreation                                      | <p><i>Vulnerability:</i> The tourism sector is vulnerable to the impacts of changing weather conditions and extreme events (summer heatwaves, intense floods and storms, and less snowfall in the winter time in some regions) that affect tourists’ choice of destinations. High temperatures will negatively impact the number of foreign tourists visiting regions such as the Black Sea coast and mountain areas by restricting activities (e.g. outdoor activities) at tourist resorts.</p> <p><i>Adaptation:</i> The key measures include: taking advantage of opportunities and avoiding the risks associated with climate change through strategic planning at the national level; supporting competitive tourism sectors and those that are less vulnerable to the impacts of climate change (e.g. ecotourism and spa tourism); supporting the development of four-season green mountain resorts; and adapting coastal tourism to climate change.</p>  |
| Water resources   | <p><i>Vulnerability:</i> The key vulnerabilities of water resources include: an increase in the average temperature in winter and shorter winters, causing a decrease in the seasonal snow volume and early and fast melting of snow; an imbalance in water demand and supply resulting from high temperatures and dry conditions during summer; a decrease in the average flows in rivers resulting from high evaporation; and an increase in water stress resulting from a growing demand for irrigation in agriculture.</p> <p><i>Adaptation:</i> Measures related to water resources focus on: preventing systemic losses in water distribution networks; promoting the reuse of treated wastewater in the industrial sector; protecting critical water supply sources; limiting the use of groundwater in areas of over-extraction; upgrading the existing radar network for measuring precipitation intensity; managing construction activities in areas of high flood risk; and enhancing the amount of investment planned for construction, renewal and improvement of flood management infrastructure.</p> |

84. Romania reported limited information on international adaptation activities. As part of its bilateral cooperation with developing countries on adaptation, in 2016, Romania provided USD 51,734.00 for adaptation activities in Georgia.

**2. Assessment of adherence to the reporting guidelines**

85. The ERT assessed the information reported in the NC7 of Romania and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 17.

Table 17

**Findings on the vulnerability assessment, climate change impacts and adaptation measures from the review of the seventh national communication of Romania**

| No. | Reporting requirement, issue type and assessment   | Description of the finding with recommendation or encouragement   |
|-----|--|---|
| 1   | Reporting requirement specified in paragraph 49<br><br>Issue type: transparency<br><br>Assessment: encouragement | <p>The ERT noted that Romania's NC7 does not clarify whether the Party used the IPCC <i>Technical Guidelines for Assessing Climate Change Impacts and Adaptations</i> and the UNEP <i>Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies</i>.</p> <p>During the review, Romania informed the ERT that it used the IPCC technical guidelines and UNEP handbook to guide the use of available climate change projections based on the global emissions and concentration scenarios for studies related to impact assessment and knowledge development for adaptation planning. In addition, it used the UNEP handbook to formulate socioeconomic scenarios for Romania in the analyses performed under the OPERA-CLIMA programme.<sup>a</sup></p> <p>The ERT encourages Romania to clarify in its next NC whether it uses the IPCC <i>Technical Guidelines for Assessing Climate Change Impacts and Adaptations</i> and the UNEP <i>Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies</i>.</p> |
| 2   | Reporting requirement specified in paragraph 49<br><br>Issue type: completeness<br><br>Assessment: encouragement | <p>In its NC7, Romania did not report specific results of scientific research in the field of vulnerability assessment and adaptation.</p> <p>During the review, the Party presented the results of relevant scientific research related to vulnerability assessment and adaptation, including the RO-RISK project, the SnowBall project<sup>b</sup> and the IMDROFLOOD project,<sup>c</sup> while explaining that the information is included in the section on research and systematic observation.</p> <p>The ERT encourages Romania to report specific results of scientific research in the in the field of vulnerability assessment and adaptation in the section on vulnerability and adaptation.</p>  |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. 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.

<sup>a</sup> Climate change and economic growth based on low carbon. See <http://opera-clima.ro/en/>.

<sup>b</sup> Remote sensing, model and in situ data fusion for snowpack parameters and related hazards in a climate change perspective. See <http://snowball.meteoromania.ro/about/about-snowball>.

<sup>c</sup> Improving drought and flood early warning, forecasting and mitigation using real-time hydroclimatic indicators. See <http://imdروفlood.meteoromania.ro/> and <http://imdروفlood.csic.es/>.

