COMPLIANCE COMMITTEE

CC/ERT/IRR/2008/7
16 May 2008

Report of the review of the initial report of Romania

Note by the secretariat

The report of the review of the initial report of Romania was published on 16 May 2008. For purposes of rule 10, paragraph 2, of the Rules of procedure of the Compliance Committee (annex to decision 4/CMP.2), the report is considered received by the secretariat on the same date. This report, FCCC/IRR/2007/ROU, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

UNITED
NATIONS

UNFCCC Framework Convention on Climate Change

Distr.
GENERAL

FCCC/IRR/2007/ROU
16 May 2008

ENGLISH ONLY

Report of the review of the initial report of Romania

According to decision 13/CMP.1, each Annex I Party with a commitment inscribed in Annex B to the Kyoto Protocol shall submit to the secretariat, prior to 1 January 2007 or one year after the entry into force of the Kyoto Protocol for that Party, whichever is later, a report (the 'initial report') to facilitate the calculation of the Party's assigned amount pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol, and to demonstrate its capacity to account for emissions and the assigned amount. This report reflects the results of the review of the initial report of Romania conducted by an expert review team in accordance with Article 8 of the Kyoto Protocol.

CONTENTS

I. Introduction and summary

A. Introduction

1. This report covers the in-country review of the initial report of Romania, coordinated by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 8 to 13 October 2007 in Bucharest, Romania, and was conducted by the following team of nominated experts from the roster of experts: generalist – Ms. Katarina Mareckova (European Community); energy – Mr. Ralph Harthan (Germany); industrial processes – Mr. Domenico Gaudioso (Italy); agriculture – Ms. Fatou Gaye (Gambia); land use, land-use change and forestry (LULUCF) – Mr. Daniel Martino (Uruguay); waste – Mr. Seungdo Kim (Republic of Korea).
Ms. Katarina Mareckova and Mr. Daniel Martino were the lead reviewers. In addition, the expert review team (ERT) reviewed the national system, the national registry, and the calculations of the Party's assigned amount and commitment period reserve (CPR), and took note of the LULUCF parameters and the elected Article 3, paragraph 4 activities. The review was coordinated by Mr. Tomoyuki Aizawa and Mr. Harald Diaz-Bone (UNFCCC secretariat).

2. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1), a draft version of this report was communicated to the Government of Romania, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

1. Timeliness

3. Decision 13/CMP.1 requests each Party to submit the initial report prior to 1 January 2007 or one year after the entry into force of the Kyoto Protocol for that Party, whichever is later. Romania submitted its initial report on 18 May 2007, which is not in accordance with decision 13/CMP.1. On 5 May 2006, a complete time series (1989–2004) of the 2006 greenhouse gas (GHG) inventory in the common reporting format (CRF) and a national inventory report (NIR) were submitted. On 18 May 2007, the complete 2006 GHG inventory was resubmitted. In its initial report Romania refers to the 2006 GHG inventory submission of 18 May 2007. The Party resubmitted its complete 2006 GHG inventory for the inventory years 1989–2004 on 7 December 2007, in response to questions raised by the ERT during the course of the in-country visit. The initial report, the NIR and the latest CRF tables included in this submission are considered in this review report.

2. Completeness

4. Table 1 below provides information on the mandatory elements that have been included in the initial report and reflects revised values for the assigned amount and the commitment period reserve provided by the Party resulting from the review process. These revised values concern emissions of GHGs from liquid, solid and gaseous fuels from stationary fuel combustion sources (see paragraph 59), GHGs from navigation and domestic aviation (see paragraphs 63, 64 and 70), methane (CH_4) emissions from enteric fermentation (see paragraphs 92 and 93), CH_4 and nitrous oxide (N_2O) emission from manure management (see paragraph 95), direct and indirect N_2O from agricultural soils (see paragraph 95), and N_2O emissions from human sewage (see paragraph 112). These revisions changed the estimate for total national GHG emissions in the base year, from 282,467.0 Gg CO_2 eq., as reported originally by the Party, to 278,225.02 Gg CO_2 eq. (see paragraphs 115 and 116).

Table 1. Summary of the reporting on mandatory elements in the initial report

Item	Provided	Value/year/comment
Complete GHG inventory from the base year 1989 to the most recent year available 2004	Yes	
Base year for HFCs, PFCs and SF_6	Yes	1989
Agreement under Article 4		not applicable
LULUCF parameters	Yes	Minimum tree crown cover: 10% Minimum land area: 0.25 ha Minimum tree height: 5 m
Election of and accounting period for Article 3, paragraphs 3 and 4, activities	Yes	Forest management and revegetation were elected as activities under Article 3, paragraph 4. Entire commitment period for accounting activities under Article 3, paragraphs 3 and 4
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8	Yes	1 299 349 047 tonnes CO_2 eq.
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8, revised value	Yes	1 279 835 099 tonnes CO_2 eq.
Calculation of the commitment period reserve	Yes	800 298 657 tonnes CO_2 eq.
Calculation of the commitment period reserve, revised value	Yes	780 545 734 tonnes CO_2 eq.
Description of national system in accordance with the guidelines for national systems under Article 5, paragraph 1	Yes	
Description of national registry in accordance with the requirements contained in the annex to decision 13/CMP.1, the annex to decision 5/CMP.1 and the technical standards for data exchange between registry systems adopted by the CMP	Yes	An explanation of how the national registry conforms with the data exchange standards was not given

5. The initial report generally covers all elements as required by decision 13/CMP.1, section I of decision 15/CMP.1, and relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

6. The ERT noted that emission trends by gas and the calculation of the assigned amount and the CPR as presented in Romania's initial report included emissions of CH_4 and N_2O from LULUCF (this sector is not included in Annex A of the Kyoto Protocol). In response to a request by the ERT, Romania provided updated trend tables without CH_4 and N_2O in LULUCF during the in-country review.

3. Transparency

7. The information in the initial report is generally transparent. During the review the ERT identified several areas where transparency needs to be further enhanced: the section related to the national system does not sufficiently describe the inventory improvement strategy, and the descriptions of the QA/QC procedures, the archiving system, and the institutional arrangements do not fully reflect the current situation in Romania. Specific aspects of transparency related to the NIR and CRF tables are described in the relevant paragraphs of this report. During the in-country review, Romania provided additional information on these aspects and the ERT recommended that the Party include this updated information in its next annual report.

4. Emission profile in the base year, trends and emission reduction target

8. In the base year 1989 (for all GHGs), the most important GHG in Romania was CO_2, contributing 69.2 per cent to total[1] national GHG emissions expressed in CO_2 eq., followed by CH_4,

[1] In this report, the term total emissions refers to the aggregated national GHG emissions expressed in terms of CO_2 equivalent excluding LULUCF, unless otherwise specified.

17.7 per cent, and N_2O, 11.9 per cent, see figure 1. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6) taken together contributed 1.2 per cent of the overall GHG emissions in the base year. The energy sector accounted for 67.7 per cent of the total GHG emissions in the base year, followed by industrial processes (15.5 per cent), agriculture (14.5 per cent) and waste (2.1 per cent) (see figure 2). Total GHG emissions (excluding LULUCF) amounted to 278,225.02 Gg CO_2 eq. and decreased by 43.9 per cent from the base year to 2004. The trends for the different gases and sectors are reasonable and reflect the national circumstances of Romania and its economy, which is in transition.

