**UNITED
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**UNFCCC Framework Convention
on Climate Change**

Report of the individual review of the greenhouse gas inventory of Romania submitted in 2005*

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* In the symbol for this document, 2005 refers to the year in which the inventory was submitted, and not to the year of publication.

CONTENTS

<u>Annex</u>

I. Overview

A. Introduction

1.   This report covers the centralized review of the 2005 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. The review took place from 10 to 15 October 2005 in Bonn, Germany, and was conducted by the following team of nominated experts from the roster of experts: Generalists – Mr. Ignacio Sánchez García (Spain) and Mr. Audun Rosland (Norway); Energy – Mr. Scott McKibbon (Canada), Mr. Hristo Vassilev (Bulgaria) and Mr. Hongwei Yang (China); Industrial Processes – Mr. Menouer Boughedaoui (Algeria) and Mr. Manfred Ritter (Austria); Agriculture – Mr. Sergio González (Chile) and Ms. Lilian Portillo (Paraguay); Land Use, Land-use Change and Forestry (LULUCF) – Mr. Charalampos Petsikos (Greece) and Ms. María José Sanz Sánchez (Spain); Waste – Mr. Seungdo Kim (Republic of Korea) and Ms. Tatiana Tugui (Republic of Moldova). Mr. Sergio González and Mr. Audun Rosland were the lead reviewers. The review was coordinated by Mr. Sergey Kononov and Ms. Astrid Olsson (UNFCCC secretariat).

2.   In accordance with the "Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention", 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 2005 submission, Romania submitted a complete set of common reporting format (CRF) tables for the years 1989–2003[1] and a national inventory report (NIR). Romania provided the new set of LULUCF reporting tables as required by decision 13/CP.9. Where needed the expert review team (ERT) also used previous years' submissions, additional information provided during the review and other information. The full list of materials used during the review is provided in the annex to this report.

C. Emission profiles and trends

4.   In 2003, the most important GHG in Romania was carbon dioxide (CO_2), contributing 77.9 per cent to total[2] national GHG emissions, followed by methane (CH_4), 16.6 per cent, and nitrous oxide (N_2O), 5.0 per cent. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) taken together contributed 0.4 per cent of the overall GHG emissions in the country; among these gases, the share of HFCs and SF_6 was extremely low (less than 0.003 per cent taken together). The Energy sector accounted for 77.4 per cent of total GHG emissions, followed by Industrial Processes (10.5 per cent), Agriculture (8.4 per cent) and Waste (3.5 per cent). Total GHG emissions amounted to 142,905 Gg CO_2 equivalent in 2003; they decreased by 46.1 per cent from the base year (1989) to 2003. Over the period 1989–2003, emissions from all sectors, and for all gases, decreased.

D. Key categories

5.   Romania reports a key category tier 1 analysis, both level and trend assessment, as part of its 2005 submission. Romania did not include the LULUCF categories in its analysis. The key category

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[1] The year 1989 is the base year for Romania.

[2] 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.

analyses performed by the Party and the secretariat[3] produced identical results except for Stationary Combustion: biomass – CH_4. This category is a key category on trend assessment according to the secretariat, but Romania does not report it as such.

6. At present Romania uses mainly tier 1 methods and default factors, and the key category analysis does not play a central role in the choice of priorities for inventory improvement. The ERT recommends that Romania move to higher-tier methods, depending on available resources, and to use the key category analysis in the development of its inventory.

E. Main findings

7. The inventory of Romania has improved notably compared to the previous years' submissions. Some of the recommendations made by previous reviews have been followed, so that the completeness, transparency and consistency of the inventory have improved. However, the ERT noted that these efforts should continue, since the inventory still has areas where conformity with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" (hereinafter referred to as the revised UNFCCC reporting guidelines) and/or 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) has not been achieved. The main remaining weaknesses include the lack of a formal quality assurance/quality control (QA/QC) programme and the absence of a quantitative assessment of uncertainty. In addition, transparency must be enhanced and the completeness of the inventory improved (see paragraphs 8–14).

