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**Report for the Stage 3 in-depth review of emission
inventories submitted under the UNECE LRTAP
Convention and EU National Emissions Ceilings
Directive for:**

ROMANIA

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INTRODUCTION

1. The mandate and overall objectives for the emission inventory review process under the LRTAP Convention is given by the UNECE document 'Methods and Procedures for the Technical Review of Air Pollutant Emission Inventories reported under the Convention and its Protocols' (1) – hereafter referred to as the 'Methods and Procedures' document.
2. This annual review has concentrated on SO₂, NO_x, NMVOC, NH₃, plus PM₁₀ & PM_{2.5} for the time series years 1990 – 2008 reflecting current priorities from the EMEP Steering Body and the Task Force on Emission Inventories and Projections (TFEIP). HMs and POPs have been reviewed to the extent possible.
3. This report covers the stage 3 centralised reviews of the UNECE LRTAP Convention and EU NEC Directive inventories of Romania coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place from 21 June 2010 to 25 June 2010 in Copenhagen, Denmark, and was hosted by the European Environment Agency (EEA). The following team of nominated experts from the roster of experts performed the review: generalist - Jean Pierre Chang (France), Energy - Laetitia Serveau (France), Energy / mobile - Emilia Hanley (Ireland), Industry - Kees Peek (Netherlands), Agriculture + Nature - Rocio Danica Condor (Italy), Waste - Sophie Hoehn (Switzerland). For resource constraint reasons in the ERT the Solvents estimates were not reviewed.
4. Justin Goodwin was the lead reviewer. The review was coordinated by Katarina Marečková (EMEP Centre on Emission Inventories and Projections - CEIP).

¹ Methods and Procedures for the Technical Review of Air Pollutant Emission Inventories reported under the Convention and its Protocols. Note by the Task Force on Emission Inventories and Projections. ECE/EB.AIR/GE.1/2007/16 <http://www.unece.org/env/documents/2007/eb/ge1/ece.eb.air.ge.1.2007.16.e.pdf>

PART A: KEY REVIEW FINDINGS

5. The inventory is generally in line with the EMEP EEA inventory guidebook and UNECE Reporting Guidelines. However, ERT notes that the latest submission only includes recalculated estimates for 2007 and new estimates for 2008. Emissions from 1990 to 1999 are reported only in 10 SNAP categories instead of NFR categories. Furthermore, emissions of HCBs are not reported for the entire time series and AD in NFR tables are reported only for the years 2007 and 2008. Emissions for a number of key categories are reported as IE/NE/NA. Transport emissions are calculated on base fuels used/fuel sold.

6. ERT has also noted that recalculations have been not applied consistently through the entire time series. Romania does not provide the necessary explanations in the IIR for recalculations or any recalculated estimates for 1990 – 2006. List inconsistent years. Time series of CO and PCDD/PCDF do not seem to be consistent. The ERT has also noted that the country applies Tier 1 methods and default parameters for most of categories. For some key categories the Party applies country-specific methods which are not consistent with the inventory Guidebook.

7. The 2008 submission shows improvements in a number of issues; nevertheless the ERT identified a need for further improvements in the transparency / completeness /consistency of the IIR.

INVENTORY SUBMISSION

8. In the 2010 submission, Romania provides national inventories for the years 2007 and 2008, including emissions and activity data for the different NFR09 categories. In previous submissions national totals for 1980-2004 and complete emission tables for 2005-2007 were submitted. Romania has submitted an IIR report, but the IIR template is not yet applied.

9. Emissions and activity data (for 2007 and 2008) are reported in NFR09 categories; however, many source categories are not estimated (use of NE notation key). Furthermore no explanation for missing sources is provided in the IIR or in the NFR sheet "Additional info".

10. Transport emissions are based on fuel sold as requested.

11. The quality of the CLRTAP inventory submission 2010 is limited due to missing sources in Energy, IP, Transport Agriculture and Waste and descriptions of methods, data sources, assumptions, recalculations, QA/QC and trends which are not detailed enough in the IIR.

