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ROMANIA

**REPORT OF THE INDIVIDUAL REVIEW OF THE GREENHOUSE GAS INVENTORY
SUBMITTED IN 2004[1]**

I. OVERVIEW

A. Introduction

1.   This report covers the desk review of the 2004 greenhouse gas (GHG) inventory submission of
Romania, coordinated by the United Nations Framework Convention on Climate Change (UNFCCC)
secretariat, in accordance with decision 19/CP.8 of the Conference of the Parties. The review took place
from 8 to 25 November 2004 and was conducted by the following team of nominated experts from the
roster of experts: Generalists – Mrs. Inga Konstantinaviciute (Lithuania) and Mrs. Anke Herold
(European Community); Energy – Mr. Eilev Gjerald (Norway) and Mr. Yannis Sarafidis (Greece);
Industrial Processes – Mr. Riccardo De Lauretis (Italy) and Mr. Marius Taranu (Moldova); Agriculture –
Mr. Erda Lin (China) and Mr. Samuel Adeoye Adejuwon (Nigeria); Land-use Change and Forestry
(LUCF) – Mr. Justin Ford-Robertson (New Zealand) and Mrs. Thelma Krug (Brazil); Waste –
Mr. Takashi Morimoto (Japan) and Mr. Davor Vesligaj (Croatia). Mr. Samuel Adeoye Adejuwon and
Mrs. Anke Herold were the lead reviewers of this review. The review was coordinated by
Mr. Javier Hanna (UNFCCC secretariat).

2.   In accordance with the UNFCCC "Guidelines for the technical review of greenhouse gas
inventories from Parties included in Annex I to the Convention" (hereafter referred to as the UNFCCC
reporting guidelines), 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. Inventory submission and other sources of information

3.   In its 2004 submission, Romania has submitted a complete set of common reporting format
(CRF) tables for the years 1989 (base year) and 1990–2002, and a national inventory report (NIR).
Where needed the expert review team (ERT) also used previous years' submissions and other
information. The full list of materials used during the review is provided in annex 1 to this report.

C. Emission profiles and trends

4.   In the year 2002, the most important GHG in Romania was carbon dioxide (CO_2), contributing
77.4 per cent to total[2] national GHG emissions expressed in CO_2 equivalent, followed by methane (CH_4)
– 17.8 per cent – and nitrous oxide (N_2O) – 4.4 per cent. Perfluorocarbons (PFCs) contributed
0.4 per cent of the overall GHG emissions in the country. Hydrofluorocarbons (HFCs) and sulphur
hexafluoride (SF_6) are not estimated. The Energy sector accounted for 76.7 per cent of total GHG

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[1] In the symbol for this document, 2004 refers to the year in which the inventory was submitted, and not to the year
of publication.
[2] In this report, the term total emissions refers to the aggregated national GHG emissions expressed in terms of CO_2
equivalent excluding LUCF, unless otherwise specified.

emissions, followed by Industrial Processes (10.8 per cent), Agriculture (8.1 per cent) and Waste (4.4 per cent). Total national GHG emissions amounted to 136,547.26 Gg CO_2 equivalent and decreased by 48.0 per cent from 1989 (base year) to 2002. Over the period 1989–2002, CO_2 emissions decreased by 42.1 per cent, CH_4 emissions by 53.0 per cent and N_2O emissions by 78.2 per cent. Emissions from PFCs decreased by 33.1 per cent. The main decreases in GHG emissions during this period were in the Industrial Processes sector (70.2 per cent), Agriculture (57.6 per cent) and Energy (42.1 per cent). The trends are described in the NIR but not explained in detail for all relevant sources.

D. Key sources

5.   Romania has reported a tier 1 key source analysis, both level and trend assessment, as part of its 2004 submission. The key source analyses performed by the Party and the secretariat[3] produced similar results. However, table 1.5.1 in section 1.5 Key Source Categories of the NIR is misleading as it only represents the results of the trend assessment and not the results of the level assessment: the latter is only provided in annex 2 of the NIR. The ERT recommends Romania to report the complete results of the key source analysis in the main report in the future. As Romania continues to use mostly tier 1 methods and default emission factors (EFs), the key source analysis is not yet clearly linked with the setting of priorities for the improvement of the inventory.

6.   The ERT recommends that Romania perform a tier 2 key source analysis after completing the uncertainty assessment and further enhance its use of qualitative criteria in the identification of key sources.

E. Main findings

7.   The ERT noted that Romania has implemented some of the improvements recommended by the previous (2003) in-country review. The main improvements are the recalculations made for the entire time series and the provision of more detailed information on methodologies, activity data (AD) and EFs in the NIR. However, more detail is needed for a fully transparent inventory, and the inventory submitted by Romania is still not fully in conformity with the UNFCCC reporting guidelines, in particular because (a) the estimation of gases and source categories is incomplete (e.g., HFCs and SF_6 are not estimated) and (b) Romania has not used higher-tier methods for important key source categories. The uncertainty assessment and a formal quality assurance/quality control (QA/QC) system have also not yet been fully implemented. The ERT encourages Romania to complete the implementation of the recommendations of the *Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) as soon as possible and to start using higher-tier methods for the most important source and sink categories and in those areas where the 2003 in-country review identified potential additional data sources.

F. Cross-cutting topics

Completeness

8.   In general, the inventory covers all years and is complete with regard to geographical coverage. However, it is incomplete in relation to gases, sectors and some source categories: 2.E Production of Halocarbons and SF_6 emissions, and 2.F Consumption of Halocarbons and SF_6 have not been estimated. The 2003 review recommended that the inventory team should consult national experts on the Montreal Protocol gases and identify alternative data sources. The NIR does not report such consultations having taken place. Source categories 5.C Abandonment of Managed Lands and 5.D CO_2 Emissions and

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[3] The secretariat had identified, for each individual Party, those source categories which are key sources in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC good practice guidance. Key sources according to the tier 1 trend assessment were also identified for those Parties providing a full CRF for the year 1990. Where the Party has performed a key source analysis, the key sources presented in this report follow the Party's analysis. However, they are presented at the level of aggregation corresponding to a tier 1 key source assessment conducted by the secretariat.