F. Cross-cutting topics

1. Completeness

8. The inventory covers all gases for the whole period 1989–2003 and it is complete in terms of geographical coverage. The ERT noted that Romania has submitted, for the first time, estimates of HFCs, PFCs and SF_6 from Consumption of Halocarbons and SF_6, and CO_2 emissions from Glass Production.

9. The ERT also noted that there are still some gaps in the inventory, such as the absence of estimates for Waste Incineration. The ERT recommends that Romania address the sources that are not estimated at present.

10. Emissions from international bunker fuels are separated from the corresponding national categories using an expert assessment. The ERT recommends that Romania collect the information needed to disaggregate bunker fuel emissions from domestic civil aviation and navigation. The ERT noted that the current approach may lead to total national emissions being overestimated.

2. Transparency

11. Romania's NIR is structured as mandated by the revised UNFCCC reporting guidelines, except for the annexes. The NIR does not include the following annexes: a detailed discussion on

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[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 Intergovernmental Panel on Climate Change *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Key categories according to the tier 1 trend assessment were also identified for those Parties that provided a full set of CRF tables for the year 1990. 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.

methodologies; a description of the CO_2 reference approach and comparison with the sectoral approach; an assessment of completeness; and a quantitative evaluation of uncertainties. The ERT recommends that Romania further document the methods used and the selection of emission factors (EFs), and to provide the required annexes to the NIR.

12. The notation keys are sometimes used incorrectly: for example, "not estimated" ("NE") is used for international bunker emissions, whereas "included elsewhere" ("IE") should be used. The CRF table 9, on notation keys, should be corrected: some rows are repeated; in others the explanations are missing. The ERT encourages Romania to improve the use of the notation keys throughout the CRF tables and to revise table 9.

13. In the LULUCF sector, estimates for the new LULUCF categories seem somewhat disconnected from the old categories 5.A, 5.B, 5,C and 5.D. The assessment of the estimates for this sector would be facilitated by "mapping" the estimates in the new categories to the old categories.

14. The NIR does not clearly explain the reasons behind the trends in GHG emissions and the ERT recommends that Romania better explain trends at the source level in the NIR, especially when large fluctuations are observed.

3. Recalculations and time-series consistency

15. The ERT noted that recalculations for 1989–2003 had been undertaken to take into account recommendations from previous reviews. The effect of the recalculations on total GHG emissions (without LULUCF) was an increase of 0.88 per cent in the estimates for the base year and a decrease of 0.45 per cent for 2002. The downward trend is therefore slightly increased.

16. For the first time, Romania has included in the NIR a section on recalculations, and the ERT welcomes this improvement. However, the reasons for the recalculations are not always clearly explained. Given that the inventory is in a process of development in which recalculations play a significant role, the ERT recommends that Romania pay special attention to this section of the NIR.

4. Uncertainties

17. Romania does not provide quantitative or qualitative uncertainty estimates in the NIR. The ERT recommends that Romania implement an IPCC tier 1 uncertainty analysis as soon as practicable, and present it in the NIR.

5. Verification and quality assurance/quality control approaches

18. Romania has not implemented a QA/QC programme. Only general QC activities related to the data processing, archiving and reporting are performed. The NIR states that a QA/QC plan will be set up when the national system under Article 5.1 of the Kyoto Protocol is put in place. The Party confirmed during the review that the National System would be part of the National Action Plan on Climate Change, to be adopted by September 2006. The ERT supports Romania's plans to establish a framework for formatting, collecting, processing and presentation of the information necessary for the preparation of the national inventory and recommends that Romania describe it in the next NIR.

6. Follow-up to previous reviews

19. The inventory of Romania is in a process of continuing development that began with the 2003 in-country review. Romania has improved the completeness and transparency of the inventory in response to previous reviews.