KEY CATEGORIES

12. The key category analysis (KCA) provided by Romania is not comparable with the one made by CEIP because it has not been performed consistently with the EMEP/EEA Guidebook. The KCA is made separately per sector and it is not done for categories within the energy sector. The key category trend analysis has not been performed. The ERT recommends that Romania compile its key category analysis in line with the EMEP/EEA Guidebook and provide a description of the analysis in its IIR, including how the KCA is used to prioritise improvements.

QUALITY

Transparency

13. The ERT recognises the effort undertaken by Romania in providing an inventory with a significant level of detail concerning emissions factors and activity data in the IIR, which enables sectoral reviews. However, the ERT notes that for a fully transparent submission, Romania has provided insufficient information in the IIR on the description of the methods and assumptions. In addition, the IIR does not follow the recommended IIR template, with extremely limited descriptions of methods, assumptions and data sources in the sectoral chapters of the IIR resulting in a lack of transparency regarding the methods, assumptions and data sources in the IIR overall. The ERT recommends that Romania follow the recommended outline for IIRs in the IIR template, cf. <http://www.ceip.at/reporting-instructions/list-of-annexes-2010>, Annex VI: Recommended structure for Informative Inventory Report (IIR).

14. The ERT noted a significant number of notation keys "IE" (emissions of the category are Included Elsewhere) used in the NFR tables for the energy sector (1A2c, 1A2d, 1A2e, 1A2fii, 1A4aiii, 1A4biii for all pollutants) and without explanation in the IIR or the NFR sheet "Additional info". This creates a lack of transparency in the inventory submission and the ERT encourages Romania to report emissions in the appropriate NFR categories or where not possible to clearly explain which categories are included where for future submissions.

15. Romania's NFR provides information on activity data. However, no specific paragraphs in the IIR explain the trends of emissions per sector, which leads to a lack of transparency regarding the trends, dips and jumps in the inventory submission. The ERT encourages Romania to create a new chapter in the IIR which explains the main reasons for emissions trends and to provide some detailed explanation of trends in each sector chapter as well.

16. Romania has recalculated its inventory for almost all sectors for the year 2007; however, no data for the years 1990 – 2006 have been reported for this submission where they had been reported in previous submissions. Romania does not provide the necessary explanations in the IIR for recalculations or any recalculated estimates for 1990 – 2006. The ERT encourages Romania to provide more detailed explanation of recalculations, including the impact on the sectors and the implication for trends.

Completeness

17. Romania provides national inventories for the years 2007 and 2008 only in the 2010 submission. For 2007 and 2008 the submitted inventories include many notation keys "NE" for the energy, transport, industrial processes and agriculture sectors. Only national total annual emissions were reported for all Protocol years prior to 2005. Romania does not provide the necessary explanations in the IIR for recalculations or for what is included or excluded for the estimates for the years 1990 – 2006. Romania has informed the ERT that it plans to include the activity data and details for the missing years 1990 – 2006 as a matter of priority. The ERT welcomes the efforts of Romania to make this improvement and encourages Romania to complete the inventory by including estimates of missing sources, with the key category analysis, as well as to include more detailed descriptions of methodology choice and the recalculations applied. Where emissions exist but cannot be

estimated the ERT encourages Romania to provide, in the IIR, the rationale for excluding these sources and descriptions of any plans to estimate these emissions for future submissions.

Consistency, including recalculations and time-series

18. Romania has undertaken significant recalculations for the year 2007: NMVOC (+32%), SO_x (-24%), PM (47% to 245%), Pb (37%), Cd (61%), Hg (169%), PCDD/PCDF (-24%), PAHs (710%), HCBs (16%), PCBs (16657%). However, descriptions have not been provided in IIR. Romania provided some explanations during the review, and the ERT encourages Romania to provide the rationale for the recalculations as well as the impacts of the changes on the national estimates and time series in its future IIR submissions.