## F. Research and systematic observation

### 1. Technical assessment of the reported information

86. Romania provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions to the World Climate Research Programme, the International Geosphere–Biosphere Programme, the International Human Dimension Programme on Global Environmental Change and the IPCC. Romania has also synchronized its monitoring activities with GCOS.

87. Romania has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. Romania has focused its research-related activities on the physical basis of climate change, including analysis of climate variability and change at the regional level using observational data and results from global and regional climate models in order to identify climate-related risks.

88. Romania has been involved in several national and international research projects addressing sustainable development, green growth adaptation, and risk and vulnerability

assessment, including ADER, CAMARO-D,<sup>7</sup> CLIMHYDEX,<sup>8</sup> DRIDANUBE,<sup>9</sup> ERA4CS,<sup>10</sup> EUPORIAS,<sup>11</sup> GenClim,<sup>12</sup> Green Path towards Sustainable Development,<sup>13</sup> IMDROFLOOD,<sup>14</sup> IRIDA,<sup>15</sup> SnowBall,<sup>16</sup> OPERA-CLIMA<sup>17</sup> and RO-RISK. At the EU level, many Romanian institutions have participated in various European research programmes, including the Horizon 2020<sup>18</sup> and COST<sup>19</sup> frameworks. Romania is also a member of the EU Joint Programming initiative,<sup>20</sup> which aims to better utilize national research and development resources to address common European challenges. Research in Romania is supported by five ministries: Ministry of Research and Innovation, Ministry of Environment, Ministry of Agriculture and Rural Development, Ministry of Regional Development and Public Administration and Ministry of European Funds. The National Action Plan for 2016–2020 favours interministerial interaction on climate research.

89. In terms of activities related to systematic observation, Romania reported on national plans, programmes and support for ground- and space-based climate observing systems, including atmospheric climate, Black Sea climate and terrestrial climate. Romania also reported on challenges related to the maintenance of a consistent and comprehensive observation system. Romania participates in climate-related monitoring at the national level and also contributes to European and international monitoring activities. NMA is the main organization conducting systematic observations on atmospheric, oceanographic and terrestrial climate systems through the National Meteorological Network, which comprises seven regional meteorological centres and 168 weather stations. Romania complies with the GCOS requirements, and contributes to free data exchange under the national law on meteorology and relevant international regulations. NMA participates in the exchange of international meteorological data with 23 stations in the Regional Basic Synoptic Network and 14 stations in the Regional Basic Climatological Network.<sup>21</sup> NMA has also submitted updated climate data to the European Climate Assessment and Dataset project.<sup>22</sup>

90. Romania has assisted the Republic of Moldova in developing gridded data sets for the Prut River basin, including data on daily and monthly temperature, precipitation and potential evapotranspiration, by supporting the research framework of the IMDROFLOOD project. In addition, Romanian experts from NMA have contributed to capacity-building in Albania and the Republic of Moldova by organizing relevant training courses, including on severe weather forecasting and warning.

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- <sup>7</sup> Cooperating towards advanced management routines for land-use impacts on the water regime in the Danube River basin. See <http://www.interreg-danube.eu/approved-projects/camaro-d>.
- <sup>8</sup> Changes in climate extremes and associated impact in hydrological events in Romania. See <http://climhydex.meteoromania.ro/>.
- <sup>9</sup> Drought risk in the Danube region. See <http://www.interreg-danube.eu/approved-projects/dridanube>.
- <sup>10</sup> European Research Area for Climate Services. See <http://www.jpi-climate.eu/ERA4CS>.
- <sup>11</sup> European provision of regional impacts assessments on seasonal and decadal timescales. See <http://www.euporias.eu/>.
- <sup>12</sup> Evaluation of the adaptive genetic potential of the main coniferous species for a sustainable forest management in the context of climate change. See <http://genetica.icas.ro/index9bc8.html?idCapitol=34&lang=En>.
- <sup>13</sup> <https://caleaverde.ro/?lang=en>.
- <sup>14</sup> Improving drought and flood early warning, forecasting and mitigation using real-time hydroclimatic indicators. See <http://imdروفlood.meteoromania.ro/> and <http://imdروفlood.csic.es/>.
- <sup>15</sup> Innovative remote and ground sensors, data and tools into a decision support system for agriculture water management. See [http://www.waterjpi.eu/index.php?option=com\\_content&view=article&id=494&Itemid=769](http://www.waterjpi.eu/index.php?option=com_content&view=article&id=494&Itemid=769).
- <sup>16</sup> Remote sensing, model and in situ data fusion for snowpack parameters and related hazards in a climate change perspective. See <http://snowball.meteoromania.ro/about/about-snowball>.
- <sup>17</sup> Climate change and economic growth based on low carbon. See <http://opera-clima.ro/en/>.
- <sup>18</sup> <https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>.
- <sup>19</sup> <http://www.cost.eu/>.
- <sup>20</sup> [http://ec.europa.eu/research/era/what-joint-programming\\_en.html](http://ec.europa.eu/research/era/what-joint-programming_en.html).
- <sup>21</sup> <http://www.wmo.int/pages/prog/www/ois/rbsn-rbcn/rbsn-rbcn-home.htm>.
- <sup>22</sup> <https://www.ecad.eu/>.