G. Areas for further improvement

1. Identified by the Party

20.   The NIR identifies areas for improvement only at the source category level. A general section on future developments is lacking.

2. Identified by the ERT

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

   (a)   Improve institutional arrangements; the implementation of the national system is an excellent opportunity in this regard;

   (b)   Provide quantitative uncertainty estimates;

   (c)   Improve transparency by completing the NIR (as detailed in paragraph 11); better explain trends at the source category level when fluctuations are significant; and check the use of notation keys throughout the inventory;

   (d)   Develop a QA/QC management system;

   (e)   Provide estimates for sources that are still not estimated;

   (f)   Disaggregate emissions from international bunker fuels from the national totals;

   (g)   Use the key category analysis to establish priorities in inventory development.

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

II. Energy

A. Sector overview

23.   In 2003, the Energy sector in Romania accounted for 77.4 per cent of total GHG emissions. Energy Industries was the major category in the sector, accounting for 47.1 per cent of sectoral emissions. Manufacturing Industries and Construction, Transport, and Other Sectors contributed 21.7 per cent, 10.9 per cent and 10.4 per cent, respectively, to the total Energy sector emissions in 2003.

24.   During the period 1989–2003, GHG emissions from the Energy sector decreased by 38.9 per cent, primarily due to decreases in Energy Industries (–49.8 per cent) and Manufacturing Industries and Construction (–21.0 per cent) because of Romania's transition to a market economy. GHG emissions from Energy increased by 5.8 per cent between 2002 and 2003 as a result of increased emissions in the Energy Industries and Other sectors.

25.   The CRF tables for 2003 are complete. Estimates for most gases and sources are included consistently with the requirements of the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines). For Petroleum Refining and Manufacture of Solid Fuels and Other Energy Industries (1.A.1.b and 1.A.1.c), CO_2 emissions from liquid fuels are reported as "IE" and emissions (CO_2, CH_4, N_2O) from all other fuels are reported as "NA" ("not applicable"). For Manufacturing Industries and Construction, CO_2, CH_4 and N_2O emissions are reported for only one subsector – Other, whereas "NA" is used for all other subcategories instead of the more appropriate "IE". Emissions from international bunker fuels are reported as "NE".

26.   Romania has improved its inventory since the previous (2004) submission. Some deficiencies in the reporting of the Energy sector still exist, namely the lack of full documentation on data sources used and the EFs applied in the preparation of the inventory. Romania noted that these would be taken into account in the course of planned improvements relating to the disaggregation of fuel consumption based on the IPCC categories. The ERT also recommends that Romania better explain in the NIR the emission trends for those Energy sector categories where inter-annual or overall changes are large.

27.   Romania identifies the following sector-specific improvements in its NIR: disaggregating fuel consumption based on the IPCC categories; estimating Road Transportation emissions by the COPERT model; and using, as far as possible, higher-tier methods and country-specific EFs.

B. Reference and sectoral approaches

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

28.   Energy consumption and CO_2 emissions in 2003 were 4.1 per cent lower and 1.8 per cent higher, respectively, for the reference approach than for the sectoral approach. The differences in the consumption of liquid and solid fuels were higher (5.4 and 21.6 per cent, respectively). The consumption of gaseous fuels is 7.3 per cent lower in the reference approach. Romania lists only one reason for these discrepancies in the NIR: "The Reference Approach deals with the non-energy uses of fuels as if they are combustion activities". The ERT recommends that Romania investigate other possible reasons.

29.   The ERT found a discrepancy in the 2003 CRF table for the reference approach: refinery gas is not included in liquid fuels, as it should be. Also the figures for the production and import of refinery gas are exactly the same, which makes them questionable.

30.   The NIR does not explain the evolution over time of the differences in activity data (AD) and CO_2 emissions between the reference approach and the sectoral approach for liquid and solid fuels (1989–2003). The ERT encourages Romania to check the reasons for these differences and explain them in its next NIR.