19. No detailed time series for any pollutants emissions for the years 1990-2006 were presented in the IIR or the NFR submitted. From the 2007 recalculations it is clear that the previously submitted time series are no longer consistent with the new one for 2007-2008. The ERT welcomes the Party's confirmation that all transport emissions were included in the national totals in the 1990 – 2006 time series. The ERT strongly encourages Romania to split national total emission estimates into relevant categories as presented for the years 2007 and 2008. Romania has explained that data for a complete time series is being collected and that a complete emission time series is expected for future submissions using the new 2009 Guidebook. Romania has clarified that planned improvements are focused on recalculations of emissions resulting from corrections of activity data (including agriculture statistics), improving the collecting methodology, recalculations of emissions resulting from methodology changes (including additional emission sources) and on applying higher tiers of estimation methodology, especially for key sources. The ERT commends the effort Romania is making to implement a complete and consistent time series of emissions and encourages Romania to complete the recalculations for the former years and include the results in the next submission.

20. Concerning projection tables, emissions for "the most recent historical year (2007)" in the projection tables are not consistent with related 2007 emissions in NFR "Annex IV-Table1". Romania explained during the review that this was due to projection updates and that a new study on emissions projection was in progress and would be updated. The ERT encourages Romania to complete the updates in such a way that they are consistent with the next submission and to include the results in next submission. .

Comparability

21. The ERT notes that Romania follows the EMEP/UNECE reporting Guidelines within the NFR09 reporting format but uses a lot of IE notations and therefore does not present a fully comparable inventory submission. The ERT encourages Romania to allocate emissions to the appropriate NFR categories for all sources so that its estimates can be compared with those of other parties. During the review Romania also informed the ERT that for the next submission it would improve the structure of the IIR and also try to complete the missing information. ERT welcomes and encourages this improvement plan.

CLRTAP/NECD comparability

22. ERT notes that national inventories for LRTAP and NECD for recent years (2006-2008) are consistent, and that for 2006 inventories for LTRAP and NECD are

consistent but that both are not updated for 2010. Romania explained during the review that: it had no reporting obligation under the NECD before 1st January 2007, thus the first submission under the NECD was in December 2007 for the 2005 inventory. Romania also indicated that the updated time series would be sent both under the NEC and LRTAP. ERT welcomes this and encourages Romania to recalculate and re-submit time series for both LRTAP and NECD and make them fully consistent.

Accuracy and uncertainties

23. Romania does not estimate the uncertainty relating to its LRTAP/NECD inventories. During the review Romania indicated that it would consider this issue and try to implement uncertainty assessments in the inventory in the future. The ERT encourages Romania to start with a Tier 1 uncertainty assessment for main pollutants and PM for future submissions.

Verification and quality assurance/quality control approaches

24. Romania has not yet formally implemented QA/QC procedures or a quality management system for the LRTAP inventory, although routine checking procedures are in place. During the review, Romania informed the ERT that the development of a national QA/QC plan for national emissions inventories was underway and that a legislative document would be prepared for the next reporting deadline. The ERT welcomes this and encourages Romania to develop its national QA/QC plan and procedures and to describe them in its next IIR submissions: at general QA/QC activity level (tier 1), and also possibly at specific sectoral level (Tier 2) for key categories.

FOLLOW-UP TO PREVIOUS REVIEWS

25. The current stage 3 centralised review has used outputs from the stage 1 and stage 2 review processes. ERT invites Romania to also refer to these previous reviews when examining this review report, and also, where possible, updating improvement plans. Any questions issued by the ERT to the Party were dealt with promptly, indicating good communication during the Review process and good responsiveness of the Party.