Figure 1. Shares of gases in total GHG emissions, base year

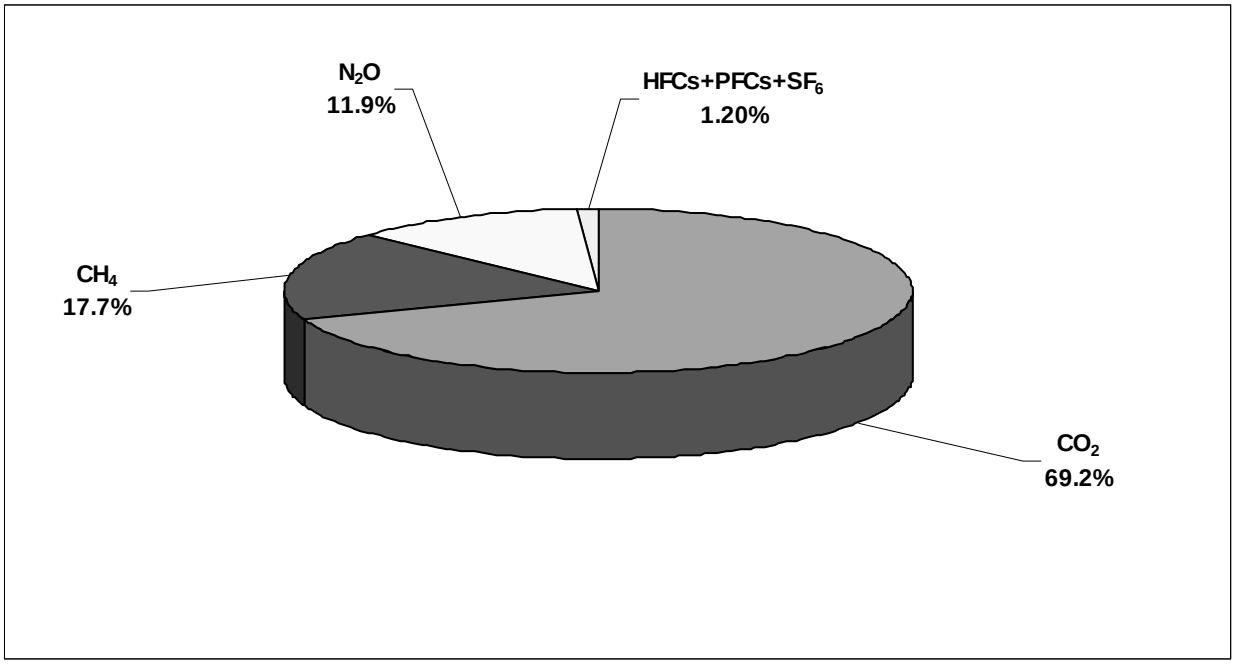

Figure 2. Shares of sectors in total GHG emissions, base year

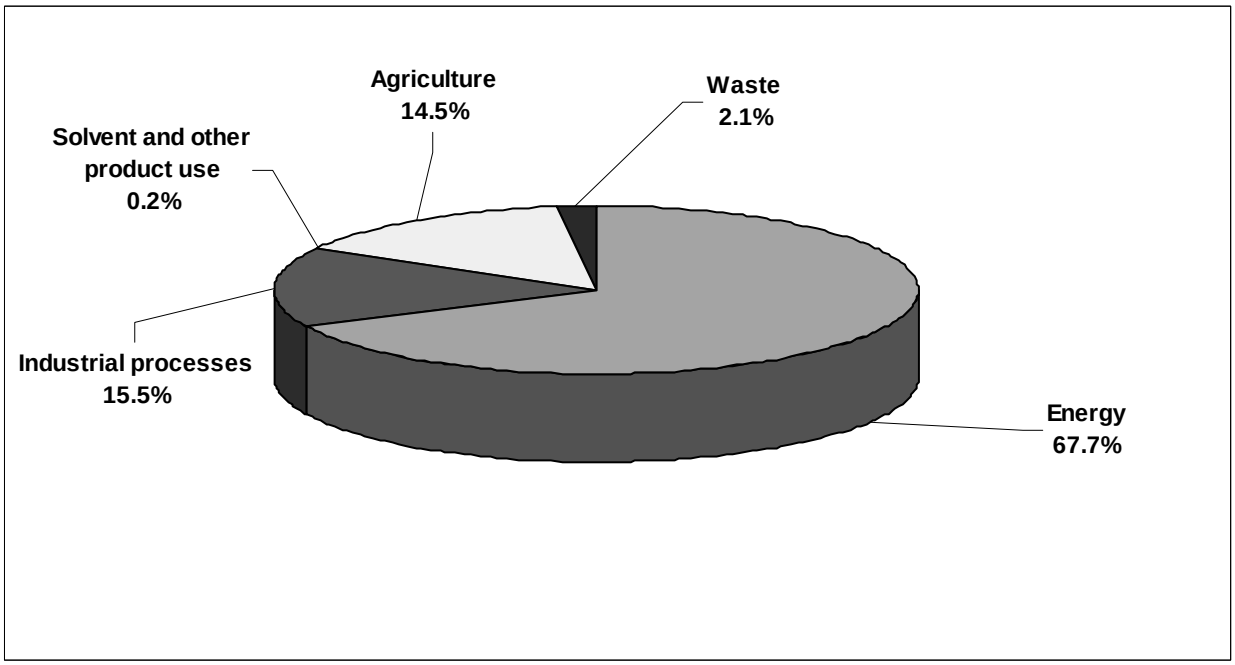

Table 2. Greenhouse gas emissions by gas, 1989–2004

GHG emissions (without LULUCF)	Gg CO_2 equivalent								Change
	Base year[a]	1990	1995	2000	2001	2002	2003	2004[a]	BY–2004 (%)
CO_2	192 407.79	171 606.52	129 206.37	95 000.17	100 006.18	105 940.30	111 156.78	111 732.75	–41.93
CH_4	49 312.33	42 988.43	32 642.23	26 598.70	26 212.58	26 815.84	27 618.63	26 926.85	–45.40
N_2O	33 155.39	28 529.87	18 914.45	15 048.36	15 253.47	14 561.67	15 267.39	16 929.19	–48.94
HFCs	NA,NE	NA,NE	0.22	2.93	2.78	3.25	5.12	6.94	NA
PFCs	3 349.52	2 115.77	1 773.67	413.14	428.75	444.59	471.90	513.34	–84.67
SF_6	NA,NE,NO	NA,NE,NO	0.06	0.00	0.00	0.01	0.00	0.08	NA
Total	**278 225.02**	**245 240.59**	**182 537.00**	**137 063.31**	**141 903.76**	**147 765.67**	**154 519.83**	**156109.15**	**–43.89**

Note: BY = Base year; LULUCF = Land use, land-use change and forestry; NA = Not applicable; NE = Not estimated; NO = Not occurring.

[a] The Party submitted revised estimates for the inventory years 1989–2004 in the course of the initial review on 7 December 2007. These estimates differ from the Party's GHG inventory submitted in 2006.

Table 3. Greenhouse gas emissions by sector, 1989–2004

Sectors	Gg CO_2 equivalent								Change
	Base year[a]	1990	1995	2000	2001	2002	2003	2004[a]	BY–2004 (%)
Energy	188 311.57	172 250.17	129 031.77	94 855.41	99 952.31	103 890.21	110 249.07	109 558.97	–41.82
Industrial processes	43 187.65	29 716.27	23 516.28	16 661.67	15 735.22	17 182.98	17 392.37	18 692.08	–56.72
Solvent and other product use	645.80	540.50	229.40	224.30	200.50	222.30	279.90	277.40	–57.05
Agriculture	40 361.99	37 302.23	23 493.96	18 006.73	18 725.53	18 706.66	18 993.33	20 182.19	–50.00
LULUCF	–32,641.18	–35 847.13	–39 284.46	–38 288.13	–39 305.20	–36 835.44	–36 466.92	–35 768.14	NA
Waste	5 718.02	5 431.43	6 265.59	7 315.19	7 290.20	7 763.53	7 605.15	7 398.51	29.39
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (with LULUCF)	**NA**	**209 393.46**	**143 252.54**	**98 775.17**	**102 598.55**	**110 930.23**	**118 052.91**	**120 341.01**	**NA**
Total (without LULUCF)	**278 225.02**	**245 240.59**	**182 537.00**	**137 063.31**	**141 903.76**	**147 765.67**	**154 519.83**	**156 109.15**	**–43.89**

Note: BY = Base year; LULUCF = Land use, land-use change and forestry; NA = Not applicable; NE = Not estimated; NO = Not occurring.

[a] The Party submitted revised estimates for the inventory years 1989–2004 in the course of the initial review on 7 December 2007. These estimates differ from the Party's GHG inventory submitted in 2006.

9. Tables 2 and 3 show the GHG emissions by gas and by sector, respectively.

10. Romania's quantified emission limitation objective is 92 per cent, as included in Annex B to the Kyoto Protocol.

II. Technical assessment of the elements reviewed

A. National system for the estimation of anthropogenic GHG emissions by sources and sinks

11. Romania's national system is prepared in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The national system was set up during 2006, however, full implementation of all elements described in these guidelines was achieved only in 2007.

12. The ERT noted that the inital report did not include a quantitative uncertainty analysis. As this is a mandatory element, in line with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1, paragraphs 7 and 14 (d)), the ERT requested the Party to provide a quantitative uncertainty analysis within six weeks after the in-country review, in accordance with decision 22/CMP.1. In response to this request Romania provided a quantitative uncertainty analysis on 26 November 2007. Table 4 shows which of the specific functions of the national system are included and described in the initial report.

Table 4. Summary of reporting on the specific functions of the national system

Reporting element	Provided	Comments
Inventory planning		
Designated single national entity*	Yes	See section II.A.1
Defined/allocated specific responsibilities for inventory development process*	Yes	See section II.A.1
Established process for approving the inventory*	Yes	See section II.A.1
Quality assurance/quality control plan*	Yes	See section II.A.2
Ways to improve inventory quality	Yes	See section II.B.3
Inventory preparation		
Key category analysis*	Yes	See section II.B.1
Estimates prepared in line with IPCC guidelines and IPCC good practice guidance*	Yes	See section II.B.2
Sufficient activity data and emission factors collected to support methodology*	Yes	See section II.B
Quantitative uncertainty analysis*	Provided after the review visit	See section II.B.2
Recalculations*	Yes	See section II.B.2
General QC (tier 1) procedures implemented*	Yes	See section II.A.2
Source/sink category-specific QC (tier 2) procedures implemented	No	See section II.A.2
Basic review by experts not involved in inventory	Partly	See section II.A.2
Extensive review for key categories	No	See section II.A.2
Periodic internal review of inventory preparation	Yes	See section II.A.2
Inventory management		
Archive inventory information*	Yes	See section II.A.3
Archive at single location	Yes	See section II.A.3
Provide ERT with access to archived information*	Yes	See section II.A.3
Respond to requests for clarifying inventory information during review process*	Yes	See section II.A.1

* Mandatory elements of the national system.

1. Institutional, legal and procedural arrangements

13. During the in-country visit Romania explained the institutional arrangements as part of the national system for preparation of the inventory. The legal, institutional and procedural arrangements are well defined by the governmental decision for establishing the national system for assessment of anthropogenic GHG emissions from sources and sinks (NS-GHG), which was adopted in September 2007. The decision also establishes rules for data collection and defines responsibility for providing the data to the inventory team. The National Environmental Protection Agency (NEPA) is the designated single national entity. Other organizations are also involved in the preparation of the inventory and have defined and allocated specific responsibilities for the inventory development process:

(a) The Ministry of Environment and Sustainable Development (MESD) – General directorate for Sustainable Development/Climate Change Directorate has the overall responsibility for the national system as the higher authority on environmental policy in Romania and annually submits the national GHG inventory to the UNFCCC Secretariat. The MESD is also responsible for official data approval prior to submission;

(b) NEPA is responsible for preparing the annual national GHG inventory, communicating with data providers, elaborating the work plan, managing the QA/QC plan and the archiving system. NEPA is also responsible for selecting methods, AD, and EFs for all sectors;[2]

(c) The National Statistical Office is the key data provider (statistical yearbook and energy balance). Additional data for source categories in industrial processes and solvents and other product use are provided by 42 local environmental agencies and/or obtained directly from industries. The national forest administration (RNP) provides supplementary data for category 5 LULUCF. The Public Health Institute and NEPA supplement data for the waste sector.

14. The ERT noted significant improvements in 2007 in the legal, institutional and procedural arrangements. For example, NEPA has established a climate change department and allocated five full-time experts to the inventory team in 2007. The ERT acknowledged these improvements and encouraged the Party to fully implement all elements of the governmental decision NS-GHG and to further enhance communication with data providers. The ERT also encouraged the Party to involve other institutions, for example universities, private industries and local environmental agencies, when developing country-specific methods and EFs, particularly for estimating emissions from key categories at higher-tier levels.

15. Romania selected the parameters for forest definition and elected activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in accordance with decision 16/CMP.1. The ERT noted that the official Romanian definition of forest is generally consistent with that used for the purpose of reporting to the Global Forest Resources Assessment of the Food and Agriculture Organization of the United Nations (FAO). There are, however, some minor inconsistencies between the country-specific land-use categories and those defined by the *Intergovernmental Panel on Climate Change Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF). The ERT noted that Romania currently does not have the capacity to identify specific areas of land subjected to changes in land use and land management, and recommended that Romania prepare for a timely monitoring of these activities. Revegetation has been selected as one of the activities under Article 3, paragraph 4, of the Kyoto Protocol. Since this activity requires net-net

[2] For the 2006 submission, the LULUCF sector was prepared by the Forest Research Institute (ICAS), commissioned by the National Research and Development Institute for Environmental Protection (ICIM), which is the entity previously responsible for inventory preparation.

accounting, the ERT reminded the Party of the need to estimate net GHG emissions, both in the base year and in the commitment period, for those land units encompassing revegetation activity.

2. Quality assurance/quality control

16. Romania has elaborated and partly implemented a quality assurance/quality control (QA/QC) plan in accordance with the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance). This plan includes general QC procedures (tier 1) as well as source/sink category-specific procedures (tier 2) for a few key categories in industrial processes. NEPA is responsible for annual coordination and recording of QA/QC activities, and regular updating of the QA/QC plan. The ERT noted that Romania nominated one of the inventory experts as its quality manager.

17. Basic QC procedures are in place and are to some extent described in the 2006 NIR. Sector-specific QA procedures are not described in the 2006 NIR. The ERT recommended that the Party improve QC by better linking data collection, data processing and emissions estimation, and document QA/QC procedures in more detail in its next submissions. The Party has conducted rather limited QA of the inventory by staff not directly involved in the inventory compilation and the ERT therefore recommended that the Party perform inventory checks by external experts before its next submission. The ERT also recommended that the Party consider system level checks, such as cross-checking activity data (AD) available from different sources (National Institute of Statistics (NIS), the European Union (EU) emissions trading scheme (ETS), the EU Large Combustion Plant Directive, the EU IPPC Directive and the European Pollutant Emission Register), to minimize the risks of missing plants/data in future submissions. These QC checks could include an independent sectoral expert review of AD to explain the reasons for large inter-annual variations for emissions from key sources (both level and trend basis). The ERT recommended that the Party include in its next NIR a list of the QC checks that are carried out prior to submission.