2. International bunker fuels

31.   International bunker fuels and associated emissions are not reported in the CRF or the NIR. According to Romanian expert estimates, fuel consumption for domestic aviation is about 20 per cent of the total consumption of aviation fuels. The ERT strongly encourages Romania to separate emissions from international bunker fuels from emissions from fuels for domestic use, and to explain clearly how that is done in its next NIR.

3. Feedstocks and non-energy use of fuels

32.   The NIR provides a short description of feedstocks and non-energy use of fuels. The Party explained that the national energy balance reports only aggregated data on non-energy use of fuels. There are no data regarding feedstocks and their use in the specific sectors. The fraction of carbon stored was used for the available data in accordance with the Revised 1996 IPCC Guidelines.

C. Key categories

1. Stationary Combustion: all fuels – CO_2

33.   A tier 1 method is used for calculating CO_2 emissions from Energy Industries. The CO_2 implied emission factors (IEFs) for gaseous fuels are higher than the IPCC default EF, for example, 58.9 t/TJ in 2003 as opposed to 56.1 t/TJ. Romania should explain the reason for this discrepancy.

34.   The national energy balance is prepared using the CAEN (National Economy Activities Classification) codes for fuel consumption. These codes are different from the IPCC source categories. Romania should establish a correspondence between the CAEN codes and the IPCC categories in order to report disaggregated emissions.

35.   For Manufacturing Industries and Construction, IPCC default EFs and a tier 1 method are used for calculating CO_2 emissions. The trends in CO_2 emissions and AD are closely related, except for one subcategory, Others. For Others, trends in emissions and AD differ due to the difference between the domestic CAEN codes and the IPCC categories.

36.   For the category Other Sectors, the NIR does not explain a very high IEF (83.6 t/TJ) for CO_2 emissions from gaseous fuels in 1991. The ERT believes that this is an error, which is systematically repeated in the Party's previous inventories. During the review, Romania confirmed that this is an error that will be corrected in the next submission.

37.   The NIR does not explain the low IEF (62.8 t/TJ) for CO_2 emissions from liquid fuels in Other Sectors in 2002. The ERT is of the opinion that this is due to the large share of liquefied petroleum gas (LPG) in residential fuel consumption. During the review Romania confirmed the opinion of the ERT and noted that the share of LPG in liquid fuels was 98.8 per cent in 2002 and 83.1 per cent in 2003.

2. Mobile Combustion – Road Vehicles: liquid – CO_2, CH_4, N_2O

38.   Emissions are estimated using an IPCC tier 1 method for CO_2, CH_4 and N_2O. GHG emissions are calculated using aggregated data on fuel from the national energy balance. The NIR reports on the dissemination of the questionnaires necessary for implementation of the COPERT model for the evaluation of road transport emissions. The ERT encourages Romania to continue this work in order to be able to use the COPERT model and thus get more accurate emission estimates, if all the necessary data can be collected.

3. Fugitive Emissions: Coal Mining and Handling – CH_4

39. CH_4 emissions from Coal Mining and Handling are estimated using an IPCC tier 1 method. As this is a key category, the Party is encouraged to investigate whether tier 2/3 methods can be applied.

4. Fugitive Emissions: Oil and Gas Operations – CH_4

40. CH_4 emissions from Oil and Natural Gas Operations decreased from 1989 to 2003 by 63.7 per cent. The ERT encourages Romania to explain this substantial reduction in its next submission.

41.   Following the recommendations of the previous (2004) review, Romania has changed the CH_4 EFs for Oil – Refining/Storage, and for Venting – Gas. The ERT encourages Romania to check whether the oil and gas operation systems in Romania are similar to those in North America, including level of emission controls, maintenance and so on. If that is the case, the ERT recommends that Romania consider using the updated default EFs included in the IPCC good practice guidance.