AREAS FOR IMPROVEMENT IDENTIFIED BY ROMANIA

26. The IIR does not include improvement chapters specifying priorities for improvement identified by Romania. However, during the centralised review and exchanges with the ERT, many improvements were identified by Romania for the next or further submissions. These include:

- (a) recalculating and updating the inventory's time series for 1990-2006.
- (b) updating projection data based on an ongoing study,
- (c) improving the structure of the IIR (to follow the template outline for IIRs, cf. <http://www.ceip.at/reporting-instructions/list-of-annexes-2010>, Annex VI: Recommended structure for Informative Inventory Report (IIR).) and completing the missing information (descriptions of methods and assumptions) for the next submission,

- (d) development of a national QA/QC Plan and a legislative document to be prepared by the next reporting deadline,
- (e) review of the KCA,
- (f) starting to estimate uncertainties,
- (g) harmonisation in the near future of SO_x, NO_x, NMVOC and CO reporting by the 2 inventory teams, LRTAP and UNFCCC.

27. The ERT commends Romania for its responsiveness to the ERT during the centralised review, and for Romania's willingness to improve many important issues regarding the quality of the national emission inventory.

PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

CROSS-CUTTING IMPROVEMENTS IDENTIFIED BY THE ERT

28. The ERT identifies the following cross-cutting issues for improvement:
29. Recalculation and resubmission of a full time series as appropriate for the LRTAP and NECD. In particular, this should include the reference years.
30. Use of the IIR template and provision of information for all the IIR chapters.
31. Minimise the use of IEs and present emissions under the appropriate NFR 09 categories, with explanations to be provided in the IIR and in the NFR sheet "Additional info" where IEs are used.
32. Reviews and/or further investigation sources which have not yet been estimated (NEs) and estimate and report them in the inventory and, where estimates cannot be made, include a rationale in the "Additional info" sheet of the NFR and in the IIR.
33. Include details of improvements planned in the IIR, including plans for estimating missing emissions.
34. Key category analysis following appropriate presentation and methods for level and trend analysis.
35. Updated projection data where necessary, especially in case of recalculations.
36. Implementation of an uncertainty assessment, and use of the results as a relevant tool to prioritise improvements for key categories. The priority may be set for the main pollutants and PM.
37. Formal implementation and documentation of QA/QC plan and procedures for the LRTAP inventory.
38. An IIR with more explanatory and informative descriptions. Information on/ explanations of key trends to be included in the IIR, taking into account the full time series. An IIR with further details for the description of methodologies. Possible use of dedicated Annex 2 of the IIR to include detailed methodological data, e.g. detailed list of emission factors etc. The rationale behind and explanations for the recalculations and their implication for trends should be included in the IIR.
39. Recommended improvements relating to specific source categories are presented in the relevant sector sections of this report.

SECTOR-SPECIFIC RECOMMENDATIONS FOR IMPROVEMENTS IDENTIFIED BY ERT

ENERGY

Review Scope

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , particulates, CO, heavy metals		
Years		1990 – 2008		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
1.A.1.a	public electricity and heat production	X		X
1.A.1.b	petroleum refining	X		X
1.A.1.c	Manufacture of solid fuels and other energy industries	X		X
1.A.2.a	iron and steel	X		X
1.A.2.b	non-ferrous metals	X		X
1.A.2.c	chemicals	X		
1.A.2.d	pulp, paper and print	X		
1.A.2.e	food processing, beverages and tobacco	X		
1.A.2.f.i	Stationary Combustion in Manufacturing Industries and Construction: Other (Please specify in your IIR)	X		X
1.A.2.f.ii	Mobile Combustion in Manufacturing Industries and Construction: (Please specify in your IIR)		X	
1 A 3 e	Pipeline compressors?		X	
1.A.4.a.i	commercial / institutional: stationary	X		X
1.A.4.a.ii	commercial / institutional: mobile?		X	
1.A.4.b.i	residential plants	X		X
1.A.4.b.ii	household and gardening (mobile)	X		
1.A.4.c.i	Agriculture/forestry/fishing. stationary	X		X
1.A.4.c.ii	off-road vehicles and other machinery?		X	
1.A.4.c.iii	national fishing?		X	
1.A.5.a	other, stationary (including military)	X		
1.A.5.b	other, mobile (including military, land based and recreational boats)?		X	
1.B.1.a	coal mining and handling	X		X
1.B.1.b	solid fuel transformation	X		X
1.B.1.c	other fugitive emissions from solid fuels	X		
1 B 2 a i	Exploration, production, transport	X		X
1 B 2 a iv	Refining / storage	X		X
1 B 2 a v	Distribution of oil products	X		X
1 B 2 b	Natural gas	X		X
1 B 2 c	Venting and flaring	X		
1 B 3	Other fugitive emissions from geothermal energy production , peat and other energy extraction not included in 1 B 2			