3. Inventory management

18. Romania has a centralized archiving system, which includes the archiving of all submissions, EFs, AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory. Calculation sheets are also systematically archived. The archived information also includes internal documentation on QA/QC procedures, internal and external reviews, and documentation on annual key categories and key category identification. The electronic archiving system is physically located at one of NEPA's computer servers. Access rights are well defined and data are regularly backed up. The archive/data manager has been nominated. Hard copies of historical AD are archived at the NEPA department of climate change. During the review the data manger presented the system to the ERT. The ERT was informed that Romania plans to develop a catalogue of documents included in the archive. The ERT appreciated this plan and encouraged Romania to implement it. The ERT recommended that Romania transfer historical key AD into the electronic system.

B. Greenhouse gas inventory

19. In conjunction with its initial report, Romania has submitted a complete set of CRF tables for the years 1989–2004 and an NIR. The Party officially resubmitted its CRF tables for the years 1989–2004 on 7 December 2007 in response to questions raised by the ERT during the course of the visit to Romania. Where necessary the ERT also used the 2005 submission, including the CRF tables for the years 1989–2003.

20. During the review Romania provided the ERT with additional information sources. These documents are not part of the initial report submission, but are in many cases referenced in the NIR. The full list of materials used during the review is provided in the annex to this report.

1. Key categories

21. Romania has reported a tier 1 key category analysis, both level and trend assessment, as part of its initial report submission. Romania has not included the LULUCF sector in its key category analysis.

22. The key category analysis performed by the Party and the secretariat[3] produced similar results. There are minor differences in the results of these analyses, which can be explained by not including LULUCF and not accounting threshold categories by Romania. The ERT recommended that the Party include LULUCF in the key category analyses in its next submission.

23. Priority areas for inventory improvement on the basis of the key category analysis have not yet been determined. There are a number of categories identified by Romania and the ERT recommended that the Party follow the IPCC good practice guidance more closely and use higher-tier methods for estimating GHG emissions from key categories. Limitations on the availability of AD and national/source-specific EFs continue to prevent the development of higher-tier methods. Systematic key category analyses should be used to prioritize improvements to and the development of the inventory.

2. Cross-cutting topics

24. The inventory is generally in line with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC guidelines), the IPCC good practice guidance and the IPCC good practice guidance for LULUCF, but Romania is prevailingly applying default EFs and tier 1 methods also for key categories. The ERT appreciated the significant improvement in the inventory achieved since the previous submission, but encouraged Romania to continue its efforts and apply tier 2 methods for key categories as far as practicable. The ERT encouraged Romania to improve the consistency of emission trends by improving the quality of historical AD.

25. The inventory is compiled in accordance with Article 7, paragraph 1, and decision 15/CMP.1. The ERT recommended that the Party improve its description of the process for selecting EFs and AD, the description of the QA/QC plan and its state of implementation – external evaluation and review process. The ERT recommended that Romania provide complete uncertainty analyses in its next submission.

Completeness

26. Romania has provided its GHG inventory data for the base year 1989 and the years 1990–2004, and included all the tables required with data on all relevant gases, sectors and categories. The ERT noted that the CRF Reporter software identified 357 “NE” (“not estimated”) notation keys in the CRF tables for 1989. The ERT recommended that Romania complete the inventory as far as practicable in its next submission. Missing estimates were generally explained by unavailability of AD and/or EFs. The inventory is complete in terms of geographic coverage.

27. The ERT assessed the inventory data for the base year (1989) and the years 1990–2004 as complete. Notation keys were used throughout the tables. Those categories that were reported as “NE” or “included elsewhere” (“IE”) were explained in CRF table 9. The ERT noted that notation keys were used extensively particularly within the tables for the energy and LULUCF sectors.

[3] The secretariat identified, for each Party, those source categories that are key categories in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC *Good Practice Guidance for Land Use, Land-use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF) for the base year or base year period as well as the latest inventory year. Key categories according to the tier 1 trend assessment were also identified. Where the Party performed a key category analysis, the key categories presented in this report follow the Party’s analysis. However, they are presented at the level of aggregation corresponding to a tier 1 key category assessment conducted by the secretariat.

Transparency

28. The information provided in the NIR and CRF is generally transparent. The ERT noted that the transparency and quality of the information reported in the CRF tables and the NIR have improved since the previous (2005) submission. However, the description of methodologies and information on data selection in the NIR could be improved by giving more detailed information. The ERT also noted that sufficient rationale for the selection of methods and EFs in some categories in the energy and agriculture sectors is not provided. The ERT recommended that the Party clearly reference the AD and EFs used and discuss and explain their trends.

Consistency

29. In general, methods and EFs are used consistently over the entire time series. The ERT noted that AD are not consistently applied throughout the entire time series in a few cases, where different types of data have been used for different years. For details see the discussion in the sectoral part of this report.

Comparability

30. The inventory is generally comparable with those of other Parties in its use of the Intergovernmental Panel on Climate Change (IPCC) methodologies and of the UNFCCC reporting formats. Allocation of the source/sink categories follows the Revised 1996 IPCC guidelines and the IPCC good practice guidance with a few exceptions, where categories are reported as "IE". The EFs used are in general consistent and comparable with those from other countries, but some outliers and incorrect applications were identified by the ERT in all sectors. For details see the discussion in the sectoral part of this report.

Accuracy

31. The ERT considers Romania's inventory to be accurate in that it does not contain either systematic overestimation or systematic underestimation, as far as can be judged, and that uncertainties have been reduced as far as is practicable. Some uncertainties have been estimated. However, uncertainty has not been estimated for total national emissions and many other categories.

Recalculations

32. The national system can ensure that recalculations of previously submitted estimates of GHG emissions by sources and removals by sinks are prepared in accordance with the IPCC good practice guidance. Recalculations have been undertaken when methods or EFs have changed or been refined, when improved AD have been collected, or when mistakes in the estimates have been identified and corrected. All recalculations have been recorded in the archiving system and are correctly reported in the NIR and the CRF tables.

33. The ERT noted that recalculations of the time series from the base year to 2003 had been undertaken in all sectors, taking into account the recommendations of previous reviews as well as new information on AD and EFs, and reconsideration of the selection of methods and AD. The major changes after resolving the potential problems for the year 1989 include increases in estimates for emissions from energy (+3.8 per cent), waste (+6.3 per cent), agriculture (+32.6 per cent) and decreases in estimates for emissions from industrial processes (–17.5 per cent). The total effect of these recalculations is a 4.7 per cent increase for 1989. The rationale for these recalculations was provided during the review and in the NIR. Based on the information provided the ERT assessed the recalculations as appropriate.

Uncertainties

34. The Party did not provide complete uncertainty analysis for each source category and for the inventory in total, following the IPCC good practice guidance. The uncertainty estimates were provided only for a few categories with default parameters from the IPCC good practice guidance. The ERT requested Romania to submit to the secretariat a complete uncertainty analysis within six weeks after the review visit.

35. The ERT appreciated that Romania provided the secretariat with complete quantitative uncertainty analyses based on the IPCC tier 1 method by 26 November 2007. The ERT noted that most of the values used in analyses are IPCC default or expert judgment values with limited explanation. The ERT recommended that Romania obtain country-specific uncertainty parameters particularly for significant sources and further improve the uncertainty analyses in line with the provisions in the IPCC good practice guidance. The ERT recommended that Romania also provide tier 1 uncertainty analyses with the next submission.

3. Areas for further improvement identified by the Party

36. In its response to questions raised by the ERT during the in-country review, Romania explained that it is working towards improving its estimates in several categories (see details in the sectoral sections of this report below). Romania also informed the ERT that all the relevant inventory data will be gradually included in the centralized archiving system and that a catalogue of all archived information will be developed. Romania is in the process of advancing with the implementation of its national QA/QC plan and is considering broader involvement of external experts in its inventory review.

37. The NIR identifies the following areas for further improvement:

- Improve the consistency and accuracy of the time series AD in the energy sector;
- Justify/obtain information on international aviation and navigation;
- Further increase the accuracy of EFs on the basis of measurements and a longer data series for nitric acid production;
- Further refine its consumption data for consumption of halocarbons and SF_6, primarily as regards final use;
- Further verify both the AD and the background inventory information for the forest land category.

4. Areas for further improvement identified by the ERT

38. The ERT identified the following cross-cutting issues for improvement. The ERT recommended that Romania:

- Increase the sustainability of the national system in its specific functions of inventory planning and management and elaborate a detailed inventory manual for inventory planning and management which reflects national circumstances and includes detailed descriptions of formal procedures, time schedules, data flow, documentation formats and guidance for improvements;
- Strengthen its institutional capacity by ensuring adequate long-term financial support for inventory-related contracts and arrangements and by encouraging inventory experts to attend the UNFCCC training;
- Involve a broader range of sectoral experts, for example, from industry, universities and local agencies, to develop country-specific methods and EFs;

- Collect AD and develop well-documented country-specific EFs for use with higher-tier methods for key categories;
- Further develop uncertainty analyses;
- Include LULUCF in the key category analyses in its next submission;
- Further develop and then implement the QA/QC procedures for each sector, and in particular implement tier 2 QA/QC procedures for identified key categories.

39. Recommended improvements relating to specific source/sink categories are presented in the relevant sector sections of this report.

5. Energy

Sector overview

40. In the base year, the energy sector accounted for 67.6 per cent of total GHG emissions in Romania. Energy industries is the major source category in the sector, contributing 56.5 per cent to sectoral emissions, followed by manufacturing industries and construction, fugitive emissions, transport and energy use in other sectors (19.9 per cent, 15.0 per cent, 3.1 per cent and 5.6 per cent, respectively). Between 1989 and 2004, emissions from the energy sector decreased by 41.8 per cent, due to a decline in fuel combustion in both energy industries and manufacturing industries and construction, as well as due to decreasing fugitive emissions from fuels.

41. The CRF tables for 1989 are complete. However, several emissions were reported as "NE". During the review, host country representatives explained that further data were available for some categories, but there was not sufficient additional information, so that corresponding emissions could not be estimated. For example, no estimates for emissions from "other fuels" were provided, since no information with respect to disaggregation of fuel types and EFs was available. The CRF tables for 1989 generally include many notation keys. The ERT encouraged the Party to continue its endeavour to collect further AD and expert judgments, and to better understand existing data and expert judgments in order to improve completeness of emission estimates in the energy sector.

42. Romania has significantly improved its inventory in the energy sector since its last (2005) submission. Major improvements include the correction of a misallocation of fuels within the liquid, solid and gaseous fuel categories, the consistent application of IPCC default EFs for all fuels, the use of more detailed AD in the transport sector and the inclusion of emissions from pipeline transportation in the inventory. Recalculations have been performed accordingly for categories related to fuel combustion since the 2005 inventory submission. In the NIR and during the review the Party provided all relevant information for these recalculations. The ERT acknowledges the improvements made.