## 2. Assessment of adherence to the reporting guidelines

91. The ERT assessed the information reported in the NC7 of Romania and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 18.

Table 18

### Findings on research and systematic observation from the review of the seventh national communication of Romania

| No. | Reporting requirement, issue type and assessment  | Description of the finding with recommendation or encouragement  |
|-----|---|--|
| 1   | Reporting requirement specified in paragraph 58<br><br>Issue type: completeness<br><br>Assessment: recommendation | In its NC7, Romania did not report on actions taken to support capacity-building related to research and systematic observation in developing countries.<br><br>During the review, Romania provided the ERT with information on the actions taken to support capacity-building related to research and systematic observation in developing countries (see para. 90 above).<br><br>The ERT recommends that Romania include in its next NC information on actions taken to support capacity-building related to research and systematic observation in developing countries.  |
| 2   | Reporting requirement specified in paragraph 62<br><br>Issue type: completeness<br><br>Assessment: encouragement  | In its NC7, Romania did not provide information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.<br><br>During the review, Romania explained that the main barrier in the free exchange of international meteorological data is the budget constraints faced by NMA in running the 23 stations of the Regional Basic Synoptic Network and 14 stations of the Regional Basic Climatological Network. Other barriers are those related to the limitations of human and computational resources, including monitoring equipment.<br><br>The ERT encourages Romania to include in its next NC information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.   |
| 3   | Reporting requirement specified in paragraph 63<br><br>Issue type: completeness<br><br>Assessment: encouragement  | In its NC7, Romania did not provide information on highlights, innovations and significant efforts made with regard to socioeconomic analysis, including analysis of both the impacts of climate change and response options and the research and development on mitigation and adaptation technologies.<br><br>During the review, Romania explained that socioeconomic analysis is mentioned in the NC7 and that the Party faces a shortage of experts on socioeconomic analysis related to climate change impacts and modelling. Romania provided the ERT with information on research and development related to mitigation and adaptation technologies, such as OPERA-CLIMA <sup>a</sup> , a programme and a study on urban flooding and urban heat islands.<br><br>The ERT encourages Romania to include in its next NC information on highlights, innovations and significant efforts made with regard to socioeconomic analysis and research and development on mitigation and adaptation technologies. |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. 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.

<sup>a</sup> Climate change and economic growth based on low carbon. See <http://opera-clima.ro/en/>.

## G. Education, training and public awareness

### 1. Technical assessment of the reported information

92. In the NC7 Romania provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness, primary, secondary and higher education, public information campaigns, training programmes, education materials,

resource or information centres, the involvement of the public and NGOs and its participation in international activities.

93. The National Strategy for Sustainable Development: Horizons 2013–2020–2030 recognizes national educational and training systems as a priority objective and key to the effective application of the principles of sustainable development. Sustainable development principles are integrated into both the initial and the continuing vocational education and training systems, which are implemented by the Ministry of Education and Scientific Research and the Ministry for Labour, Family, Social Protection and Elderly together with respective line agencies. Initial vocational education and training comprises early learning, primary education, secondary education and tertiary education, with different elements of sustainable development and climate change being taught at each level. Several universities in Bucharest offer masters and doctoral-level studies on topics such as carbon capture, transport and storage process analysis, climate change and sustainable development. The continuing vocational education and training system supports lifelong learning through the adoption of the National Lifelong Learning Strategy 2015–2020. This includes relevant training courses on climate change for sharing knowledge and best practices as well as events, workshops, conferences and dedicated projects aimed at building capacity, influencing policy and increasing the level of education and public awareness. The National Agency for Community Programmes in the Field of Education and Vocational Training manages several relevant EU programmes, including Comenius 2013,<sup>23</sup> ERASMUS+,<sup>24</sup> Grundtvig<sup>25</sup> and Leonardo da Vinci.<sup>26</sup>