Removals from Soil have not been estimated. The review in 2003 recommended that the inventory team should consult government agricultural experts to determine whether there are in fact data available for estimating emissions/removals of CO_2 from Agricultural Soils. The NIR does not report such consultations. Emissions from 6.C Waste Incineration have not been estimated. In addition, some minor subcategories are not estimated ("NE"), as explained in the sectoral sections of this report. The ERT recommends Romania to estimate emissions of the source categories that are not yet estimated as soon as possible, in particular those that may not be negligible.

9.   Emissions from International Bunkers are not estimated (all fuel use is categorized as domestic). The 2003 review recommended that Romania consult national energy experts and introduce assumptions about the use of jet fuel for international flights as opposed to domestic flights. Neither the NIR nor the CRF reports any such consultations or their results.

10.   For emissions from Adipic Acid Production, the time series is incomplete: data for 1998, 1999, 2000 and 2002 are missing. Limestone and Dolomite Use is not estimated for the years 1989–1993. Soda Ash Use is not estimated for the years 1989–1991. The ERT suggests that Romania interpolate or extrapolate estimates from the years for which data are available in order to complete those years where no emissions are currently reported, as recommended by the IPCC good practice guidance.

11.   In some of the sectoral background data tables the information provided is not complete, for example, in table 4.A average daily feed intake and CH_4 conversion are not reported, and no further information is provided in the documentation box.

Transparency

12.   An NIR has been submitted and includes information on key sources, methods and data sources for each source category, and a brief description of the QC procedures used in the preparation of the GHG inventory. The description of methods has improved compared to the 2003 NIR but is not yet complete (e.g., there is generally no explanation of how default EFs were chosen from the IPCC default ranges). The NIR broadly follows the structure recommended in the UNFCCC reporting guidelines, but not completely. Chapter 10 (Recalculations and Improvements) is missing, as are the suggested annexes. Taking into account Romania's national circumstances, annex 4, "CO_2 reference approach and comparison with sectoral approach and relevant information on the national energy balance", and annex 5, "Assessment of completeness and (potential) sources or sinks of GHG emission and removals excluded", would be particularly relevant.

13.   The use of the notations keys has improved compared to previous submissions. Additional information in most cases is not provided in the CRF and only a few explanations are provided in the documentation boxes of the CRF. Frequently "0.00" is reported instead of "not occurring" ("NO") or "NE" (e.g., table 1.B.2 or table 5.C of the CRF). The ERT encourages Romania to further improve the use of the notation keys and the presentation of additional information in the CRF.

14.   The 2003 in-country review concluded that process emissions from iron and steel production were not estimated separately and might have been double-counted in previous years. The NIR still does not mention how process emissions from Iron and Steel production are estimated. The ERT suggests that Romania report on this issue in its next inventory submission.

Recalculations and time-series consistency

15.   Romania has provided recalculated estimates and explanatory information for the years 1989–2001 as recommended by the 2003 in-country review. The effect of the recalculations for the base year (as reported in the CRF tables) is a decrease by 0.55 per cent in the estimates of CO_2 equivalent emissions excluding LUCF and 4.19 per cent including LUCF.

16.   The secretariat compared the summary emissions trend data contained in CRF table 10 as submitted in 2004 with the corresponding data submitted in 2003 and the result of this comparison was checked against the recalculations the Party has reported in table 8(a). The comparison shows that there

are large differences in the estimates of CO_2 emissions for the year 2001, both with and without LUCF. This seems to be due to incorrect reporting in the recalculations table of LUCF emissions in total CO_2 emissions.

17.   The reasons for recalculations are not always transparently reported in the NIR, for example, which recommendation from previous reviews was followed, and which source categories were recalculated for which years (e.g., section 3.4.5 on recalculations in Transport).

18.   Trends are mainly described in the NIR but are usually not explained. The ERT recommends Romania to include more explanatory information about the reasons for the trends observed at a more disaggregated level (e.g., source category), particularly when large fluctuations occur. From the information provided, trends remain rather unclear and raise the question whether the time series is consistent.

19.   As the 2003 review concluded, the ERT believes that the overall trend of emissions for fuel combustion is plausible, but there are some very unusual fluctuations from particular source categories from year to year. This indicates that there could be problems in the allocation of fuel consumption from the national energy balance to specific sectors. Romania should try to reassess the allocation of fuel consumption in the national energy balance with the support of energy experts at the National Institute of Statistics. No additional information on these strongly fluctuating trends has been provided in 2004.

Uncertainties

20.   No quantitative uncertainty assessment, as the IPCC good practice guidance requires, has been conducted so far. In CRF table 7, qualitative uncertainty estimates using the indicators "high" ("H"), "medium" ("M") and "low" ("L") are provided. The ERT encourages Romania to report the quantitative uncertainty analysis as soon as possible.

Verification and quality assurance/quality control approaches

21.   Romania has not yet established a formal QA/QC plan or system but is very interested in establishing such a system. However, basic QC procedures are implemented and Romania also reports on source-specific QC checks. No QA activities have been performed beyond the UNFCCC review. The ERT encourages Romania to establish a formal QA/QC system as soon as possible.

22.   The 2003 review recommended that the inventory team should consult other government ministries and experts at the National Institute of Statistics and at international agencies to establish more disaggregated data. The inventory team should also determine whether the 42 local environmental protection agencies can be used as a source of bottom–up data for the inventory. The NIR does not report on any consultation activities with other ministries or agencies or any other data-gathering activities. The ERT recommends Romania to start and to report on such activities.

Follow-up to previous reviews

23.   The ERT noted major improvements in this inventory submission compared to the 2003 submission with regard to the transparency and quantity of information. These improvements are largely due to improved descriptions of methods, AD and EF in the NIR, as well as the recalculation of the entire time series. Where the issues identified by the 2003 review are fully within the competence of the inventory agency, they have been addressed and improvements made.

24.   The team also noted, however, that a number of major issues identified in previous inventory reviews, such as the lack of documented QA/QC procedures and quantitative uncertainty assessment, have not yet been addressed in the 2004 submission.