Note: Where a sector has been partially reviewed (e.g. some of the NFR codes) please indicate which pollutants have been reviewed and which have not in the respective columns.

General recommendations on cross-cutting issues

Completeness:

40. Romania provides limited information on completeness in the IIR but the information is not organised and not easy to find. The ERT encourages Romania to develop a specific paragraph which synthesises the notation keys used and which gives the reason for the relevant choices.

41. Romania reports "NA" and "NE" in a number of places in its submission. The ERT encourages Romania to review data availability and consider collecting data and estimating emissions for the most important missing sources including all pollutants for the NFR code 1A5a, all pollutants for the MSW with energy recovery included in the NFR code 1A1a / NO_x, CO and NMVOC for NFR code 1B2c (method Tier 1 in the Guidebook EMEP / HAP total for NFR code 1B2a iv (method Tier 1 in the Guidebook EMEP))

Transparency:

42. The ERT recognises the efforts put in by Romania for the description of the methods used by NFR codes and commends the extensive use of AD and EF tables which improve the transparency of the IIR. However, the ERT encourages Romania to include more detailed descriptions in the IIR for the various NFR codes (see sub-sector specific recommendations).

43. No specific paragraph in the IIR explains the trends of emissions per key source for Energy. The ERT encourages Romania to create a new paragraph in the IIR which explains the main reasons for the emissions trends. In addition, the ERT encourages Romania to provide more details on the trends of fuel consumption and the energy balance for all sectors and for each sub-sector to improve the transparency of the submission..

44. The ERT notes that the IIR describes a number of subcategories (1A2c, 1A2d and 1A2e) which are included in the NFR code 1A2fi. The ERT recommends that Romania corrects the emission template for the NFR codes 1A2c, 1A2d and 1A2e by using the notation key "IE" instead of "NA".

45. For the NFR code 1B1b (NO_x, CO, SO_x, Cr, Cu, Se and Zn) and 1B2b, 1B2a i, 1B2a v and 1B2a iv (SO_x and PCDD-F), the EMEP Guidebook recommends using the notation "NE" if emissions are occurring but insignificant. The ERT recommends that Romania corrects the emission template for this NFR code and for these pollutants by using the notation key "NE" instead of "NA".

46. For the NFR code 1A2b, Romania has indicated that a Tier 2 method is used. Romania does not clarify which pollutants are/are not included and uses "NA" as the notation key for this category in the NFR. The ERT encourages Romania to present an emission estimate or to use the correct notation key for this category and to explain what is included in the IIR for the next submission.

Accuracy:

47. The ERT encourages Romania to undertake uncertainty analysis for the Energy sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

48. Romania explains its IIR that for the moment no formal QA/QC procedures are used. Several checks are routinely carried out to eliminate possible errors. During the review Romania explained that a national QA/QC Plan for national emissions inventories was being developed and a legislative document would be prepared for the next submission. The ERT encourages Romania to implement these plans and to document them for QA/QC and its QA/QC plan and procedures in future IIRs.

Consistency:

49. For all NFR codes relevant to the Energy sector, the ERT encourages Romania to explain in its IIR the consistency of the methodology used during 2005-2008.