94. To enhance public awareness on climate change issues, various NGO projects and public outreach activities have been implemented with international and domestic funding. The European Environment Agency Financial Mechanism 2009–2014<sup>27</sup> funded 42 projects under the NGO Fund programme in Romania, which covered sustainable development and climate change, among other topics. Domestically, the Administration of the Environmental Fund promotes and supports education and public awareness activities related to climate change mitigation and adaptation.

**2. Assessment of adherence to the reporting guidelines**

95. The ERT assessed the information reported in the NC7 of Romania and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 19.

Table 19  
**Findings on education, training and public awareness from the review of the seventh national communication of Romania**

| No. | Reporting requirement, issue type and assessment                                | Description of the finding with recommendation or encouragement   |
|-----|---|---|
| 1   | Reporting requirement specified in paragraph 65<br><br>Issue type: completeness | In its NC7, Romania did not report information on the extent of public participation in the preparation or domestic review of the NC.<br><br>During the review, Romania clarified that there was no public participation in the preparation of the NC7. |

<sup>23</sup> [http://www.welcomeurope.com/subventions-europennes/llp-comenius-607+507.html#tab=onglet\\_details](http://www.welcomeurope.com/subventions-europennes/llp-comenius-607+507.html#tab=onglet_details).

<sup>24</sup> To support education, training, youth and sport. See [http://ec.europa.eu/programmes/erasmus-plus/node\\_en](http://ec.europa.eu/programmes/erasmus-plus/node_en).

<sup>25</sup> Aimed at providing adults with ways to improve their knowledge and skills, keep them mentally fit and potentially more employable. See [https://eacea.ec.europa.eu/sites/2007-2013/llp/grundtvig-programme\\_en](https://eacea.ec.europa.eu/sites/2007-2013/llp/grundtvig-programme_en).

<sup>26</sup> On mobility, providing opportunities for target groups to complete their vocational education and training in another country. See [https://www.welcomeurope.com/european-funds/llp-leonardo-da-vinci-mobility-191+91.html#tab=onglet\\_details](https://www.welcomeurope.com/european-funds/llp-leonardo-da-vinci-mobility-191+91.html#tab=onglet_details).

<sup>27</sup> <https://eeagrants.org/programme/getagreement/LV04/EEA>.

| <i>No.</i> | <i>Reporting requirement, issue type and assessment</i> | <i>Description of the finding with recommendation or encouragement</i>   |
|------------|---|--|
|            | Assessment: encouragement                               | The ERT encourages Romania to include in its next NC information on the extent of public participation in the preparation or domestic review of its NCs. |

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. 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.

### III. Conclusions and recommendations

96. The ERT conducted a technical review of the information reported in the NC7 of Romania in accordance with the UNFCCC reporting guidelines on NCs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC7 provides an overview of the national climate policy of Romania.

97. The information provided in the NC7 includes most of the elements of the supplementary information under Article 7 of the Kyoto Protocol. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by Romania in its 2018 annual submission with the exception of some elements of information on the national system and the national registry.

98. 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.

99. 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.

100. The GHG emission projections provided by Romania include those under the WOM, WEM and WAM scenarios. In the three scenarios, emissions are projected to be 34.5, 52.0 and 52.8 per cent below the 1990 level in 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.

101. The projections indicate that Romania can meet its Kyoto Protocol target for the second commitment period under the WEM scenario, and that GHG emissions are not expected to exceed the Kyoto Protocol target even by 2020, as reflected in the AEAs for Romania pursuant to the ESD.

102. The NC7 contains information on how the Party's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Romania is

not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target.

103. 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 NC7 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.