G. Areas for further improvement

Identified by the Party

25.   The NIR identifies several areas for improvement that are fully supported by the ERT. The Party should:

(a)   Prepare and report quantitative uncertainties;

(b)   Collect more specific data on feedstocks and non-energy use of fuels;

(c)   Move to higher-tier methods in the Transport source category;

(d)   Obtain more information on the split between surface and underground mines;

(e)   Explore the possibility of estimating CO_2 emissions from Cement Production by using the clinker production method and improve the consistency of the time series by completing the missing AD for the period 1989–1991;

(f)   Collect activity data in order to estimate emissions from SF_6 Used in Aluminium and Magnesium Foundries;

(g)   Obtain disaggregated data on cattle population, as the CRF tables require. Since Enteric Fermentation is a key source, the national experts will have to make efforts to implement the tier 2 method for assessing CH_4 emissions in this source category;

(h)   Improve the collection of timely information regarding Rice Cultivation: the water management regime, number of crops per year, and organic amendment;

(i)   Use higher-tier methods for estimating Enteric Fermentation and Manure Management, and obtain information on cultivated area of histosols;

(j)   Continue and increase the cooperation with the Romanian Forest Research Institute in order to strengthen the gathering of AD in the entire LUCF sector;

(k)   Collect detailed historical data on waste disposal in future with a view to implementing the tier 2 method for CH_4 estimation.

Identified by the ERT

26.   The ERT identifies the following cross-cutting issues for improvement. The Party should:

(a)   Improve the institutional arrangements in order to be able to estimate the categories that are not yet estimated (e.g., Consumption of Halocarbons and SF_6) and to use higher-tier methods and some country-specific parameters for the estimation of important key categories;

(b)   Improve the completeness of the time series, for example, using inter- and extrapolations and other methods provided in the IPCC good practice guidance for years where it has not yet been possible to obtain data;

(c)   Further improve the methodological descriptions and the provision of background information in the NIR where indicated in this report;

(d)   Prepare and report a quantitative uncertainty analysis;

(e)   Improve the justification for the recalculations performed;

(f)   Provide information that explains emission trends;

(g)   Include a section in the NIR that explains improvements made in response to previous review recommendations, and report on progress made in further improving the institutional arrangements according to the UNFCCC review guidelines.

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

II. ENERGY

A. Sector overview

28.   In 2002, GHG emissions from the Energy sector amounted to 104,735.90 Gg CO_2 equivalent and accounted for 76.7 per cent of the total emissions of Romania. Emissions from the Energy sector decreased by 42.1 per cent between 1989 (when they were 180,832.96 Gg CO_2 equivalent) and 2002. This trend is discussed in the NIR and is attributed to declining fuel consumption in Romania. In 2002, 47.9 per cent of emissions from the Energy sector derived from Energy Industries, followed by Manufacturing Industries and Construction (21.7 per cent), Transport (11.4 per cent), Fugitive Emissions From Fuels (10.5 per cent) and Other Sectors (8.5 per cent). Emissions from all subsectors except Transport in 2002 had decreased compared to base year levels. Emissions from Transport in 2002 had increased by 63.6 per cent compared to base year levels.

29.   The CRF tables include estimates of CO_2, CH_4 and N_2O emissions from the Energy sector, as recommended by the UNFCCC reporting guidelines. However, the ERT was not able fully to assess whether all emission sources are appropriately addressed as aggregated emission estimates are provided for Energy Industries and Manufacturing Industries and Construction, and little information is provided regarding the national energy balance data.

30.   The information on the Energy sector included in the NIR includes a general overview of the sector, a trend analysis and a discussion of some general methodological issues regarding the AD used for estimating emissions and the approach followed. Romania has applied IPCC tier 1 methodologies for both fuel combustion and fugitive emissions. The IPCC default EFs have been used and in most cases the intermediate values were chosen whenever the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC Guidelines) provides a range.

31.   The national energy balance is the only source of AD and net calorific values for estimating GHG emissions from fuel combustion activities. Major problems related to the national energy balance, as reported in the NIR, include the timing with which the energy balance data are made available to the inventory team and the lack of detailed disaggregation regarding fuel consumption. The NIR includes little information regarding (a) the matching of fuel categories and sectors in the national energy balance with the fuels and IPCC source categories and (b) basic AD from the national energy balance. To improve the transparency of the inventory, the ERT recommends the Party to provide such information, for example, in annex 4 of the proposed structure for the NIR, which includes relevant information from the national energy balance.

32.   According to the NIR, the national energy balance includes information on the net calorific values of the fuels used in Romania. However, such information is not reported either in the CRF tables (e.g., in the reference approach table) or in the NIR. The ERT recommends that this information be reported to enhance transparency.

33.   The ERT noted that recalculations of the entire time series 1989–2002 have been carried out following the recommendation of the 2003 review. For the period 1989–1991, the methodologies described in the IPCC Guidelines have been applied (emissions estimated using the old IPCC Guidelines have not been recalculated since the 1994 inventory), while for the whole 1989–2002 period: (a) emissions from the consumption of sub-bituminous coal were reported; (b) emissions from the non-energy use of fuels are not reported in the Energy sector; (c) 20 per cent of total kerosene consumption in

the Transport category is allocated to Civil Aviation; and (d) emissions from the combustion of liquid fuels in agriculture were reported. The relevant CRF tables have been filled in.

34.   The NIR and CRF tables mention that emissions from the non-energy use of fuels are subtracted from the Energy sector, but the ERT was not able to assess whether those emissions are included in the national totals. The ERT suggests that the inventory team check this issue, correct the information if necessary, and provide more information in the next submission.

35.   A general overview of emissions trends is included in the NIR. The ERT noted abrupt changes in implied emission factors (IEFs) and fuel consumption in all source categories. In its response to the 2004 previous review stages, Romania indicated that some of the IEF variations are attributed to misallocation of fuels caused by the importing of the IPCC worksheets into the CRF tables. The ERT recommends Romania to correct these errors in its future submissions. In relation to fuel consumption, the ERT recommends that the NIR could contain a more detailed discussion of emission trends.

B. Reference and sectoral approaches

Comparison of the reference approach with the sectoral approach and international statistics

36. CO_2 emissions from fuel combustion have been calculated using the reference approach and the sectoral approach. For the year 2002, there is a difference of 2.2 per cent in the CO_2 emission estimates between the reference approach and the sectoral approach. Explanations are provided in the relevant documentation box of the CRF tables as well as in the NIR.