43. The chapter on energy in the 2006 NIR contains basic information with respect to data sources, methodologies and emission trends. However, emission estimates are not fully reproducible with the information provided in the NIR. For instance, the derivation of AD from the national energy balance or the distribution between fuel consumption for international bunkers and domestic aviation and navigation are not fully traceable. Host-country representatives clarified most cases of non-transparent reporting during the review. The ERT recommended that the Party improve its documentation of data sources, methodological choices and expert judgments in its future submissions.

44. For estimating emissions from the energy sector, a tier 1 approach and constant EFs are consistently used throughout the whole time series. Since the energy sector contains major key categories, the ERT recommended that the Party increase accuracy by gradually introducing higher-tier approaches, especially for key categories.

45. Following some changes in the statistical system in the early 1990s, the disaggregation of the national energy balance changed in 1992. The ERT therefore encouraged the Party to investigate the level of consistency between the former and the current AD, at least with regard to the total amount of fuel consumed per fuel type.

46. Uncertainties in the energy sector were "NE" in the 2006 inventory submission. The ERT recommended that the Party undertake such estimations in its future submissions.

Reference and sectoral approaches

47. Energy consumption and CO_2 emissions in the base year are 29.1 per cent and 19.4 per cent higher, respectively, for the reference approach than for the sectoral approach. In 2004, the difference between the two approaches for energy consumption decreased in comparison to the base year (to 1.6 per cent) and for CO_2 emissions (to –2.2 per cent). The differences between the reference approach and the sectoral approach fluctuate significantly over the time series.

48. According to the 2006 NIR, non-energy fuel use is accounted as combustion use in the reference approach, and "a correction is done by the carbon stored from non-energy fuel use", but related information is limited. The NIR states that a further reason for differences between the reference approach and the sectoral approach could be "the high statistical differences reported in the energy balance". During the review, it was clarified that blast furnace gas is not taken into account in the reference approach, but considered in the sectoral approach. Due to significant variations of consumption of blast furnace gas over time there are also considerable variations of the difference between the reference approach and the sectoral approach. Furthermore, due to transfer problems, non-energy fuel consumption was not included in the CRF files. The ERT recommended that the Party further investigate and document the reasons for differences between the reference approach and the sectoral approach in future submissions.

International bunker fuels

49. For the base year, CO_2 emissions from aviation bunkers are reported as "IE", and emissions of CH_4 and N_2O are reported as "NE". CO_2 emissions from marine bunkers are reported as "included elsewhere, not applicable, not estimated" ("IE, NA, NE"), and emissions of CH_4 and N_2O are reported as "NA, NE". CRF table 9(a) does not provide an explanation for these notation keys, but during the review host country representatives clarified that all emissions from international bunker fuels are included in the emission estimates for domestic consumption of fuels for aviation and navigation. Following the recommendations by the ERT during the review, the Party recalculated emissions from domestic fuel use and international bunkers from aviation and navigation (see paragraph 70) and submitted revised estimates. In the base year, CO_2 emissions from aviation bunkers are estimated at 155.7 Gg and from marine bunkers at 1,352.2 Gg. CH_4 and N_2O emissions are also quantified, but are so low as to be negligible.

50. According to the 2006 NIR, "no information regarding international bunker fuels is reported in the Romanian Energy Balance". It was assumed that 20 per cent of fuel consumption for aviation and 100 per cent of fuel consumption for navigation was allocated for domestic purposes (see also paragraphs 64 and 70). Corresponding emissions from international bunkers are not reported (see paragraph 49). The ERT noted that these assumptions are not justified in the 2006 NIR and could not be fully explained during the review. The ERT therefore recommended that the Party improve the understanding of bunker fuel use in Romania and increase transparency with respect to the assumptions made. Furthermore, the ERT encouraged the Party to provide consistent information in the NIR and CRF in future submissions. Following the recommendations provided by the ERT during the review, the Party provided new estimates for the shares of domestic and international bunker fuel use for navigation and aviation (see also paragraphs 64 and 70). According to these estimates, 85.8 per cent of fuel used for

aviation and 84.0 per cent of fuel used for navigation are reported under international bunkers in the base year.

Feedstocks and non-energy use of fuels

51. Information on feedstocks and non-energy use of fuels is scant in the 2006 NIR. According to the 2006 NIR, non-energy fuel use is accounted as combustion use in the reference approach, and "a correction is done by the carbon stored from non-energy fuel use". No data on feedstock use in specific sectors are available in the national energy balance. The ERT recommended that the Party generally improve and document the understanding of feedstocks and non-energy use of fuels in the national energy balance and the inventory (see also paragraph 48).

52. As regards the consumption of coke in the iron and steel sector, it is not fully transparent in the 2006 submission and during the review what share of coke consumption was used for processing purposes (as a reducing agent) and what share was used for combustion purposes could not be clarified. The ERT recommended that the Party further investigate and document the purpose of coke consumption in the iron and steel sector. Following the recommendation by the ERT during the review, the Party clarified this issue and provided revised estimates (see also paragraph 59).

Key categories

Stationary combustion: all fuels – CO_2, CH_4 and N_2O[4]

53. GHG emissions from stationary combustion accounted for 55.5 per cent of total national emissions in the base year and 53.2 per cent in 2004. These emissions decreased by 46.2 per cent between 1989 and 2004, mostly due to a general decline in economic activity after 1989. In the base year CO_2 accounted for 99.5 per cent of GHG emissions from stationary combustion.

54. Emissions from stationary fuel combustion are estimated by a tier 1 approach using data from the energy balance and IPCC default EFs. For estimating emissions of CH_4 and N_2O, AD are aggregated according to fuel categories (liquid, solid, gas, biomass) and multiplied by the corresponding default IPCC EFs.

55. Since the 2005 submission, CO_2 EFs for blast furnace gas and coke oven gas were changed; the values of the 2006 submission correspond to the IPCC default values. In the 2006 submission fuels were partly reallocated to other fuel categories. Consumption of blast furnace gas varies significantly over the time series (see also paragraph 48). For these reasons, recalculations in the 2006 submission for stationary combustion led to significant changes in comparison to the 2005 submission and recalculation changes vary considerably over the time series.

56. Emissions from stationary combustion encompass three key categories and account for the bulk of Romanian GHG emissions. The ERT therefore recommended that the Party improve accuracy by using higher-tier approaches for CO_2 emissions from stationary combustion of gaseous, liquid, and solid fuels as well as for CH_4 emissions from stationary combustion of biomass (key categories). Work could be prioritized by identifying the most sensitive parameters for GHG emissions from stationary combustion. Improvements should involve the consideration of more disaggregated CO_2 emissions factors (according to different fuel qualities used). The ERT encouraged the Party to explore the possibility of using available plant-specific and other bottom-up data, such as those from the European Union emissions trading scheme (EU ETS).

[4] It should be noted that not all emissions related to all fuels and gases under this category are key categories. However, since the calculation procedure for stationary combustion is common for many sources, individual source categories are difficult to separate.

57. As explained in the 2006 NIR and during the review, there is currently no energy utilisation in the waste sector. The Party is encouraged to track potential future energy uses in this sector, such as electricity and/or heat generation from landfill gas, biogas, or incineration.

Manufacturing industries and construction – other: coke – CO_2, CH_4 and N_2O

58. Coke consumption is accounted for in both the energy sector (category 1.A.2.f) and the industrial processes sector (category 2.C.1). For the energy sector, AD are taken from the national energy balance, and for industrial processes plant-specific data are used. The sum of plant-specific data for coke consumption in blast furnaces for the purpose of derivation of emissions under industrial processes corresponds to the value for coke consumption in the energy balance included in the emission estimates of the energy sector. The delineation between coke consumption for processing purposes (as a reducing agent) and for energy purposes was not fully clarified during the review. There is therefore a potential for double counting of coke consumption and related GHG emissions from categories 1.A.2.f and 2.C.1.

59. The ERT recommended that the Party explain and document the value for coke consumption used in the estimation of GHG emissions for categories 1.A.2.f and 2.C.1, including underlying calculations and assumptions made. Based on this new information, the ERT further recommended that the Party revise the relevant estimates, as appropriate. In response to these recommendations, the Party examined this issue and clarified that coke consumption in the energy balance previously used for the estimation of energy emissions included coke used for non-energy purposes for the years 1992 onwards (the structure of the energy balance changed in 1992). For that reason the Party provided revised estimates for the years 1992 onwards by subtracting emissions resulting from coke consumption in the energy balance from emission estimates in the energy sector, thus ensuring that no double counting occurs with the industrial processes sector. For the years 1989 to 1991, the Party demonstrated that the old energy balance used at that time excluded coke consumption for non-energy purposes. Therefore no revision of emission estimates for the years 1989 to 1991 was carried out. Consequently, base year emissions remained unchanged. The Party is encouraged to document this issue in its future submissions.

Transport: all fuels – CO_2, CH_4 and N_2O[5]

60. CO_2 emissions from transport accounted for 2.1 per cent of total national GHG emissions in the base year and for 9.3 per cent in 2004. These emissions more than doubled (+100.4 per cent) between 1989 and 2004. Road transport is the largest source in the transport sector and accounted for 79.2 per cent of overall CO_2 emissions in the transport sector in the base year and for 95.3 per cent in 2004. CO_2 emissions from road transport increased by 202.3 per cent between 1989 and 2004.

61. The estimation of GHG emissions in the transport sector is based on a tier 1 approach using data from the energy balance and IPCC default EFs. The ERT acknowledged the improved data availability for the individual transport category for the years from 1993 onwards since the 2006 inventory submission. Shares of fuel consumption from 1993 onwards were used to extrapolate fuel consumption in the different categories for the years 1989 to 1992.

62. Emissions from the use of biofuels in transport are not yet included in the inventory. The ERT encouraged the Party to consider including them in its future submissions.

Navigation: all fuels – CO_2, CH_4 and N_2O

63. The derivation of the share of domestic fuel consumption for navigation is not fully transparent. According to the 2006 NIR for "marine bunkers, other sources besides energy balance were consulted

[5] It should be noted that not all emissions related to all fuels and gases under this category are key categories. However, since the calculation procedure for road transportation is common for many sources, individual source categories are difficult to separate.

(such as International Energy Agency (IEA) statistics), but no relevant information was found". During the 2005 centralized review, the ERT recommended that "Romania collect the information needed to disaggregate bunker fuel emissions from domestic civil aviation and navigation" and noted that "the current approach may lead to total national emissions being overestimated." During the 2007 in-country review, no such data was available, and further justification of the above assumption was not provided to the ERT. The ERT reiterated the recommendation of the 2005 centralized review that Romania should collect the information necessary to disaggregate bunker fuel emissions from navigation in order to explain and document the derivation of the share of domestic fuel consumption for navigation, including the underlying calculations and assumptions made. Based on this new information, the ERT further recommended that the Party revise the relevant estimates, as appropriate.