104. In its NC7, Romania reported information on vulnerability and adaptation. The vulnerable sectors and areas include agriculture, biodiversity, water resources, forestry, infrastructure, construction and urban planning, tourism, energy, industry, transport, health, insurance and recreational activity. The key vulnerabilities include increasing temperature, decreasing precipitation and expanding snowmelt area resulting in a higher risk of flooding and drought, particularly in the southern and south-eastern regions of the country. The key impacts of climate change include a loss of agricultural production, an imbalance in water demand and supply, heat island effects in urban areas, and flood and drought risk in some areas. Romania provided information on the adaptation measures planned for these vulnerable areas as part of its National Climate Change Strategy, approved in 2013 by government decision 529/2013 and updated in 2016.

105. In its NC7, Romania provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions to the World Climate Research Programme, the International Geosphere–Biosphere Programme, the International Human Dimension Programme on Global Environmental Change and the IPCC. Romania has focused its research-related activities on the physical basis of climate change, including analysis of climate variability and change at the regional level using observational data and results from global and regional climate models in order to identify climate-related risks. In terms of activities related to systematic observation, Romania reported on national plans, programmes and support for ground- and space-based climate observing systems, including atmospheric climate, Black Sea climate and terrestrial climate. NMA is the main organization conducting systematic observations on atmospheric, oceanographic and terrestrial climate systems through the National Meteorological Network, which comprises 7 regional meteorological centres and 168 weather stations. Romania complies with the GCOS requirements, and contributes to free data exchange under the national law on meteorology and relevant international regulations.

106. In its NC7, Romania provided information on its actions relating to education, training and public awareness at the domestic and international level. The National Strategy for Sustainable Development: Horizons 2013–2020–2030 recognizes national educational and training systems as a priority objective and key to the effective application of the principles of sustainable development. Sustainable development principles are integrated into both the initial and the continuing vocational education and training systems. Various internationally and domestically funded NGO projects and public outreach activities have been implemented to enhance public awareness on climate change issues.

107. In the course of the review, the ERT formulated the following recommendations for Romania to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:<sup>28</sup>

- (a) To improve the completeness of its reporting by:
  - (i) Including the results of any test procedures developed with the aim of testing the performance, procedures and security measures of the national registry (see issue 1 in table 6);
  - (ii) Providing a description of any provisions to make information on the domestic and regional legislative arrangements and enforcement and administrative procedures

<sup>28</sup> The recommendations are given in full in the relevant sections of this report.

related to the implementation of the Kyoto Protocol publicly accessible (see issue 1 in table 7);

(iii) Providing information on legislative arrangements and administrative procedures for ensuring that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources (see issue 2 in table 7);

(iv) Providing information on the steps it has taken, in pursuit of Article 2, paragraph 2, of the Kyoto Protocol, to promote and implement ICAO and IMO decisions to limit or reduce emissions from aviation and marine bunker fuels (see issue 1 in table 9);

(v) Providing information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties (see issue 2 in table 9);

(vi) Providing information on actions taken to support capacity-building related to research and systematic observation in developing countries (see issue 1 in table 18);

(b) To improve the transparency of its reporting by:

(i) Including a transparent description of the official consideration and final approval of its inventory, and the process used for the selection of the EFs, particularly the sources of the EFs used (see issue 1 in table 5);

(ii) Ensuring that its projections encompass implemented and adopted PaMs (WEM scenario) and planned PaMs (WAM scenario) (see issue 1 in table 13);

(iii) Providing correct information regarding the estimation of the total effect of implemented and adopted PaMs (see issue 1 in table 15).

#### **IV. Questions of implementation**

108. During the review the ERT assessed the NC7, including the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, and the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol with regard to timeliness, completeness and, transparency. No questions of implementation were raised by the ERT during the review.

## Annex

### Documents and information used during the review

#### A. Reference documents

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## **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:

Bojariu R, Bîrsan MV, Cică R, Velea L, Burcea S, Dumitrescu A, Dascălu SI, Gothard M, Dobrinescu A, Cărbunaru F, Marin L. 2015. *Climate Change – from Physical Basis to Risks and Adaptation* (in Romanian with a summary in English). București: Printech. 200 pp. ISBN: 978606-23-0363-1, DOI:10.13140/RG.2.1.1341.0729. Available at  
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<http://www.meteoromania.ro/anm/images/clima/SEERISKchangingclimate2014.pdf>.

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