37.   Several areas were identified by the ERT where the inventory data differ from the International Energy Agency (IEA) data. The ERT recommends that these differences should be either corrected or analysed and explained by the Party. Moreover, the ERT encourages all the agencies involved to cooperate in order to resolve the institutional problems related to the development of the national energy balance. Until then, the ERT considers that it would be helpful to provide in the NIR the relevant information, from the national energy balance, used for the compilation of the inventory.

International bunker fuels

38.   Romania does not report emissions under International Bunkers. The NIR explains that the national energy balance does not contain any information regarding bunker fuels. Following the recommendation of the 2003 review report, 20 per cent of total jet kerosene consumption under the Transport category is allocated to Civil Aviation. However, it is not clear whether the remaining amount of jet kerosene and the relevant emissions are allocated under any other source category. This share of jet kerosene consumption (80 per cent) could be allocated under Aviation Bunkers. Romania should analyse further the data mentioned in the NIR and try to make the necessary efforts or develop assumptions to separate bunkers from domestic emissions in Civil Aviation.

Feedstocks and non-energy use of fuels

39.   The information provided in this area is limited to aggregated data on the non-energy use of fuels as reported in the national energy balance of Romania. However, there are no data regarding the specific sectors in which they are used. The ERT supports the plan reported in the NIR to obtain more information regarding non-energy use of fuels.

C. Key sources

Stationary combustion: all fuels – CO_2

40.   The EFs and fuel parameters used are the default values proposed by the IPCC Guidelines. Romania does not disaggregate emissions within source category 1.A.1 Energy Industries. All emissions are reported under 1.A.1a Public Electricity and Heat Production. The Romanian team explained that the reason for this was lack of background information. Similarly, all emissions within 1.A.2 Manufacturing

Industries and Construction are allocated under 1.A.2f Other, the reason again being lack of data. The ERT encourages Romania to make all necessary assumptions, based on data contained in the national energy balance, to disaggregate emissions and achieve a higher level of disaggregation in its future submissions.

Stationary combustion: solid fuels – CO_2

41.   The ERT noted significant fluctuations of solid fuel consumption for the period 1989–2002. The 2004 previous review stages identified cases that were considered as outliers (e.g., between 1990 and 1991–17.0 per cent; between 1991 and 1992–15.3 per cent; between 1996 and 1997 –15.9 per cent; and between 1998 and 1999–13.2 per cent). Since the fluctuations identified are lower than those identified in the 2003 submission, and the CO_2 IEFs estimated for solid fuels are fairly constant, it seems that some of the issues raised by the 2003 in-country review have been resolved. However, the provision of more detailed information regarding the national energy balance data could make it easier to assess the improvements made.

Stationary combustion: liquid fuels – CO_2

42.   The 2004 previous review stages identified cases where IEFs were considered as outliers (e.g., 64.86 t/TJ (1991) and 81.08 t/TJ (1992) for Commercial/Institutional). The ERT recommends that Romania analyse these cases, provide necessary explanations and make any necessary revisions.

Stationary combustion: gas – CO_2

43.   The IEFs for gas combustion in Energy Industries for 2002, in Manufacturing Industries and Construction for the period 1990–2002 and in Commercial/Institutional for 1991 are among the highest of reporting Parties. The Party indicated in its response to the 2004 previous review stages that these IEF values are attributed to the misallocation of fuels while transferring IPCC worksheets to the CRF tables. The ERT recommends that Romania make the necessary revisions in its next submission.

Mobile combustion: road transportation/railways/navigation – CO_2

44.   The estimation of GHG emissions is based on a disaggregation of total consumption by mode of transport and fuel according to the assumptions presented in the NIR, using default EFs and fuel parameters from the IPCC Guidelines. The assumptions made regarding navigation are not consistent with the energy statistics provided to IEA by Romania, as indicated in the 2004 previous review stages. The ERT noted significant fluctuations of energy consumption in all source categories. The ERT encourages all the agencies involved to cooperate in order to resolve the institutional problems related to the development of the national energy balance.

Fugitive emissions: coal mining and handling – CH_4

45.   Romania uses expert estimation to separate coal production from underground and surface mines. According to those estimations, which are kept constant for the whole period, 70 per cent of coal comes from surface mines and the rest from underground mines. The ERT recommends Romania to provide information about the basis on which this assumption is made and welcomes the plan, mentioned in the NIR, to obtain more information regarding the split between surface and underground mining.

Fugitive emissions: oil and natural gas – CH_4

46.   Romania does not report venting and flaring emissions from oil production because no regional EF is available in the IPCC Guidelines. The ERT encourages Romania to develop national EFs. Regarding emissions from venting from gas production, Romania uses the lower end of the range provided by the IPCC for East European countries (the range is 6,000–30,000 kg/PJ of gas produced). The ERT recommends that Romania provide explanations for the selection made and analyse whether a higher value would be more appropriate if old equipment is in operation. Emissions from flaring (oil, gas and combined) are not reported.

D. Non-key sources

Mobile combustion: road transportation – N_2O

47.   Romania applies a constant EF throughout the time series for both gasoline and diesel oil (0.6 kg/TJ). This EF is rather low compared to the IEFs of other Parties. In addition, a constant EF together with the IPCC tier 1 methodology does not take into account the effect of changing technologies. The ERT recommends that Romania consider moving to higher-tier methods in future so that N_2O emissions are appropriately estimated when the share of new cars with catalytic converters increases in the Romanian vehicle fleet.

III. INDUSTRIAL PROCESSES AND SOLVENT USE

A. Sector overview

48.   In 2002, total GHG emissions from the Industrial Processes sector amounted to 14,794.61 Gg CO_2 equivalent, or 10.8 per cent of total national emissions. Emissions from the sector decreased by 70.2 per cent between the base year and 2002. The reduction came mainly in the categories Chemical Industry and Metal Production, where emissions decreased by 86.1 per cent and 66.0 per cent, respectively, from 1989. The other source category reported is Mineral Products, where there was a decrease in emissions of 39.8 per cent from the base year. Emissions of CO_2 represented 87.0 per cent and N_2O emissions 9.4 per cent of CO_2 equivalent emissions from the sector in 2002. Emissions of PFCs accounted for 3.5 per cent of the emissions from the sector, and emissions of CH_4 accounted for the remaining 0.1 per cent.