64. In response to these recommendations, the Party examined this issue and clarified that statistics on loading and unloading of goods in Romanian harbours should serve as the basis for disaggregating domestic and international emissions from navigation. Based on these findings, the Party revised the estimates for CO_2, CH_4 and N_2O emissions from navigation for the whole time series. These changes resulted in a decrease of estimated CO_2 emissions from navigation by 84.0 per cent (from 1,607.3 to 257.2 Gg CO_2 eq.) for the base year. CH_4 and N_2O emissions decreased by the same amount, but are so low as to be negligible. The Party is encouraged to document this new approach accordingly in future submissions.

Fugitive emissions – CH_4, CO_2, N_2O

65. The estimation of fugitive emissions is based on a tier 1 approach using data from the national energy balance and the statistical yearbook as well as IPCC EFs. Several fugitive emissions are "NE". In order to increase accuracy and to improve completeness, the ERT recommended that the Party explore the possibility of estimating further fugitive emission sources and of moving to higher-tier approaches, at least for key categories.

Coal mining and handling – CH_4

66. CH_4 emissions from coal mining and handling are estimated by using AD from the statistical yearbook and by using EFs provided by the IPCC. The split in AD between 15 per cent underground mines and 85 per cent surface mines was based on a scientific study for the years 2002 and 2003. The ERT recommended that the Party verify shares of underground and surface mines in its future submissions. It is possible that data could be sourced from national coal associations.

Other leakage – natural gas – CH_4

67. The value for consumption of natural gas used for the estimation of CH_4 emissions from "other leakage" is higher than the value used for transmission of natural gas. The ERT noted that CH_4 emissions from "other leakage" related to consumption of natural gas may therefore be overestimated. The ERT recommended that the Party explain and document the value of the consumption of natural gas used for estimating the CH_4 emissions, including underlying calculations and assumptions made. Based on this new information, the ERT further recommended that the Party revise the relevant estimates, as appropriate. In response to these recommendations, the Party examined this issue and clarified that natural gas consumption used for the estimation of CH_4 emissions from "other leakage – natural gas" – was not aggregated correctly. Based on these findings, the Party revised the estimates for CH_4 emissions from "other leakage – natural gas" – for the whole time series. These changes resulted in a decrease of estimated CH_4 emissions from "other leakage – natural gas", by 20.4 per cent (from 5,418.5 to 4,314.6 Gg CO_2 eq.) for the base year.

Non-key categories

Civil aviation: liquid fuels – CO_2, CH_4 and N_2O

68. The derivation of the share of domestic fuel consumption for civil aviation is not fully transparent. According to the 2006 NIR (page 41) "experts maintained the assumption that only 20 per cent of the entire fuel consumption reported for aviation is used for the domestic aviation sector". During the in-country review, host country experts made a reference to Romania's 2003 in-country review report, in which it is stated that "data from Eurostat and the IEA indicate that an important fraction of emissions from civil aviation corresponds to international flights (more than 80 per cent)." During the 2005 centralized review, the ERT recommended that "Romania collect the information needed to disaggregate bunker fuel emissions from domestic civil aviation and navigation" and noted that "the current approach may lead to total national emissions being overestimated". During the 2007 in-country review, no such data was available, and further justification of the above assumption was not provided to the ERT.

69. Furthermore, during the review the ERT reproduced the calculation of this estimate and noted that 100 per cent of the consumption of aviation gasoline was allocated to civil aviation. The ERT noted that GHG emissions for civil aviation may therefore be overestimated. The ERT reiterated the recommendation of the 2005 centralized review that Romania collect the information necessary to disaggregate bunker fuel emissions from domestic civil aviation in order to explain and document the derivation of the share of domestic fuel consumption for civil aviation, including the underlying calculations and assumptions made. Based on this new information, the ERT further recommended that the Party revise the relevant estimates, as appropriate.

70. In response to these recommendations the Party examined this issue and developed a new approach for the derivation of emissions from domestic and international civil aviation. The new approach is based on fuel consumption data for domestic and international operators, respectively. For national operators, distances travelled in Romania in comparison to distances travelled abroad serve as the basis for determining domestic emissions from national operators. Emissions related to fuel consumption from international operators are assumed to be fully international. Based on these findings, the Party revised the estimates for CO_2, CH_4 and N_2O emissions from civil aviation. These changes resulted in a decrease of estimated CO_2 emissions from civil aviation by 86.7 per cent (from 193.5 to 25.7 Gg CO_2 eq.) for the base year. The Party is encouraged to document this new approach accordingly in future submissions.

6. Industrial processes and solvent and other product use

71. Industrial processes and solvent and other product use amounted to 43.8 Gg CO_2 eq. in the base year (1989), which corresponds to 15.7 per cent of total GHG emissions without LULUCF.

72. The quality of the submission has been greatly improved compared to those of past years, mainly in response to previous review reports. However, emission estimates have not yet been estimated for the following categories and sub-categories: asphalt roofing, road paving with asphalt, consumption of halocarbon and SF_6, foam blowing, consumption of halocarbon and SF_6, aerosols/metered dose inhalers, solvents and semiconductor manufacture. Also, N_2O emissions from solvent and other product use were "NE". As a priority for further improvements of the inventory, the ERT recommended that the Party provide estimates for the above-mentioned (sub-)categories.

73. In the 2006 submission, tier 2 estimation methodologies have been used for most key categories for the first time. However, emission estimates are mainly based on default EFs. The ERT encouraged the Party to make efforts to extend the use of tier 2 methodologies to all key categories, to develop country-specific EFs, possibly through the use of new sources of information (European Pollutant

Emission Register (EPER), EU ETS) and to improve its understanding of the characteristics of the different sources of AD.

74. The different elements of the submission are generally transparent, but the ERT recommended that the Party improve the use of notation keys in the CRF tables and provide more detailed information in the NIR. Despite the lack of a systematic QA/QC plan, some basic QC activities are reported in the NIR, as well as specific QC checks for AD for the following activities: limestone and dolomite use, nitric acid production, and aluminium production. A comparison with AD reported by companies under the EU ETS has also been performed for: cement production, lime production, glass production and iron and steel production. EF uncertainty analysis is reported for cement production, lime production, iron and steel production. However, no uncertainty analysis is documented for AD. The ERT recommended that the Party include an uncertainty analysis for AD in its next submission, starting from the categories for which different data-sets are available.

75. Recalculations have been carried out mainly to improve the quality of AD and ensure time series consistency for the following categories: cement production, lime production, limestone and dolomite use, nitric acid production, iron and steel production, ferroalloys production, aluminium production, other production, and consumption of halocarbon and SF_6. Recalculations have decreased the base year estimate for GHG emissions by 15 per cent or 7,595.65 Gg CO_2 eq..

Key categories

Cement production – CO_2

76. A tier 2 methodology is used for cement production, with average calcium oxide (CaO) and magnesium oxide (MgO) contents and clinker production data provided by companies; since this is a key category, the ERT recommended that the Party collect information on possible changes in the CaO content in clinker.

Lime production – CO_2

77. Emissions from lime production are estimated using a default EF, and AD from the National Institute of Statistics (NIS); as this is a key category, the ERT recommended that the Party apply the correction for the CaO content, as foreseen by the tier 2 methodology.

Limestone and dolomite use – CO_2

78. To complete the time series of AD for limestone and dolomite use, linear interpolation has been replaced in the current submission by a correlation with pig iron production. This approach does not ensure completeness and accuracy, since it does not consider other possible uses of limestone and dolomite. Therefore, the ERT recommended that the Party collect information about other possible uses of limestone and dolomite.

Ammonia production – CO_2

79. For ammonia production, the estimation is based on production data provided by the NIS; since this is a key category, the ERT recommended that the Party use the most accurate estimation method, based on the consumption of natural gas, at least as a comparison with estimates based on production data.

Nitric acid production – N_2O

80. A tier 2 methodology is used for nitric acid production, with production data supplied by manufacturers and default EFs for the different technologies used in each installation; the information is traceable and documented, but since large differences exist between production data reported by the

manufacturers and information from the NIS, particularly for the base year, the ERT recommended that the Party provide it in its next submission.

Carbide production – CO_2

81. Production data provided by the NIS have been used as a basis to estimate CO_2 emissions from the production of calcium carbide. The default emission factor (EF) used for this estimate is 760 kilograms per tonne of carbide produced, whereas an EF of 1,100 kilograms CO_2 per tonne of carbide produced is provided in the Revised 1996 IPCC guidelines for the entire production process. The ERT therefore recommended that the Party revise the current estimate for this category in its future submissions.

Iron and steel production – CO_2

82. For iron and steel production, a tier 2 methodology has been used, with plant-specific AD, and a mix of default and CS values for EFs (carbon content). The accuracy of the estimate has been checked through comparison with figures reported under the EU ETS, but no checks were performed between coke consumption data reported by companies and figures reported in the energy balance; therefore, double counting (with the energy sector) may not be excluded (see also paragraphs 58 and 59). The ERT recommended that the Party provide estimates for CO_2 emissions from the consumed electrodes, for steel produced in electric arc furnaces, and check coke consumption data, in order to avoid double counting or overestimation.

Aluminium production – PFCs

83. A tier 1 methodology, which uses default EFs, has been used to estimate emissions of PFCs from aluminium production; as this is a key category, the ERT recommended that the Party make efforts to apply higher-tier methods based on the smelter-specific relationship between emissions and operating parameters.

Non-key categories

Soda ash production and use – CO_2

84. To complete the time series of AD for soda ash use, linear interpolation has been replaced by a correlation with soda ash production for the periods 1989–1993 and 2003–2004. The ERT encouraged the Party to check the accuracy of this correlation using available import and export data.

Asphalt roofing – CO_2

85. Emissions for asphalt roofing have not been estimated. The ERT recommended that the Party make an effort to include estimates for CO_2 from asphalt roofing in its next submission, possibly through the use of proxy AD if no other information is available.

Road paving with asphalt – CO_2

86. Emissions for road paving with asphalt have not been estimated. The ERT recommended that the Party make an effort to include estimates for CO_2 from road paving with asphalt in its next submission, possibly through the use of proxy AD if no other information is available.

Other: carbon black – CO_2

87. No CO_2 emissions are provided for this category, since the corresponding cell in the CRF is shaded. The ERT recommended that the Party make an effort to include estimates for CO_2 from carbon black in its next submission: an EF is available in the 2006 IPCC Guidelines, and further information might be available in the EPER database.

Ferroalloy production – CO_2

88. AD for ferroalloy production for 1989–1991 are not available, and they have been calculated using a trend extrapolation; the ERT has verified that the relevant assumptions lead to a conservative estimate for the base year. However, the ERT encouraged the Party to collect historical data concerning the share of the different alloys during the period 1989–1991.

7. Agriculture

Sector overview

89. The agriculture sector accounted for 14.5 per cent of the total GHG in 1989. In the sector GHG decreased by 50.0 per cent in 2004 compared to the 1989 levels, due to the decline in the animal population and the decrease in the amount of chemical fertilizers applied to soils. The sectoral emissions are complete in terms of years, gases and sources covered, except for the prescribed burning of savannahs, which does not occur in Romania. The ERT recognized the improvements in the agriculture sector compared to previous inventory submissions.