Comparability:

50. The ERT found no differences between the NECD and UNECE data submitted for 2010.

Recalculations:

51. Romania has recalculated its inventory for almost all subcategories of the Energy sector for the year 2007 but has provided no data for the years 1990 – 2006. Romania does not provide the necessary explanations in the IIR for recalculations. The ERT encourages Romania to provide more detailed explanations for recalculations, including the impact on the sector and implications for trends in the Energy sector in its IIR.

Improvement:

52. No specific IIR paragraphs describe the planned improvements. The ERT recommends that Romania provides in its IIR details of the main planned improvements for the next submissions as explained in Romania's response to the review for the Energy sector.

Sub-sector Specific Recommendations

Category issue 1: 1.A.1.a: Public power and district heat - All pollutants

53. The ERT notes that the IIR describes the methodology used to estimate emissions for the NFR code 1A1a. The ERT recommends that Romania provide more details on the methods, assumptions and data sources in its IIR.

54. The ERT recommends that Romania provide some more explanation of the > 50 MW, fuel consumption and SO₂, NO_x and TSP emissions used in the inventory and that these data should come from the LCP inventory. The ERT also encourages Romania to provide some details and references for the LCP data (including the number of plants, QA/QC and the alignment of energy use with national energy balances).

55. The ERT notes that Romania's inventory uses default emission factors from unknown sources for other pollutant estimates for plants > 50 MW and that all the small plants (< 50 MW) and the stationary engines and gas turbines excluded under

the LCP directive for any of the pollutants are included in another NFR code. The ERT encourages Romania to explain how emissions for other pollutants are calculated including the use of EFs and AD. The ERT recommends that Romania explain in its NIR that for all the small plants (< 50 MW plant) emissions are counted under the CRF code 1A4.

56. The ERT notes that no explanation is given in the IIR concerning waste incineration with energy recovery (NFR code 1A1a). In its responses to the ERT, Romania indicated that six plants had been designed to recover energy but that these plants were not included in the Romania's inventory as there was no data on the amounts of energy recovered. Romania also indicated that these plants were under-utilised and that the energy recovered was not significant. The ERT recommends that Romania explains in the IIR (NFR code 1A1a) that there is no data on the amounts of energy recovered or on its assumptions regarding the significance of energy recovery and that it tries to collect data to support its assumptions. In addition, the ERT recommends that Romania verify if waste incineration without energy recovery exists in Romania and include these emissions in the NFR code 6Cc.

Category issue 2: 1.A.1.b: Petroleum refineries - All pollutants

57. The ERT notes that the IIR describes the methodology used to estimate emissions for the NFR code 1A1b. The ERT recommends that Romania provides more details on the methods, assumptions and data sources in its IIR. The ERT recommends that Romania provide some more explanation for fuel consumption and SO₂, NO_x and TSP emissions used in the inventory for 1A1b petroleum refining and that these data should come from the LCP inventory. The ERT also encourages Romania to provide some details and references for LCP data (including the number of plants, QA/QC and the alignment of energy use with national energy balances.

58. The ERT notes that Romania's inventory uses default emission factors from unknown sources for other pollutant estimates for plants > 50MW and does not take into account small plants (< 50 MW) and the stationary engines and gas turbines excluded under the LCP directive for any pollutants. The ERT encourages Romania to explain how emissions for other pollutants are calculated, including the use of EFs and AD and to clarify if < 50 MW plants, stationary engines and gas turbines exist and need accounting for in the inventory.

Category issue 3: 1.A.1.c: Fuel transformation and extraction of fuel - All pollutants

59. The ERT notes that a tier 1 method is used to describe sources for 1A1c (part 2. 1 - 1A1c) in the IIR but that no reference is made to the source of emission factors. The ERT also notes that the emission factors used are the same for all years and do not take into account the specific fuel sulphur content. The ERT encourages Romania to estimate SO₂ emissions using fuel sulphur content data and to provide a reference for the emission factors used in its IIR.