49.   Romania has used IPCC default EFs and methodologies for all source categories reported. The ERT encourages Romania to use higher-tier methods for the key source categories for its next submission. The CRF includes all tables required and estimates of most gases and sources in the sector. Notable exclusions are HFCs and SF_6, and source categories 2.E Production of Halocarbons and SF_6 and 2.F Consumption of Halocarbons and SF_6. The NIR states that HFCs, SF_6 and other PFCs (except those from aluminium production) could not be calculated because of lack of statistical data on consumption of halocarbons and the confidentiality of data. Also, for the years 1989–1991, AD were not available for 2.A.2 Lime Production, for 1989–1993 AD were not available for 2.A.3 Limestone and Dolomite Use and 2.A.4 Soda Ash Use, while for 1998–2000 and 2002 AD were not available for 2.B.3 Adipic Acid Production. The ERT encourages Romania to look for alternative methods of and approaches to collecting missing AD for the source categories mentioned above and estimating those emissions that are not yet estimated, in particular those categories that may not be negligible.

50.   Romania has also provided source-specific recalculated estimates and explanatory information for 1989–2001 as recommended by the 2003 review (e.g., CO_2 emissions from Ammonia Production, N_2O emissions from Nitric Acid Production, N_2O emissions from Adipic Acid Production, CO_2 emissions from Iron and Steel Production, and CH_4 and hexafluoroethane (C_2F_6) from Aluminium Production).

B. Key sources

Iron and steel production – CO_2

51.   The tier 1a method based on consumption of the reducing agent (coke from coal) has been used to calculate CO_2 emissions from Iron and Steel Production. The ERT encourages Romania to improve the accuracy of the estimates by applying a tier 2 method that includes a correction for the carbon stored in the metal produced and that also makes it possible to calculate emissions from iron production and steel production separately.

Cement production – CO_2

52.   The IPCC default method based on quantity of cement produced as AD has been used to calculate CO_2 emissions. Romania should explore the possibility of estimating CO_2 emissions by using the more

accurate clinker production method; if clinker production data cannot be obtained directly, as stated in the NIR, they should be inferred from cement production (the tier 1 method).

Lime production – CO_2

53.   For 1989–1991 Romania reports only the amount of quicklime produced, while from 1992 both quicklime and dolomite lime produced are reported. The IPCC default method has been used to calculate CO_2 emissions. In order to avoid overestimation of emissions by using default EFs for lime production, the ERT recommends Romania to adjust the EFs and to account for the CaO and the CaO·MgO contents for each type of lime produced.

Limestone and dolomite use – CO_2

54.   For 1989–1993 Romania has not reported CO_2 emissions from limestone and dolomite use. The NIR states that no information is available for this period in the national statistics. The inter-annual changes for CO_2 emissions from limestone and dolomite use for some of the years under review are large (e.g., between 2000 and 2001 the difference is +190.2 per cent). The ERT recommends that the Party explain the reasons for these large fluctuations in the NIR and show that the time series is consistent. Romania is also recommended to estimate CO_2 emissions for the missing years using the methods provided by the IPCC good practice guidance for incomplete time series.

Ammonia production – CO_2

55.   The tier 1b method has been used to calculate CO_2 emissions from ammonia production for the entire time series, as recommended by the 2003 review. The inter-annual changes of CO_2 emissions from ammonia production for some of the years under review are large (e.g., between 1997 and 1998 the difference is –50.8 per cent, and between 1998 and 1999 it is +78.2 per cent). The ERT recommends that the Party explain the reasons for these large fluctuations in the NIR and show that the time series is consistent.

Nitric acid production – N_2O

56. N_2O emissions from nitric acid production decreased by 91.7 per cent during the period 1989–2002. Emissions are estimated by multiplying AD from the National Institute of Statistics by the default EF. The IPCC good practice guidance recommends that data on emissions and destruction be collected directly from plants for key sources, and the Party should implement this in future.

57.   The inter-annual changes of N_2O emissions from nitric acid production for all the years under review (except 2002) are greater than 10 per cent (e.g., between 1997 and 1998 the difference is –46.8 per cent, and between 1999 and 2000 it is +71.7 per cent). The ERT recommends that the Party explain the reasons for the fluctuations in the NIR and show that the time series is consistent.

C. **Non-key sources**

Aluminium production – PFCs

58.   The Party reports in the CRF IEFs for tetrafluoromethane (CF_4) (0.373 kg/t) and hexafluoroethane (C_2F_6) (0.037 kg/t) that are within the range of the default EFs provided for the tier 1c method for aluminium production. However, the EFs provided in the NIR for CF_4 (0.373 t/t) and C_2F_6 (0.1 t/t) are indicated with the wrong units.

Adipic acid production – N_2O

59. N_2O emissions from Adipic Acid Production are reported only for the period 1989–1997 and 2001. Romania explained that it was not possible to estimate emissions for 1998–2000 and 2002 because of a lack of national production data. In these circumstances the ERT recommends that the Party use the information on production capacity of the plants to ensure that the time series is consistent for N_2O emissions from this source category.

Ferroalloys production – CO_2

60.   The NIR states that CO_2 emissions from Ferroalloys Production are not estimated due to lack of data. However, in the 2003 submission the Party reported these emissions for all years except 2001. The ERT recommends that the Party report CO_2 emissions from Ferroalloys Production in its 2005 submission and ensure that the inventory is complete by covering all Industrial Processes source categories within the national reporting boundaries.

Glass production – CO_2

61.   AD are provided for glass production in CRF table 2(I).A-G but CO_2 emissions are not reported because of lack of a methodology. The ERT recommends the Party to report CO_2 emissions from Glass Production in its 2005 submission, using the EMEP/CORINAIR methodology,[4] and to ensure that the inventory is complete within the national reporting boundaries. The following EFs might be used: 150 kg CO_2/t of container glass produced and 140 kg CO_2/t of flat glass produced.

Solvent and other product use

62.   Emissions of CO_2 and N_2O are reported as "NE" for all source categories of this sector. Non-methane volatile organic compound (NMVOC) emissions have been reported for Other Use of N_2O instead of Other Solvent Use as stated in the NIR. Also, although NMVOC emissions from 3.A to 3.D are reported, the associated background AD are not provided. The ERT recommends that Romania provide the missing information in this sector, at least in the NIR.