90. The ERT noted that Romania has recalculated emissions on enteric fermentation, manure management and agricultural soils for the entire time series. The total effect of these recalculations in the agriculture sector is a 32.6 per cent increase for the base year. Recalculations were carried out for all the gases and categories consistent with IPCC good practice guidance. The AD used in the calculations were provided by the National Statistical Office. The emission factors used are all default values provided in the Revised 1996 IPCC guidelines. All the time series recalculations were either based on interpolation or extrapolation of data provided by the NIS for the years 2004 and 2005. The source of AD is not properly explained and documented in the NIR and this has raised transparency questions. The national expert responded satisfactorily to the ERT's questions during the review. The ERT recommended that Romania improve documentation of AD and recalculations in its next submission.

91. For all categories tier 1 methods were applied, due to the lack of relevant country data required for more sophisticated methods. Romania used EFs for Eastern Europe provided in the Revised 1996 IPCC guidelines for the calculation of CH_4 emissions from enteric fermentation. The national expert has indicated plans to improve the quality of estimates in the agriculture sector in Romania's next submission.

Key categories

Enteric fermentation – CH_4

92. Methane from enteric fermentation is one of the main sources of CH_4 emissions in the agriculture sector. It is also the second largest source in the sector, and in 1989 it contributed 4.0 per cent of the total GHG emissions in Romania. The 2004 and 2005 data were the only data available and were used to extrapolate the whole time series, to split the cattle population into dairy cows, non dairy cattle and buffaloes. The number of dairy cows estimated was not consistent with the milk production of 1989 obtained from the statistical year book. The milk production for 2004 was 3,500 litres per cow per year: if that were used to extrapolate to 1989, then the number of animals would have been 1 million. Secondly, if the IPCC default value for eastern European milk production is 2,550 litres per head per year, then the number of dairy cows in 1989 would have been 1.44 million. In both cases, this could lead to overestimation of base year emissions. The ERT identified this as a potential problem and recommended that Romania a) revise the estimation of the population of dairy cows in the base year, and find an estimate that is consistent with the milk production in that year as reported by the NIS, and with the IPCC default milk productivity factor; or b) provide evidence that the average milk productivity in the base year was in the order of 1,000 litres of milk per head per year, therefore confirming the current estimate for the population of dairy cattle in 1989.

93. The ERT welcomed the fact that, in response to this question raised by the ERT, Romania revised the dairy cattle population data (and consequently the non-dairy cattle population data) taking into account option a) of the ERT's recommendation and also newly available data on milk production provided by the NIS representatives. As a result the population of dairy cattle decreased by 40 per cent, and the population of non-dairy cattle increased by 53 per cent in the base year. The emission estimates in the entire time series have been revised accordingly and the total effect on CH_4 enteric fermentation in the base year was a decrease of 6.4 per cent (from 11,829.3 to 11,076.0 Gg CO_2 eq.). The ERT recommended that Romania further enhance the accuracy of the information on the rearing and feeding conditions of feedstock and use tier 2 methods for the most important categories (dairy cows and other cattle) under enteric fermentation.

Manure management – CH_4 and N_2O

94. Romania has applied a tier 1 method and default values for Eastern Europe. As this is a key category, Romania is encouraged to apply a higher-tier method, depending on the availability of data and resources.

95. The inconsistent split between dairy and non-dairy cattle reported in the base year affects the emissions under manure management and consequently N_2O emissions on agricultural soils. The ERT identified this as a potential problem (see also paragraphs 92 and 93) and recommended that Romania revise the animal population data and recalculate the emissions accordingly. The Party followed this recommendation (see paragraph 93) and revised the emission estimates for the entire time series accordingly. The total effect on N_2O emissions from manure management and agricultural soils in the base year was a decrease by 9.1 per cent (from 3,095.8 to 2,813.0 Gg CO_2 eq.) and 1.4 per cent (from 22,177.3 to 21,866.5 Gg CO_2 eq.), respectively.

96. Romania used IPCC default values for partitioning the animal waste management systems which is not consistent with the presentations and discussions during the review, which indicated that for six months of the year the animals spend the time grazing on pasture, paddock and range. The selected IPCC default values do not cater for pasture, paddock and range. Discrepancies were not significant but the ERT recommended that Romania further enhance the accuracy of information for the most important categories in agriculture (dairy cows, other cattle and swine) and on manure management practices in its next submission.

Agricultural soils – N_2O

97. Romania uses a tier 1 method with default parameters. The ERT recognized an improvement compared to previous submissions, but encouraged Romania to develop country-specific EFs and parameters for this category, depending on the availability of data and resources.

Non-key categories

Rice cultivation – CH_4

98. An IPCC tier 1 method was used in this calculation and CH_4 emissions from rice cultivation decreased by almost 98 per cent in 2004 compared to the base year.

8. Land use, land-use change and forestry

Sector overview

99. In 1989 the LULUCF sector in Romania was a net sink of 32,641.2 Gg CO_2 eq. The category "Forest land remaining forest land" was responsible for this sink effect. Romania did not report carbon stock changes for other land-use or land-use change categories. Biomass burning in wildfires was the only source of emissions reported, and was of very little significance (2.5 Gg CO_2 eq.). In spite of the

occurrence of small rates of deforestation in the base year, these emissions cannot be accounted for the estimation of the assigned amounts because the LULUCF sector as a whole was a net sink in the base year.

100. The ERT noted the major improvements achieved by Romania with respect to previous submissions. However, several deficiencies were detected regarding completeness (discussed in paragraph 101 below), QA/QC and consistency. The QA/QC plan was not implemented, with the exception of some basic checks as reported in the NIR. Inconsistencies were identified in the time series of land use areas. The Party is encouraged to continue with its efforts to solve these problems.

101. Romania has reported the inventory categories of LULUCF according to decision 13/CP.9. The ERT noted the efforts made by Romania to improve its reporting of AD of land-use categories, having achieved full coverage of land-use transitions. However, some inconsistencies were identified in the conversion of country-specific categories to the IPCC land-use categories, and the ERT encouraged the Party to solve these inconsistencies for future submissions. Romania has provided a complete set of CRF tables for the LULUCF sector, as required by decision 13/CP.9, covering the entire period 1989–2004. The data reported in the NIR and the CRF tables did not include estimates for the categories 5B (cropland), 5C (grassland), 5D (wetlands), 5E (settlements), 5F (other land), 5.III (emissions of N_2O from disturbance associated with land-use conversion to cropland) and 5.IV (carbon emissions from agricultural lime application). The activities corresponding to these categories do indeed occur in Romania and their reporting is recommended in future submissions to improve the completeness of the inventory.

Key categories

Forest land (5A) – CO_2

102. The area of forest land in 1989 was 6,558 kilohectares (kha), having remained relatively constant at 6,457 to 6,791 kha during the period 1989–2004. Some inconsistencies were detected in the time series of the land areas under forest. The ERT identified outlier values for the area of forest land remaining forest land in the years 1989, 1990, 2000, 2001 and 2004; and for the area of land converted to forest in the years 1990, 1999, 2001 and 2003. The Party did not provide an explanation for these variations in the NIR. It is recommended that Romania follow IPCC good practice guidance for a consistent representation of land use. In particular, it suggested revising some unlikely figures (e.g., the conversion of 120,000 hectares of settlements to forest land in a single year) and that specific land areas affected by a change in land use remain in the "land converted to" category for the default period of 20 years.

103. Estimation of carbon stock change in living biomass was based on country-specific Iv values.[6] These values, derived from the latest national forest inventory published in 1985, seem to be adequate for the conditions in the base year, but may not apply to the whole time series, particularly considering possible changes in the age and class distribution of Romania's forests. The ERT welcomed the information received during the review that Romania plans to implement a new national forest inventory starting in 2008, and recommended considering the adoption of remote sensing and geographic information tools in order to make better use of the information to be collected.

104. A slight modification of the tier 1 method was developed by the Party for estimation of carbon losses due to harvesting and fuelwood collection. The modification consisted in multiplying the mass of carbon contained in the wood removed from the forest by a newly introduced biomass expansion factor (BEF_{roots}) to account for the instant oxidation of below-ground biomass at the time of wood removal. This may cause an overestimation of the losses (or an underestimation of the net CO_2 removals). The values chosen for BEF_{roots} are not consistent with the root-to-shoot ratios (R) used for estimating the

[6] Iv = annual increment in commercial wood volume per hectare.

biomass increments in the same forests. The ERT noted the efforts made by the Party to develop country-specific factors and methods, and encouraged further improvement of the accuracy of the estimates.

Non-key categories

Cropland (5B) and Grassland (5C) – CO_2

105. No carbon stock changes were reported for the categories that extend over a combined area of almost 15 million hectares, or two-thirds of Romania's territory. According to AD provided in Tables 5B and 5C of the CRF, there were changes in land use to cropland and grassland in several years of the time series (although not in the base year) which, according to IPCC tier 1 methods, would have caused changes in carbon stocks. Given the large extension of land covered by these two categories, it is likely that carbon stock changes also occur in areas not affected by changes in land use. The ERT recommended that Romania consider attributing cropland and grassland areas to different land-use subcategories (e.g., perennial crops, annual crops, set-aside land, etc.) and management systems (e.g., unique combinations of different practices) and applying carbon stock parameters at a disaggregated level (i.e., for each combination of land-use subcategory and management system) in order to improve the completeness of the inventory for future submissions.

106. Considering the election by Romania to include revegetation as an activity under the provisions or Article 3, paragraph 4 of the Kyoto Protocol, the development of the capacity to produce disaggregated estimation of carbon stock changes for these two categories becomes highly relevant.

Forest fires – CH_4 and N_2O

107. The ERT welcomed the reporting by Romania of this mandatory source for the first time. The Party reported emissions of CO_2, CH_4 and N_2O using the IPCC tier 1 method. Two errors were detected in the application of this method, leading to an overestimation of emissions. Firstly, a 100 per cent combustion efficiency was assumed, while the IPCC default factor is lower (see Table 3A.1.12 of the 2003 IPCC good practice guidance). Secondly, CO_2 emissions were erroneously accounted, since these only apply to cases where the forest fires imply a change in land use. In spite of this being a relatively minor source, the ERT encouraged Romania to apply the IPCC method correctly in future submissions.

9. Waste

Sector overview

108. In the base year, GHG emissions from the waste sector amounted to 5,718.0 Gg CO_2 eq. representing 2.1 per cent of total GHG emissions in Romania. Solid waste disposal on land, wastewater handling and waste incineration accounted for 45.2, 53.5, and 1.5 per cent of total emissions from the waste sector respectively. CH_4 accounted for 88.0 per cent of emissions from the sector, CO_2 for 1.5 per cent, and N_2O for 10.5 per cent. Sectoral emissions have increased, and by 2004 were 29.4 per cent above the base year value, mainly due to a 66.5 per cent increase in CH_4 emissions from solid waste disposal on land (SWDL), whereas GHG emissions from wastewater handling and waste incineration decreased.