42. CH_4 emissions from Venting and Flaring are reported only for gas systems. The ERT encourages Romania to estimate the volumes vented and flared for both gas and oil, and to calculate the resulting emissions using a tier 1 method, as recommended by the IPCC good practice guidance.

D. Non-key categories

1. Other Transportation: all fuels – CO_2

43.   It is not clear from the NIR or the CRF if only emissions from Agriculture/Forestry/Fisheries are included in this source category. The ERT recommends that Romania clarify this in its next submission.

44. Estimates of CO_2 emissions from off-road vehicles used in Agriculture/Forestry/Fisheries are not explained transparently in the NIR or in the CRF tables. The ERT noted that, according to the Revised 1996 IPCC Guidelines, these emissions should be included in the source category Other Sectors – Agriculture/Forestry/Fisheries. The ERT recommends that Romania report these emissions in the correct source category in its next submission.

2. Stationary Combustion: biomass – CH_4

45. CH_4 emissions from biomass are 84.1 per cent of the total CH_4 emissions from the Energy sector excluding fugitive emissions. From this, more than 77 per cent comes from combustion in the Residential sector. It was not clear to the ERT what is included in the fuel biomass, for example, wood or wood residue and waste gas. The ERT encourages Romania to include this information in its next NIR.

III. Industrial Processes and Solvent and Other Product Use

A. Sector overview

46. In 2003, total GHG emissions from the Industrial Processes sector in Romania amounted to 15,006 Gg CO_2 equivalent, or 10.5 per cent of national total emissions. The emissions decreased by almost 70.5 per cent between the base year (1989) and 2003. The main emission sources in 2003 were the production of iron and steel, cement, lime, ammonia and nitric acid.

47. The ERT recognizes the improvements in the inventory reporting, which follows most of the recommendations of previous reviews. However, emissions from some categories are still not estimated ("NE" is reported), for example, for Asphalt Roofing – CO_2; Road Paving with Asphalt – CO_2; Other Production – CO_2; and potential emissions of HFCs, PFCs and SF_6. The ERT encourages Romania to estimate emissions from these sources.

48. Romania mainly uses tier 1 methodologies to estimate GHG emissions for the Industrial Processes sector. The ERT encourages the Party to move to higher-tier methodologies when the necessary data and/or resources are available.

B. Key categories

1. Lime Production – CO_2

49. Following the recommendations of previous reviews, Romania has approximated dolomite production for the years 1989–1991 and 2003. The ERT encourages Romania to document the methodology used to approximate the data for these years and to explain why these data cannot be taken from national statistics.

2. Nitric Acid Production – N_2O

50. Previous 2005 review stages identified large inter-annual changes of N_2O emissions from Nitric Acid Production for 1998–2001. The ERT encourages Romania to further investigate these variations by documenting production figures for the whole time series, accompanied by a trend assessment.

3. Iron and Steel Production – CO_2

51. Following the recommendations of previous reviews, Romania has used an IPCC tier 2 method including a correction for carbon stored. However, the relevant CRF sectoral background data table contains several empty cells. Additionally, there are considerable changes in the IEF for pig iron between 1990 (1.66 t/t) and 2003 (1.02 t/t). This may be linked to the lack of statistical data. The NIR assumes that all iron produced is used for steel production. The ERT encourages Romania to investigate

the possibility of completing the sectoral background table and distinguishing between steel and pig iron production.

52.   The Party states in the NIR that it will investigate the possibility of obtaining plant-specific data for iron and steel production. The ERT supports this intention.

C. Non-key categories

Ferroalloy Production – CO_2 and CH_4

53.   The NIR states that ferroalloy production is included in the national statistics only for the years 1992–2000 and 2002–2003, thus preventing Romania from estimating emissions from this source. Additionally, Romania assumes that all CO_2 emissions from coke used as reducing agent are already considered under Iron and Steel Production. The ERT encourages Romania to further investigate the possibility of obtaining statistical data on ferroalloy production. If that is not possible, the ERT recommends that the Party use the methods provided in the IPCC good practice guidance to estimate emissions for the missing years and to document this in the next NIR.