IV. AGRICULTURE

A. Sector overview

63.   In 2002, the Agriculture sector accounted for 8.1 per cent of total national GHG emissions, reaching 11,023.34 Gg CO_2 equivalent. Over the period 1989–2002, emissions from the sector decreased by 57.6 per cent. In 2002 CH_4 emissions contributed 63.7 per cent to the CO_2 equivalent emissions from the sector and N_2O emissions the remaining 36.3 per cent.

64.   The methodological description of the Agriculture sector has been improved and previous inconsistencies between the NIR and the CRF have been removed. Romania has completed most of the relevant Agriculture tables for the years 1989–2002. However, N_2O emissions from the cultivation of histosols have not been estimated. The previous review recommended that the area of histosols in the country should be checked and documented in the next NIR. However, the area for histosols still seems to be missing. Sectoral background data tables are sometimes only partially filled in (e.g., table 4.A, 4.B(a)); however, usually sufficient information is provided to make it possible to calculate the IEFs.

65.   The ERT recommends that Romania complete all the background data tables throughout the Agriculture sector for the period 1989–2002, using the notation keys correctly and providing additional information in the documentation boxes. It also recommends Romania to try to derive estimates for the area of histosols and report the corresponding N_2O emissions.

66.   The time series for CH_4 emissions from 4.C Rice Cultivation and 4.F Field Burning of Agricultural Residues have been recalculated, as well as N_2O emissions from manure management and agricultural soils. Recalculations in particular for 4.C Rice Cultivation were proposed by the previous review and the recalculations performed have improved the consistency of the time series.

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[4] EMEP/CORINAIR Atmospheric Emission Inventory Guidebook, Volume 1, 2nd edn (1 September 1999, B3314-21 and B3314-23).

B. <u>Key sources</u>

<u>Enteric fermentation – CH$_4$</u>

67.   Romania uses a tier 1 method with aggregate AD that include both cattle and buffalo populations under the category Cattle, and no further disaggregation of animal categories is performed. As enteric fermentation is a key source, Romania should make further efforts to implement the tier 2 method for assessing CH$_4$ emissions in this source category and try to establish an improved disaggregation of the cattle population.

68.   The 1990–2002 value of the CH$_4$ IEF for Sheep (5 kg CH$_4$/head/year) is among the lowest of reporting Parties (the range is 4.15–17.17 kg CH$_4$/head/year) and lower than the IPCC default value (8 kg CH$_4$/head/year). The 1990–2002 value of the CH$_4$ IEF for Swine (1 kg CH$_4$/head/year) is the lowest of reporting Parties (the range is 1.003.41 kg CH$_4$/head/year) and lower than the IPCC default value (1.5 kg CH$_4$/head/year). Additional explanations for the low IEFs should be provided. In its response to the 2004 previous review stages, Romania explained that the default EF for developing countries is used. It should explain further why the default for developing countries is considered adequate under the national circumstances. The IEFs would be easier to understand if Romania could provide complete information in sectoral background data table 4.A (e.g., for average daily feed intake or CH$_4$ conversion). This should be possible provided that Romania uses default parameters. In its response to the draft review report, the Party announced that further explanations will be provided and that it intends to use a higher tier methodology for this key source.

<u>Manure management – CH$_4$</u>

69.   Romania uses the tier 1 method with aggregate AD. As CH$_4$ from Manure Management is a key source, Romania should undertake further efforts to implement the tier 2 method for assessing these CH$_4$ emissions.

70.   The 1990–2002 value of the CH$_4$ IEF for Sheep (0.16 kg CH$_4$/head/year) is among the lowest of reporting Parties (the range is 0.10–1.73 kg CH$_4$/head/year) and lower than the IPCC default value for temperate conditions (0.19 kg CH$_4$/head/year). The 1990–2002 value of the CH$_4$ IEF for Horses (1.6 kg CH$_4$/head/year) is lower than the IPCC default value for temperate conditions (2.1 kg CH$_4$/head/year). The NIR explains that the default EFs for developing countries, for temperate climates, have been used for Sheep, Horses and Poultry. Additional explanations should be provided for the low IEFs and as to why the default values for developing countries are considered adequate under the national circumstances.

<u>Agricultural soils: direct soil emissions – N$_2$O</u>

71.   Romania uses the tier 1 method with default parameters. As N$_2$O from Agricultural Soils is a key source, it is desirable that Romania make further efforts to develop country-specific EFs.

72.   The 2002 value of the fraction of crop residues burned (Frac$_{BURN}$) (0.25 kg N/kg crop-N) is higher than the IPCC default value (0.1 kg N/kg crop-N). The Party should explain why the default value for developing countries has been used. The 1990–2002 value of the fraction of livestock nitrogen (N) excreted and deposited onto soil during grazing (Frac$_{GRAZ}$) (0.02 kg N/kg N excreted) has been identified as an outlier. It is the lowest of reporting Parties (the range is 0.02–0.65 kg N/kg N excreted). This value should be explained. In its response to the draft review report the burning of crop residues will be further considered taking into account that new information indicates that this activity is being performed at a smaller scale than previously thought.

73.   The 1990–2002 value of the fraction of N in N-fixing crops (Frac$_{NCRO}$) (0.03 kg N/kg of dry biomass) is among the highest of reporting Parties (the range is 0.008–0.0415 kg N/kg of dry biomass) and higher than the IPCC default value (0.015 kg N/kg of dry biomass). The ERT was of the view that there might be a mistake, and it seems that the values for Frac$_{NCRO}$ and the fraction of N in non-N-fixing crops (Frac$_{NCRBF}$) should be exchanged in table 4.D.

C. **Non-key sources**

Manure management – N$_2$O

74.   From 1989 to 2002, in table 4.B(b), the sum of animal population multiplied by N excretion of corresponding animal types does not equal the total N excreted under different manure management systems of all animal types listed. Total N excretion based on population multiplied by N excretion per animal is 10 times higher than the total from all manure management systems. This mistake should be corrected.

75.   Mules and Asses are not included in the calculation of N$_2$O emission from Manure Management; however, this should only be a minor contribution to the total emissions.