Key categories

Solid waste disposal on land – CH_4

109. Romania has applied the tier 1 methodology to estimate the CH_4 emission from SWDL, which is not in accordance with the IPCC good practice guidance. The ERT noted a time series inconsistency as a result of applying three different estimation methods for AD to the three corresponding periods: (1) 1989–1994, (2) 1995–1997, and (3) 1998–2004. A much lower per capita waste generation rate in

the first period (1989–1994) may underestimate CH_4 emissions in the base year. No information was available for the industrial waste that has been landfilled. The ERT recommended that Romania adopt the tier 2 methodology to improve the quality of emissions data, develop a proper method or use the method proposed in the IPCC good practice guidance to ensure consistency in the time series, and collect information on the quantities and qualities of landfilled industrial waste to enhance the accuracy of CH_4 emission from SWDL. The ERT also recommended that Romania obtain more precise data and detailed information on municipal solid waste (MSW) disposal sites and improve the consistency of the time series.

Wastewater handling – CH_4

110. Romania used proper tier 1 methodologies for this sub-category in accordance with the IPCC good practice guidance. Default values were mostly adopted from the revised 1996 IPCC guidelines. The ERT noted that the methane conversion factor (MCF) value (0.46) selected by Romania is high and is not sufficiently backed up. CH_4 emissions from domestic and commercial wastewater were underestimated in the base year as a result of calculating maximum CH_4 producing capacity (parameter B0) incorrectly. The ERT encouraged Romania to refer to the default values in the 2000 IPCC good practice guidance rather than to those in the Revised 1996 IPCC guidelines, in cases where different default values are provided for the same parameter. The ERT recommended that Romania provide an explanation for its MCF values and improve the CH_4 EF for domestic and commercial wastewater in its next submission.

Non-key categories

Wastewater handling – N_2O

111. The IPCC default methodology has been used to estimate N_2O emissions from human sewage. Romania used a fixed value for a per capita protein intake of 104 grammes per person per day over the entire time series. The source of this value was not explained in the 2006 NIR or during the in-country review. According to the Food and Agriculture Organization of the United Nations Statistics Database (FAOSTAT), the per capita protein intake in Romania was 91 grams per person per day in the base year. The ERT noted that application of higher per capita protein intake leads to an overestimation of the N_2O emissions from human sewage.

112. The ERT recommended that Romania explain and document the value for per capita protein intake used in the 2006 inventory, including underlying calculations and assumptions made. Alternatively, the ERT recommended that Romania use the value for per capita protein intake from FAOSTAT. Based on this new information, the ERT further recommended that the Party revise the relevant estimates, as appropriate. In response to these recommendations the Party examined this issue and revised protein consumption values in line with the data provided by FAOSTAT. Based on these findings, the Party revised the estimates for N_2O emissions from human sewage. These changes resulted in a decrease of estimated N_2O emissions from wastewater handling by 12.5 per cent (from 2.21 to 1.93 Gg N_2O) for the base year.

Waste incineration – CO_2

113. The IPCC methodology was applied to assess the CO_2 emissions from hazardous and clinical waste incineration, using the default values from the 2000 IPCC good practice guidance. CO_2 emissions from clinical waste incineration were "NE" during the period 1989–1994, possibly underestimating the CO_2 emissions from this subsector in the base year. The ERT recommended that Romania completely cover the CO_2 emissions from all sources, including clinical waste.

C. Calculation of the assigned amount

114. The assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated broadly in accordance with the annex to decision 13/CMP.1. However, the ERT noted that non-CO_2 emissions from LULUCF were included in the calculation of total GHG emissions in the base year. The ERT noted that, according to decision 13/CMP.1, for the purpose of calculating the assigned amount all emissions from LULUCF are to be excluded, unless this sector constitutes a net source of GHG emissions.

115. Romania's base year is 1989 for all GHGs, including the fluorinated gases. Romania's quantified emission limitation is 92 per cent, as included in Annex B to the Kyoto Protocol. Based on Romania's original estimate of its base year emissions (282,467,184.19 Gg CO_2 eq.) and its Kyoto Protocol target (92 per cent), the Party calculated its assigned amount to be 1,299,349,047 tonnes CO_2 eq.

116. In response to inventory issues identified during the review, Romania submitted revised estimates for its base year inventory, which resulted in a recalculation of the assigned amount. Based on the revised estimates for Romania's base year emissions – 278,225.022 Gg CO_2 eq. – the Party calculates its assigned amount to be 1,279,835,099 tonnes CO_2 eq. The ERT agrees with this figure.

D. Calculation of the commitment period reserve

117. The calculation of the required level of the CPR is broadly in accordance with paragraph 6 of the annex to decision 11/CMP.1. However, the ERT noted that non-CO_2 emissions from LULUCF were included in the calculation of total GHG emissions in the most recent inventory year (i.e. 2004). The ERT noted that, according to decision 13/CMP.1, for the purpose of calculating the CPR, all emissions from LULUCF are to be excluded.

118. Based on the original estimate for its total GHG emissions in the most recent inventory year (2004), 160,059,731.4 Gg CO_2 eq., Romania calculated its CPR to be 800,298,657 tonnes CO_2 eq.

119. In response to inventory issues identified during the review, the Party submitted revised estimates of its 2004 inventory, which resulted in a recalculation of the CPR. Based on the revised estimates, the Party calculates its CPR to be 780,545,734 tonnes CO_2 eq. The ERT agrees with this figure.

E. National registry

120. Romania has provided most of the information on the national registry system required by the reporting guidelines under Article 7, paragraphs 1 and 2, of the Kyoto Protocol (decision 15/CMP.1). The information provided is broadly transparent and in accordance with the requirements of the UNFCCC reporting guidelines. However, the ERT noted that some of the information is not provided or clearly indicated in the initial report, for example, conformity with the United Nations data exchange standards (DES), the Internet address of the national registry and procedures to minimize discrepancies. The ERT recommended that Romania provide more complete and detailed information in its next inventory report under the Kyoto Protocol.

121. Table 5 summarizes the information on the mandatory reporting elements on the national registry system, as stipulated by decision 15/CMP.1, which describes how the national system performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1.

Table 5. Summary of information on the national registry system

Reporting element	Provided in the initial report	Comments
Registry administrator		
Name and contact information	Yes	
Cooperation with other Parties in a consolidated system		
Names of other Parties with which Romania cooperates, or clarification that no such cooperation exists.	Yes	
Database structure and capacity of the national registry		
Description of the database structure	Yes	
Description of the capacity of the national registry	Yes	
Conformity with data exchange standards (DES)		
Description of how the national registry conforms to the technical DES between registry systems	Yes	Covered in the Independent Assessment Report (IAR)[a]
Procedures for the minimizing and handling of discrepancies		
Description of the procedures employed in the national registry to minimize discrepancies in the transaction of Kyoto Protocol units	No	
Description of the steps taken to terminate transactions where a discrepancy is notified and to correct problems in the event of a failure to terminate the transaction	No	
Prevention of unauthorized manipulations and operator error		
An overview of security measures employed in the national registry to prevent unauthorized manipulations and to prevent operator error	Yes	
An overview of how these measures are kept up to date	Yes	
User interface of the national registry		
A list of the information publicly accessible by means of the user interface to the national registry	Yes	
The Internet address of the interface to Romania's national registry	No[b]	
Integrity of data storage and recovery		
A description of measures taken to safeguard, maintain and recover data in order to ensure the integrity of data storage and the recovery of registry services in the event of a disaster	Yes	
Test results		
The results of any test procedures that might be available or developed with the aim of testing the performance, procedures and security measures of the national registry undertaken pursuant to the provisions of decision 19/CP.7 relating to the technical standards for data exchange between registry systems.	Yes	

[a] Pursuant to decision 16/CP.10, the administrator of the international transaction log (ITL), once registry systems become operational, is requested to facilitate an interactive exercise, including with experts from Parties to the Kyoto Protocol not included in Annex I to the convention, demonstrating the functioning of the ITL with other registry systems. The results of this exercise will be included in an IAR. They will also be included in the annual report to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol.

[b] The internet address was given to the ERT during the review and the UNFCCC website <http://unfccc.int/kyoto_protocol/registry_systems/registry_websites/items/4067.php> includes the link to the Romanian National Registry website <http://www.emissionstradingregistry.anpm.ro/> , which is fully functional.

122. During the initial review, the ERT was provided with additional and updated information on the national registry of Romania, which is administered by NEPA. To fulfil its obligations, Romania contracted a private Finnish company, Innofactor Ltd., to set up, host and maintain the national registry. Romania uses the registry software Greenhouse Gas Registries for Emissions Trading Arrangements (GRETA) developed by the Department for Environment, Food and Rural Affairs of the United Kingdom. The Government of Denmark (Danish Environmental Protection Agency) provided technical and financial assistance for establishing the national registry of Romania.

123. During the review visit to Bucharest, the ERT visited the offices of the registry administrator at NEPA. The ERT was not able to visit the data centre in Espoo, Finland, at which servers hosting the national registry are located.

124. Connectivity and interoperability tests with the international transaction log (ITL) were completed in September 2007. The initialization process was completed by 15 April 2008 and the registry was ready for full operation with the ITL. Information on the national registry will become publicly available through the Internet at <http://www.emissionstradingregistry.anpm.ro>.

125. The ERT was also informed about the procedures and security measures in place to minimize discrepancies, terminate transactions and correct problems, and minimize operator error. These procedures and security measures include the use of a secure sockets layer (SSL) digital certificate that provides authentication and encryption power for secure online transactions, strict confidentiality agreements with the registry administrators, well-defined business rules to ensure a common and tested way of maintaining the registry, and application manuals and support documentation.

126. The ERT acknowledged the security measures that were implemented for the national registry of Romania. The ERT noted that Romania has allocated sufficient resources to the development, operation and maintenance of the national registry under the Kyoto Protocol.

127. The ERT took note of the results of the technical assessment of the national registry, including the results of standardized testing, as reported in the independent assessment report (IAR) that was forwarded to the ERT by the administrator of the international transaction log, pursuant to decision 16/CP.10 on 30 April 2008.

128. The ERT reiterated the main findings of this report, including that the registry has fulfilled sufficient obligations regarding conformity with the DES. These obligations include having adequate transaction procedures; adequate security measures to prevent and resolve unauthorized manipulations; and adequate measures for data storage and registry recovery. The ITL operator identified some limitations during the evaluation of the documentation of Romania's registry, including the following: extensive evidence for the Disaster Recovery (DR) Plan is required, specifically how DR will be executed when the production system is in Finland and the DR system is planned to be in Romania; there seems to be no defined acceptance testing by the Romanian registry against business requirements other than executing the scripts provided by the vendor; the operational plan does not define what service arrangements have been made with the vendor to provide a level of service and how the quality of service will be managed; the explanation of incident management is not detailed enough and this suggests that no formal system exists for handling incidents; and the explanation of how operational changes will be managed, such as taking the registry offline, is limited. The Party informed the ERT that it would rectify these issues prior to the registry commencing live operation, and not later than the end of 2008.

129. Based on the results of the technical assessment, as reported in the IAR, the ERT concluded that Romania's national registry is sufficiently compliant with the registry requirements, as defined by decisions 13/CMP.1 and 5/CMP.1, noting that registries do not have obligations regarding operational performance or public availability of information prior to the operational phase.

F. Land use, land-use change and forestry parameters and election of activities

130. Table 6 shows Romania's choice of parameters for forest definition as well as elections for Article 3, paragraphs 3 and 4, activities in accordance with decision 16/CMP.1.