IV. Agriculture

A. Sector overview

54.   In 2003, GHG emissions from the Agriculture sector amounted to 11,946 Gg CO_2 equivalent, or 8.4 per cent of total national emissions. Over the period 1989–2003, the emissions decreased by 56.1 per cent. The share of CH_4 in GHG emissions from Agriculture was 60.1 per cent in 2003, and the share of N_2O 39.9 per cent.

55.   The submission is complete in terms of gases, sources, and years covered, and consistent across the time series. Some internal sectoral verification and checking activities are performed. No information on sectoral archiving or documentation is reported in the NIR.

56.   The ERT encourages the Party to develop further the data collection system to allow for the use of higher-tier methods for key categories. Romania is also recommended to formalize the sectoral QA/QC checks that are performed, to evaluate sectoral uncertainties and to report on sectoral documenting and archiving procedures.

B. Key categories

1. Enteric Fermentation – CH_4

57.   Romania uses a tier 1 method with cattle and buffalo populations disaggregated on the basis of expert assumptions. During the review, Romania explained that this disaggregation will be documented for the next submission. As this is a key category, the ERT encourages Romania to implement a higher-tier method, as recommended by the IPCC good practice guidance, depending on the availability of data and resources.

58.   The EFs for the livestock categories, except cattle, are the IPCC default values for developing countries. The ERT recommends that Romania review the EFs used, to provide information on the choice of the EFs in the NIR, and if necessary to recalculate the emissions.

2. Manure Management – CH_4

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

60.   The EFs for sheep and swine are low compared with the IPCC default values for developed countries as well as those of other reporting Parties. The EFs for sheep, goats, horses and poultry are the IPCC default values for developing countries. The ERT recommends that Romania review the IEFs, to provide information on the choice of the EFs in the NIR, and if necessary to recalculate the emissions.

3. Agricultural Soils – N_2O

61.   Romania uses a tier 1 method with default parameters. The ERT encourages Romania to develop country-specific EFs and parameters for this category, depending on the availability of data and resources.

62.   Romania reports the use of IPCC default fractions. However, the ERT noted some inconsistencies in the values for fractions: a value of 0.25 for $Frac_{BURN}$, higher than the IPCC default (0.1), appears in the CRF tables from 1990 to 2001, although the Party clarified that the default value was already used for the entire time series. The values of $Frac_{NCRO}$ and $Frac_{NCRBF}$, which were erroneously swapped in the 2004 submission, were corrected in the 2005 submission, but the corrected values were not reflected in the CRF tables. The Party confirmed during the review that these allocation mistakes in the CRF tables will be corrected in the next submission.

63.   The AD for Animal Production fluctuate and the ERT recommends that the Party explain the trend in its next NIR.

C. Non-key categories

1. Manure Management – N_2O

64.   The ERT noted large inter-annual changes in N_2O emissions from various sources, such as the N_2O emissions from Anaerobic Lagoon, and recommends that Romania explain such changes.

2. Field Burning of Residues – CH_4, N_2O

65.   For CH_4 and N_2O emissions from sugar cane, the notation key "NO" is reported for 1990–1992, and thereafter emissions are reported as "0". The ERT recommends that Romania correct this minor inconsistency for the next submission. The AD fluctuate and the ERT recommends that the Party explain the trend in its next NIR.

V. Land Use, Land-use Change and Forestry

A. Sector overview

66.   The LULUCF sector was a net GHG sink for all years from 1989 to 2003. GHG removals by LULUCF increased from 15,713 Gg CO_2 equivalent in 1989 to 16,880 Gg in 2003, an increase of 7.4 per cent. In 2003 the LULUCF sector offset 11.8 per cent of total emissions (excluding LULUCF).