Category issue 4: 1.A.2.a Iron and steel – All pollutants

60. The ERT notes that the description of methods, data sources and assumptions for 1A2a is incomplete. The ERT recommends that Romania provides

more information on the following: list the sub-sectors that make up the NFR code 1A2a and provide more detail on the source of activity data (fuel consumption comes from operators or the energy balance), give the source/reference of EFs used in this paragraph (EMEP Guidebook) and explain why these EFs are the same for all years during the period 2005-2008.

Category issue 5: 1.A.2.b: Non ferrous metallurgies – All pollutants

61. The ERT notes that the description of methods, data sources and assumptions for 1A2b is incomplete. The ERT recommends that Romania provides more information on the following: list the sub-sectors that make up the NFR code 1A2b and provide more detail on the source of activity data (fuel consumption comes from operators or energy balance), give the source/reference of EFs used in this paragraph (EMEP guidebook) and explain why these EFs are the same for all years during the period 2005-2008.

Category issue 6: 1.A.2.f i: Other industries – All pollutants

62. The ERT congratulates Romania on providing, in the IIR, a list of sub-sectors in 1A2fi which improves transparency of the submission. The ERT recommends that Romania specifies in its IIR the source/reference of fuel consumption and explains where activity data are confidential. The ERT recommends that Romania provides details of the source of EFs and explains why the EFs are the same for all years between 2005 and 2008.

Category issue 7: 1.A.4.a i and 1.A.4.b i: Residential and Commercial - All pollutants

63. The ERT congratulates Romania on providing, in the IIR, a list of sub-sectors in 1A4ai and 1A4bi which improves transparency of the submission. The ERT recommends that Romania specifies the tier used and the source/reference of fuel consumption and EFs and explains why the EFs are the same between 2005 and 2008 in its IIR.

Category issue 8: 1.A.5.a: - All pollutants

64. Romania reports "NA" or "NE" for 1A5a. In its response to the ERT Romania explained that the reason was that data for this NFR code were not available. The ERT recommends that Romania corrects the emissions template for the main pollutants to "NE" instead of "NA" and explores opportunities to gather AD and estimate emissions for this sector in the future.

Category issue 9: 1.B: Fugitive emissions - All pollutants

65. The ERT congratulates Romania on providing, in the IIR, the list of sub-sectors in 1B which improves the transparency of the submission. The ERT recommends that Romania specifies the tier used and the source/reference of the activity data and emission factors and explains why the EFs are the same for all years between 2005 and 2008 in its IIR.

TRANSPORT

Review Scope

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2008 + (Protocol Years)		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
1 A 2 f ii	Other: Off-road construction vehicles and machinery		IE	x
1 A 3 a i (i)	International Civil Aviation - LTO		NE	x
1 A 3 a ii (i)	Domestic Civil Aviation - LTO		NE	x
1 A 3 b i	Road Transport: Passenger Cars	x		x
1 A 3 b ii	Road Transport: Light Duty Vehicles	x		x
1 A 3 b iii	Road Transport: Heavy Duty Vehicles	x		x
1 A 3 b iv	Road Transport: Mopeds & Motorcycles	x		x
1 A 3 b v	Road Transport: Gasoline Evaporation	x		
1 A 3 b vi	Road Transport: Automobile tyre and brake wear		NE	
1 A 3 b vii	Road Transport: Automobile road abrasion		NE	
1 A 3 c	Railways	x		
1 A 3 d i (i)	International maritime navigation		NE	x
1 A 3 d i (ii)	International Inland Waterways		NE	x
1 A 3 d ii	National Navigation (Shipping)	x		x
1 A 3 e	Pipeline Compressors		NA	
1 A 4 a i & ii	Commercial / institutional: Stationary & Mobile	x		x
1 A 4 b i & ii	Residential: Household and gardening (stationary & mobile)	x		x
1 A 4 c i & ii	Agriculture/Forestry/Fishing: (Stationary & Off-road vehicles and other machinery)	x		
1 A 4 c iii	Agriculture/Forestry/Fishing: National fishing	x		
1 A 5 a & b	Other, Stationary & Mobile (including military, land based and recreational boats)		NE	x

Note: Where a sector has been partially reviewed (e.g. some of the NFR codes) please indicate which pollutants have been reviewed and which have not in the respective columns.