Table 6. Selection of LULUCF parameters

Parameters for forest definition		
Minimum tree cover	10 per cent	
Minimum land area	0.25 ha	
Minimum tree height	5 m	
Elections for Article 3, paragraphs 3 and 4, activities		
Article 3.3 activities	**Election**	**Accounting period**
Afforestation and reforestation	Mandatory	Commitment period
Deforestation	Mandatory	Commitment period
Article 3.4 activities		
Forest land management	Elected	Commitment period
Cropland management	Not elected	Not applicable
Grazing land management	Not elected	Not applicable
Revegetation	Elected	Commitment period

131. The parameters chosen for the definition of forest are within the agreed values of decision 16/CMP.1. The ERT noted that the official Romanian definition of forest is generally consistent with that used for the purpose of reporting to the Global Forest Resources Assessment of FAO. There are, however, some minor inconsistencies between the country-specific land-use categories and those defined by IPCC good practice guidance. In particular, the country-specific category "woodland", considered as equivalent to "forest land" may contain areas of land with tree vegetation with less than 10 per cent crown coverage. Also, the country-specific category "forest belts" does not include areas smaller than 0.25, and it is not clear how forest belts with areas between 0.25 and 0.5 hectares are classified. The ERT encouraged Romania to improve the consistency of land-use representation for future submissions.

132. Land units encompassing activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol must have clearly identified boundaries. This requires the capacity to identify and trace the land use and land-use changes in these areas. The ERT noted that Romania currently does not have the capacity to identify specific areas of land subjected to changes in land use and land management, and recommended that Romania prepare for a timely monitoring of these activities.

133. Revegetation has been selected as one of the activities under Article 3, paragraph 4, of the Kyoto Protocol. Since this activity requires net-net accounting, the ERT reminded the Party of the need to estimate net GHG emissions, both in the base year and in the commitment period, for those land units encompassing revegetation activity.

III. Conclusions and recommendations

A. Conclusions

134. The ERT concluded that the information provided by Romania in the initial report and during the review process is complete and in accordance with the relevant provisions of the annex to decision 13/CMP.1, relevant elements of section I of the annex to decision 15/CMP.1, and other relevant decisions of the CMP; that the assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP.1, and is consistent with the revised inventory estimates as submitted and reviewed; that the calculation of the required level of the CPR is in accordance with paragraph 6 of the annex to decision 11/CMP.1, and is consistent with the revised

inventory estimates as submitted and reviewed; and that the LULUCF definitions are within the agreed range.

135. Romania's national system for the estimation of GHG emissions has been prepared in accordance with the guidelines for national systems under Article 5, paragraph 1 of the Kyoto Protocol (decision 19/CMP.1) and described in accordance with the guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol (decision 15/CMP.1). During the in-country review the ERT noted that some of the mandatory elements of the national system were not presented fully in line with Article 5.1 of the Kyoto Protocol and requested Romania to provide additional information. After the in-country visit, Romania provided this information and the ERT concluded that the national system is fully in line with the guidelines for national systems.

136. Romania has provided its GHG inventory data for the base year 1989 and the years 1990–2004, and has included the tables required with data on all relevant gases and categories. Romania's GHG inventory is in general accurate, as defined in the UNFCCC reporting guidelines, and is consistent with the Revised 1996 IPCC guidelines and the IPCC good practice guidance. During the in-country review the ERT identified a number of categories where methods or EFs used were not fully in accordance with the IPCC good practice guidance, which may lead to overestimation of emissions in the base year. The ERT recommended that Romania revise its estimates for these categories. After the in-country review, Romania provided revised estimates for these categories for the base year in accordance with the recommendations of the ERT and in line with IPCC good practice guidance.

137. Romania responded to the identification of potential problems during the review by providing additional information and submitting revised estimates. The ERT noted that Romania provided timely and thorough replies to its questions concerning potential problems, following the ERT's recommendations and in line with the relevant reporting guidelines and CMP decisions.

138. The ERT did not recommend any adjustments to Romania's GHG inventory, and noted that the assigned amount and CPR, as calculated to incorporate the revised estimates submitted during the review, are in accordance with the modalities for the accounting of assigned amounts under Article 7, paragraph 4 of the Kyoto Protocol (decision 13/CMP.1) and decision 11/CMP.1. The ERT confirms that Romania's assigned amount is 1,279,835.099 tonnes CO_2 eq. based on its base year emissions (278,225.0 Gg CO_2 eq., including the revised estimates provided) and its Kyoto Protocol emissions reduction commitment of 92 per cent, and that Romania's CPR is 780,545,734 tonnes CO_2 eq. based on its 2004 emissions (156,109.15 Gg CO_2 eq., including the revised estimates provided). The ERT agrees with these figures.

139. Romania has also identified all the required information on parameters and elections for LULUCF under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in accordance with decision 16/CMP.1. This includes minimum tree crown cover of 10 per cent, minimum land area of 0.25 hectares and minimum tree height of 5 metres. Romania has chosen to account for forest management and revegetation activities under Article 3, paragraph 4, and has chosen to account for Article 3, paragraphs 3 and 4, activities for the entire commitment period and intends to report at the end of the commitment period.

140. Romania has provided all the information on the national registry system required by the reporting guidelines under Article 7, paragraphs 1 and 2, of the Kyoto Protocol (decision 15/CMP.1). During the initial review visit, the ERT was provided with additional and updated information on the national registry. The information provided is transparent and in accordance with the guidelines.

141. Based on the results of the in-country visit and the technical assessment, as reported in the independent assessment report, the ERT concluded that the national registry is sufficiently compliant with the registry requirements as defined by decisions 13/CMP.1 and 5/CMP.1.

B. Recommendations

142. In the course of the review, the ERT formulated a number of recommendations relating to the completeness, consistency and transparency of Romania's information presented in the initial report. Most of the recommendations were implemented during the review process, including those relating to the national system, and the potential problems that could have led to overestimation of emissions in the base year have been resolved. The key recommendations[7] are that Romania:

(a) Further elaborate the existing QA/QC plan in line with the requirements of the IPCC good practice guidance, including extensive tier 2 checking procedures for key categories, a procedure for external review and QA/QC procedures for activities related to Article 3, paragraphs 3 and 4, of the Kyoto Protocol; and additionally elaborate a guidance for prioritizing inventory improvements;

(b) Continue to transfer all relevant inventory information into the central archiving system, giving priority to the base year and the most recent year, develop catalogued or archived information and report updated information on the archiving system in its next submission;

(c) Rectify minor issues identified in the IAR concerning documentation before the national registry is fully operational with the ITL, and not later than the end of 2008.

143. The ERT also formulated a number of recommendations relating to Romania's GHG inventory submission. The key recommendations[8] are that Romania:

(a) Complete the GHG inventory as far as practicable in its next submission by reducing the number of missing estimates particularly in the energy and LULUCF sectors;

(b) Provide a more detailed description of the approaches taken and the underlying assumptions used for the selection of EFs and AD;

(c) Improve the consistency of its reporting by cross-checking the information provided by the statistical office with that alternative data sources;

(d) Elaborate a detailed inventory manual for inventory planning and management, reflecting national circumstances;

(e) Strengthen its institutional capacity by ensuring adequate long-term financial support for inventory-related contracts and arrangements and by encouraging inventory experts to attend the UNFCCC training courses;

(f) Collect AD and develop well-documented country-specific EFs for use with higher-tier methods for key categories.

C. Questions of implementation

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

[7] For a complete list of recommendations, the relevant sections of this report should be consulted.
[8] For a complete list of recommendations, the relevant sections of this report should be consulted.

Annex I

Documents and information used during the review

A. Reference documents

IPCC. Good practice guidance and uncertainty management in national greenhouse gas inventories, 2000. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

IPCC. Good practice guidance for land use, land-use change and forestry, 2003. Available at <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>.

IPCC/OECD/IEA. Revised 1996 IPCC Guidelines for national greenhouse gas inventories, volumes 1–3, 1997. Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

UNFCCC. Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories. FCCC/SBSTA/2004/8. Available at <http://unfccc.int/resource/docs/2004/sbsta/08.pdf>.

UNFCCC. Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention. FCCC/CP/2002/8. Available at <http://unfccc.int/resource/docs/cop8/08.pdf>.

UNFCCC. Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol. FCCC/KP/CMP/2005/8/Add.3. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

UNFCCC. Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. FCCC/KP/CMP/2005/8/Add.2. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

UNFCCC. Guidelines for review under Article 8 of the Kyoto Protocol. FCCC/KP/CMP/2005/8/Add.3. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

UNFCCC secretariat. Status report for Romania. 2006. Available at <http://unfccc.int/resource/docs/2006/asr/rom.pdf>.

UNFCCC secretariat. Synthesis and assessment report on the greenhouse gas inventories submitted in 2006. FCCC/WEB/SAI/2006. Available at <http://unfccc.int/resource/webdocs/sai/2006.pdf>.

UNFCCC secretariat. Romania: Report of the individual review of the greenhouse gas inventory submitted in the year 2005. FCCC/WEB/ARR/2005/ROM. Available at <http://unfccc.int/resource/docs/2006/arr/rom.pdf>.

UNFCCC secretariat. Romania: Independent assessment report of the national registry of Romania. Reg_IAR_RO_2008_1. Available at <http://www.unfccc.int>.

B. Additional information provided by the Party

Governmental decision on establishing the national system for assessing the anthropogenic GHG emissions and removals by sinks, provided by the Kyoto Protocol.

Response by the Party following the list of potential problems formulated by the ERT in the course of the in-country review of Romania's initial report under the Kyoto Protocol and its 2006 inventory submission.

Uncertainty analyses 1989–2004, calculation sheets.

Explanatory note on coke consumption and recalculation sheets.

Ministerial note on the share of international navigation.

Revised CRF tables 1989–2004.

Protein consumption data – FAOSTAT table D1.

Romanian National Energy Balance, 1989 (extracts, paper copy).

Romanian Statistical Yearbook, 1989–2004 (extracts, paper copy).

Annex II

Acronyms and abbreviations

AD	activity data
BEF	biomass expansion factor
CH_4	methane
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CaO	calcium oxide
CO_2	carbon dioxide
CO_2 eq.	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
DES	data exchange standards
DOC	degradable organic carbon
DR	disaster recovery
EC	European Community
EF	emission factor
ERT	expert review team
EU	European Union
EU ETS	European Union emissions trading scheme
F-gas	fluorinated gas
FAO	Food and Agriculture Organization of the United Nations
FOD	first order decay
Gg	Gigagram (1 Gg = 1 billion grams)
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
HFCs	hydrofluorocarbons
IE	included elsewhere
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ITL	international transaction log
kg	kilogram (1 kg = 1 thousand grams)
kha	kilohectares
LULUCF	land use, land-use change and forestry
m^3	cubic metre
Mg	megagram (1 Mg = 1 tonne)
MgO	magnesium oxide
Mt	million tonnes
Mtoe	millions of tonnes of oil equivalent
MSW	municipal solid waste
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joule)
QA/QC	quality assurance/quality control
SF_6	sulphur hexafluoride
SO_2	sulphur dioxide
SoE	Statistical Office of Estonia
TJ	terajoule (1 TJ = 10^{12} joule) TTU
UNFCCC	United Nations Framework Convention on Climate Change

- - - - -