67.   The new CRF tables as required by decision 13/CP.9 are used in the submission. No references to "mapping back" to the old Land-use Change and Forestry (LUCF) categories are given, although the transition to LULUCF has resulted in a change in the estimates of net GHG removals from the sector. The lack of "mapping back" made it difficult for the ERT to understand the differences between the previous and the current submission.

68. CO_2 emissions/removals are reported only for Forest Land Remaining Forest Land; CH_4 and N_2O for biomass burning are also reported for this category.

69.   In the previous (2004) submission, estimates were reported in the LUCF category Forest and Grassland Conversion; these estimates, according to the IPCC *Good Practice Guidance for Land Use,*

Land-use Change and Forestry (hereinafter referred to as the IPCC good practice guidance for LULUCF), should now be reported under Forest Land Converted to . . . (under 5.B, 5.C, 5.D, 5.F).

70.   A land-use transition matrix is not provided in the NIR, and the data on land use are scattered through the text and in some cases unclear. For example, the land areas of the country expressed as percentages add up to 99.7 per cent, the areas for all forest classes add up to 102 per cent of the forest surface, and the land subcategories classification in the CRF does not correspond to that in the NIR. Romania recognizes the problems with the data on land-use conversion and states that at present no conversions are reported but the surface area of actual types of land is provided for each year.

71.   Romania states that direct N_2O emissions from nitrogen fertilization, if they occur in lands converted to forest (i.e. agro-forestry), are included in the Agriculture sector. Drainage does not occur in organic soils, and is not estimated in mineral soils. Emissions estimates and AD are not provided for N_2O emissions from disturbance to soils associated with the conversion of land to cropland, or for carbon emissions from agricultural lime application.

72.   The ERT recommends that Romania check the consistency of its use of the notation keys across the tables and with the background information provided in the NIR, and also to provide the methodological information, included in the CRF documentation boxes, in the LULUCF chapter of the NIR.

B. Sink and source categories

Forest Land – CO_2, CH_4, N_2O

73. CO_2 emissions/removals are reported only for Forest Land Remaining Forest Land. Only aboveground biomass is included in the estimates for the living biomass pool; for dead organic matter or soils organic matter it is assumed that there is no change, but no background information to support this is provided. Romania is recommended to include in the NIR definitions for the subcategories it uses for reporting under Forest Land Remaining Forest Land.

74.   Country-specific annual wood growth is provided by the National Forest Inventory (1985). In the 2004 submission, two rates were used (3.25 for conifers and 2.65 for deciduous trees, in tonnes of dry matter per ha), whereas in the 2005 submission the same rate is maintained for conifers but the average for the rest has increased (to 2.98 tonnes of dry matter per ha). The wood densities used in the previous submission were 0.443 tonnes dry matter per m^3 for conifers and 0.614 tonnes dry matter per m^3 for deciduous trees. In the 2005 submission, however, the units used and the magnitude have changed, and it is not clear if the new wood densities are based on dry matter (if so, they are at the higher end of the IPCC default range as per table 3A.1.9-1).

75.   In the formula for estimating the increase on stocks, which the country describes in the documentation box of table 5.A, the increase in dry matter per year is defined as annual growth multiplied by wood density. Annual growth refers to wood including bark according to the National Forest Inventory of 1985. Therefore the expansion from wood volume (that is called "annual growth") to total volume is not done for aboveground biomass (no expansion factor is used). This may result in underestimation of the sink. The ERT also observed a systematic difference, resulting in an enhanced sink, for the period 1989–2002 for CO_2 emissions from forest between the 2004 and 2005 submissions.

76.   Emissions from biomass burning (wildfires) for Forest Land Remaining Forest Land are provided in table 5(V) for CO_2, CH_4 and N_2O. There is no information in the documentation box or in the NIR about the sources of AD. It seems from the CRF table Summary 3 that tier 1 and IPCC methods and default values are used but there is no explanation of exactly which of the approaches provided by the IPCC good practice guidance for LULUCF is used.