Field burning of agricultural residues – CH$_4$

76.   The CH$_4$ IEFs for sugar beet vary across the time series. Between 1989 and 2000 the IEF drops by a factor of 10. The CH$_4$ IEF for oats in 1992 is much higher than that for all other years, and no explanation has been provided. The N$_2$O IEF for rice in 2001 is lower than in any other year by a factor of 10. The crop type for Other crop residues is not specified in table 4.F in 1993 (the bottom left-hand cell is left empty). The ERT recommends that Romania explain these fluctuations and improve its reporting.

V. LAND-USE CHANGE AND FORESTRY

A. **Sector overview**

77.   The LUCF sector is a relatively stable sink, with annual mean removals of 17,324.81 Gg CO$_2$ equivalent with a standard deviation of 1,813.23 Gg CO$_2$ equivalent over the period 1989–2002. CO$_2$ removals increased by 28.4 per cent from the base year (1989) to 2002, largely due to a decrease in the commercial harvest rate. The proportion of LUCF net emissions to total CO$_2$ emissions in the period (1989–2002) varied from 6.8 per cent in 1989 to 20.1 per cent in 1999, being 15.1 per cent in 2002. No explanation is given for the 15 per cent decrease in removals or the similar increase in volume harvested during the period covered by this inventory.

78.   Estimates of emissions and removals are provided in tables 5.A Changes in Forest and Other Woody Biomass Stocks and 5.B Forest and Grassland Conversion. The other sources/sinks are noted as "NO" or "NE". In addition, The NIR includes comments on uncertainties and time-series consistency; source-specific QA/QC and verification; source-specific recalculations, including changes made in response to the review process; and source-specific planned improvements for each category.

79.   The data on emissions from harvested wood have been entered incorrectly as emissions from temperate forests. In 2002, CRF table 5 reports net removals of 15,971 Gg CO$_2$ plus other trace GHG emissions. The NIR table 2.3.1 reports removals of 15,960 Gg CO$_2$ equivalent from LUCF. The ERT recommends that Romania reconcile these inconsistencies.

80.   There is an inconsistency between tables 2.2.1 and 2.3.1 in the NIR, possibly due to a mistake in the units reported (at least for LUCF). In table 2.2.1 the unit is Gg CO$_2$ equivalent; the unit in table 2.3.1 should be Gg CO$_2$.

81.   Although Romania has introduced several improvements in its 2004 NIR, the description of the LUCF methodology provided is still limited (in particular for average annual biomass growth). With the information provided it was impossible for the ERT to reproduce the results presented in the NIR. The ERT recommends Romania to include a complete description of the data sources and the calculations undertaken to derive estimates of emissions and removals. The NIR should include a description of the methodologies adopted by the Forest Research Institute to generate the data.

82.   For the consistency of the time series, the inventories for the period 1989–2001 have been recalculated. The ERT acknowledges the effort the Party has made to recalculate the entire time series.

B. <u>Sink and source categories</u>

<u>Changes in forest and other woody biomass stocks</u>

83.   The 2003 review recommended that Romania should develop country-specific factors for annual average growth instead of using the IPCC default value for annual average above-ground biomass uptake by natural regeneration in temperate forests. For 2002, Romania has used country-specific values provided by the Forest Research Institute. For coniferous forest, the annual growth rate is estimated as 3.25 t dm/ha, with density 0.44 t dm/m^3; and for deciduous forest the respective values are 2.65 t dm/ha and 0.61 t dm/m^3. More information is required on how these values have been derived. Removals from non-forest trees have not been estimated despite a recommendation from the 2003 review.

84.   It is not easy to understand the dynamics of the forest land, or to see how forest area has remained constant despite reported deforestation. In the 2003 submission, the ERT noted that plantations were reported as "NO", although afforestation was reported in the Romanian *Statistical Yearbook 2001*. In the 2004 submission, Romania indicates "NE" for plantations. The NIR does not explicitly distinguish between coniferous and broadleaf forest types; only the CRF does this. The increments in forest area from 2001 to 2002 are essentially commercial evergreen and commercial deciduous, but the NIR is not clear on this point. It is not clear from the forest area reported what has been deforested and what has been reforested. More transparent information should be provided in the NIR.

85.   The NIR reports using a default carbon (C) fraction of 0.5, but CRF table 5.A reports 0.57 for the C fraction in harvested biomass. These differences should be clarified.

86.   No EF is provided in table 5.A for fuelwood. The emissions are therefore not included in the net emissions calculated. Emissions would rise (hence removals would fall) by approximately 15 per cent if these emissions were added to the emissions assumed from commercial harvest.

87.   Romania should report the CO_2 emissions under Other (Harvested Wood), instead of under Temperate Forests.

<u>Forest and grassland conversion</u>

88.   The ERT considers that it would be useful to include in the NIR a clear description of what happens on deforested land in order to explain the data and factors in the CRF – how much on-site biomass is commercially harvested from different types of forest, how much is burned, and how emissions are calculated.

89.   There is little support given for the estimated annual value of 1,700 ha deforested: further explanations should be provided. No data are available for grassland conversion, which has therefore not been estimated.

90.   In 2003 the ERT noted that forest fires were not reported in the Romanian *Statistical Yearbook 2001*. For the first time, Romania reports CO_2 emissions from on- and off-site burning and decay as well as non-CO_2 GHG emissions (CH_4, carbon monoxide (CO), N_2O). However, the EFs used to estimate the non-CO_2 emissions using the IPCC methodology are not clear and should be more transparent. In the additional information table provided in table 5.B, the carbon fraction of above-ground biomass (average) off site is 1.76. This is not correct and should be amended.

<u>Abandonment of managed lands</u>

91.   The NIR explains that this practice does not occur in the country. The notation key "NO" therefore seems more appropriate than "NE".

CO$_2$ emissions and removals from soils

92.   Emissions are reported as "NE" due to a lack of data from 1989 to 2002.

VI. WASTE

A. Sector overview

93.   In 2002, emissions from the Waste sector accounted for 4.4 per cent of total national GHG emissions. Emissions from the sector decreased by 5.6 per cent between the base year (1989) and 2002. CH$_4$ emissions from Solid Waste Disposal on Land and Waste-water Handling were identified as key sources by both level and trend assessment.

94.   All the CRF tables for the Waste sector from 1989 to 2002 have been provided. However, CO$_2$ emissions from Solid Waste Disposal on Land, N$_2$O emissions from Waste-water Handling and CO$_2$ emissions from Waste Incineration for the period 1989–2000 are not reported. The appropriate notation keys should be used for these categories and all relevant years.