VI. Waste

A. Sector overview

77.   GHG emissions from the Waste sector decreased from 5,358 Gg in 1989 to 5,068 Gg in 2003, a decline by 5.4 per cent. They contributed 3.5 per cent of total emissions in 2003 compared with 2.0 per cent in 1989.

78.   Romania reports GHG emissions from Solid Wasted Disposal on Land and Waste-water Handling. Emissions from Waste Incineration are not estimated although waste incineration does occur in Romania. Although the NIR contains some information on the methodologies and parameters used, the ERT recommends that Romania provide more detailed information.

79.   Recalculations for the Waste sector are documented in CRF table 8(a) but no explanations are included in table 8(b). According to the NIR, CH_4 emissions have been recalculated as a follow-up to the 2004 review, as follows: a country-specific generation rate for municipal solid waste (MSW) was used, the fraction of degradable organic content (DOC) was estimated, and the fraction of DOC dissimilated when lignin carbon is included was used.

B. Key categories

Solid Waste Disposal on Land – CH_4

80.   Only CH_4 emissions from managed landfills are estimated. However, most of the landfills in Romania seem to be unmanaged. The ERT suggests that the Party review the categorization of the landfills.

81.   An IPCC tier 1 method and default EFs have been used. The ERT recommends that the Party consider implementing a tier 2 method as soon as possible, depending on the availability of the necessary data and resources. The NIR states that in 2003 only 14 new landfills out of 252 met the standards of the European Union, which means that these 14 landfills are managed. However, the Party explained that due to lack of information on the amount of waste disposed on those 14 landfills the default methane correction factor of 0.6 is used. This has led to CH_4 emissions being underestimated. The ERT recommends that Romania collect the data needed to distinguish between managed and unmanaged landfills in its next submission, depending on the availability of the necessary resources, or to make an appropriate extrapolation or conduct a survey in order to distinguish between managed and unmanaged landfills in its future submissions.

82.   The NIR mentions that AD on annual amount of waste were estimated based on waste generation rates of 0.8 kg/capita/day for urban areas and 0.2 kg/capita/day in rural areas, these rates being provided by the National Institute of Statistics. However, the additional information box in CRF table 6.A indicates that a constant value of 0.57 kg/capita/day for waste generation rate was used for the period 1989–2003. The ERT recommends that Romania take into consideration economic growth and changes in the consumption of products in the period 1989–2003, and to re-estimate the waste generation rate for the whole times series (usually Parties included in Annex I to the Convention assume that waste generation could increase by 1.5–3 per cent per year).

C. Non-key categories

Waste-water handling– CH_4, N_2O

83.   Emissions and AD for sludge are not reported and no notation keys are used. The ERT suggests that Romania either estimate emissions and AD, or report them using the notation key "NE".

84. N_2O emissions from human sewage have been estimated based on population. The methodology used is not described in the NIR. Romania has applied a constant value of 18.75 kg/person/yr, which is significantly lower than the data from the Food and Agriculture Organization of the United Nations (FAO), which are 35.4 kg/person/yr (97 gr/person/day) for 1993–1995 and 38 kg/person/yr (104 gr/person/day) for the period 2000–2002. The ERT encourages Romania to describe in the NIR the methodologies used and to provide information to support the country-specific value.

Annex

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 secretariat. Status report for Romania. 2005. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/inventory_review_reports/application/pdf/2005_status_report_romania.pdf>.

UNFCCC secretariat. Synthesis and assessment report on the greenhouse gas inventories submitted in 2005. FCCC/WEB/SAI/2005. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/inventory_review_reports/application/pdf/sa_2005_part_i_final.pdf>.

UNFCCC secretariat. Romania: Report of the individual review of the greenhouse gas inventory submitted in the year 2004. FCCC/WEB/IRI/2004/ROM. Available at <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/inventory_review_reports/application/pdf/2004_irr_desk_review_romania.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Vlad Trusca (Air Quality and Climate Change Division, Ministry of the Environment and Water Management).

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