95.   Information on the methodologies and parameters used for estimating emissions from the Waste sector is briefly provided in the NIR. Transparency has improved compared to the 2003 submission in response to the 2003 in-country review report. The ERT recommends that more detailed information on estimation methodologies be provided in order to achieve greater transparency.

96.   Emissions from the Waste sector have been recalculated because of the revision of methodology for estimating CH$_4$ emissions from Solid Waste Disposal on Land and Waste-water Handling. As a result, the estimated emissions from the Waste sector in 2001 have decreased by 36.9 per cent compared to the 2003 submission.

B. Key sources

Solid waste disposal on land – CH$_4$

97.   CH$_4$ emissions from Solid Waste Disposal on Land in 2002 amounted to 4,072.94 Gg CO$_2$ equivalent. They had decreased by 5.7 per cent compared to 1989 and by 5.2 per cent compared to 2001. The trend was due to the decrease in the amount of municipal solid waste (MSW) disposed annually at solid waste disposal sites (SWDS), which decreased from 3,928 Gg in 1989 to 3,704 Gg in 2002.

98.   CH$_4$ emissions from Solid Waste Disposal on Land have been recalculated for the years 1989–1991 with a view to applying a consistent methodology for the whole period: the Party had previously used different methodologies for the years 1989–1991 and 1992–2001. These recalculations have been made without disaggregating by type of disposal site. Although the Party explained that the reason for the aggregation was the lack of data, the ERT recommends it to provide more detailed information on the aggregated estimation in the NIR and to verify the quality of the estimation if possible.

99.   CH$_4$ emissions from Solid Waste Disposal on Land have been estimated by the tier 1 method described in the IPCC Guidelines. Since this was identified as a key source, the tier 2 method should be adopted in accordance with the IPCC good practice guidance. The Party has already recognized the need to collect detailed data on waste disposal in order to implement the tier 2 method. The ERT recommends the Party to consider implementing the tier 2 method as early as possible.

100.   Almost all the parameters used in the estimation are IPCC default values. Some parameters are explained in the NIR. The Party is encouraged to describe the AD used, the parameters and the rationale for selecting the values in as much detail as possible in the NIR. The Party has used 0.77 as the fraction of degradable organic carbon dissimilated (DOC$_F$), which is the default value when lignin carbon is excluded. However, during the previous in-country review it was found that lignin was likely to be included in waste in SWDS. The Party is encouraged to review the value and investigate the country-specific DOC$_F$.

101.   The fraction of CH_4 in landfill gas is not reported due to the lack of AD on CH_4 recovery. The Party has attempted to recover energy from the new landfill sites, as indicated in the national waste management plan. It is therefore encouraged to make an effort to collect data on energy recovery in future.

102.   The fraction of degradable organic carbon (DOC) in MSW in 2002 was 0.17 according to the NIR. However, the fraction of DOC in MSW shown in the additional information table in the CRF is 0.6. This may be a mistake to be corrected.

103.   Urban population is not reported for the period 1993–2002. In addition, the Party has entered total population data in the cell instead of the population in number of thousands. The ERT encourages the Party to enter the population figures in the appropriate unit (number of thousands). The same problem was noted for the category Waste-water Handling.

Waste-water handling – CH_4

104. CH_4 emissions from Waste-water Handling in 2002 were 1,601.18 Gg CO_2 equivalent and had decreased by 5.5 per cent since 1989 and by 0.02 per cent compared to 2001. CH_4 emissions from Waste-water Handling were identified as a key source by both level and trend assessment.

105. CH_4 emissions from Waste-water Handling have been estimated using the IPCC method and default parameters. Since CH_4 emissions from this category are a key source, the ERT recommends that the country-specific parameters be investigated and applied if possible to improve accuracy.

106. CH_4 emissions from Waste-water Handling have been recalculated for the period 1989–2001 because the methane correction factor (MCF) has been revised. The Party has carried out the recalculation in response to the 2003 in-country review report and explains the reasons for the recalculation in the NIR and CRF table 8(b). This has improved the accuracy and transparency of the reporting of this category.

107.   The population reported in CRF table 6.B for 2002 is larger than the value indicated in CRF table 6.A. The Party should report the correct figure in both tables.

C. **Non-key sources**

6.C Waste incineration

108.   Emissions from Waste Incineration are reported as "NE" because no data are available. The ERT suggests that the Party make an effort to estimate emissions from this source since waste incineration is conducted in Romania, even though the amount of waste incinerated may be small.

ANNEX 1: MATERIALS USED DURING THE REVIEW

A. Support materials used during the review

2004 submission including a set of CRF tables for 1989–2002 and an NIR.

UNFCCC secretariat (2003). "Report of the individual review of the greenhouse gas inventory of Romania submitted in the year 2003 (In-country review)." FCCC/WEB/IRI(2)/2003/ROM (available on the secretariat web site <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/inventory_review_reports/application/pdf/romrep03.pdf>).

UNFCCC secretariat. "2004 Status report for Romania" (available on the secretariat web site <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/inventory_review_reports/application/pdf/rou04.pdf>).

UNFCCC secretariat. "Synthesis and assessment report of the greenhouse gas inventories submitted in 2003. Part I": FCCC/WEB/SAI/2003 (available on the secretariat web site <http://unfccc.int/program/mis/ghg/s_a2004.html>) and Part II – the section on *Romania* (unpublished).

UNFCCC secretariat. "Handbook for review of national GHG inventories." Draft 2004 (unpublished).

UNFCCC secretariat. "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories", "Part II: UNFCCC reporting guidelines on national communications" and "Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention." FCCC/CP/1999/7 (available on the secretariat web site <http://unfccc.int/resource/docs/cop5/07.pdf>).

UNFCCC secretariat. "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" and "Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention." FCCC/CP/2002/8 (available on the secretariat web site <http://unfccc.int/resource/docs/cop8/08.pdf>).

UNFCCC secretariat. Database search tool – *Locator* (unpublished).

IPCC. *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, 2000* (available on the following web site: <http://www.ipcc-nggip.iges.or.jp/public/gp/english>).

IPCC/OECD/IEA. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, volumes 1–3, 1997* (available on the following web site: <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>).

B. Additional materials

No additional information or materials were requested by the ERT during this review.

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