General recommendations on cross cutting-issues

66. Romania has provided a simply structured and transparent IIR. However, no detailed time series for any pollutant emissions have been presented in the IIR or NFR for the years 1990-2006. Romania submitted time series data only for national totals for the years 1990-2006 for the main pollutants: NO_x, SO_x, NH₃, NMVOC, CO. For the years 2005-2006, national totals were reported for pollutants: PM₁₀, TSP, Cd, Cu, Hg, Pb. The ERT welcomes the Party's confirmation that all transport emissions have been included in the national totals in the 1990 – 2006 time series. The ERT strongly encourages Romania to split national total emission estimates into relevant transport sub-sectors as presented for the years 2007 and 2008 and to complete the inventory (with the key category analysis), as well as to include more detailed descriptions of the background for preparing the inventory, for the methodology choice and recalculations applied.

67. As a result of the lack of transparency for the years 1990 - 2006 the following general comments and recommendations only apply to the reported years: 2007 and 2008.

Completeness:

68. The ERT considers the Transport sector and the other sectors including mobile sources to be generally complete, although there are some sectors and certain pollutants within the sectors reported as Not Estimated (NE). These have been identified by the ERT (see sub-sector specific recommendations below) and the Party has clarified the circumstances and reasons for not estimating the emissions.

Transparency:

69. Romania has provided a generally transparent emissions inventory and IIR for the Transport sector. Descriptions are clear for all reported transport sectors including mobile sources. During the review Romania provided some reasons for using the "NE" entries and the ERT strongly encourages the Party to provide these and similar explanations in the future IIR (to avoid having to clarify the same issues) for notation keys.

70. For the sub-sectors 1.A.2.f ii (Off-road Mobile: Mobile Combustion in manufacturing industries and construction), 1.A.4.a ii (Off-road Mobile: Commercial / institutional) and 1.A.4.bii (Off-road Mobile: Residential: Household and gardening), emission estimates have been reported with the IE notation key in the Party's inventory report. The ERT recommends that Romania makes a clear description of the notation keys and indicates the location of all sectors into which the categories reported as IE were merged (i.e. in a table). The ERT also encourage Romania to make separate emission estimates for these sectors in future IIR reports.

Uncertainty:

71. No quantitative uncertainty assessment for any of the pollutants of Romania's emission inventory has been provided. The ERT encourage the Party to undertake uncertainty analysis for the Transport Sector and other sectors including mobile sources in order to help support the improvement process and to provide an indication of the reliability of the inventory data.

QA/QC Procedures:

72. Romania has not implemented any formal QA/QC procedure for the Transport sector. The ERT encourages the Party to implement sector-specific QA/QC procedures for the Transport Sector and other sectors including mobile sources.

Recalculations:

73. Romania has reported that it has been undertaking a major recalculation process for all years between 1990 – 2007 but so far only the year 2007 has been reported as recalculated from the previous submission, plus a new year (2008) has

been included. The major differences from the previous year's submission were explained as a result of using the new Guidebook for this year's submission. However, the IIR does not include any explanation of the process of the recalculations being carried out. The ERT encourages Romania to provide a detailed explanation of the recalculations in the IIR, including the rationale behind them, the impact on the sector and implications for trends in the Transport and other mobile sources sectors.

Improvement:

74. No specific improvements were documented. However, the ERT notes the Party's intention to improve and review the completeness of the time series in the Transport sector. The ERT encourages Romania to check/review and include new activity data information for all Protocol years and to include any future recalculations with detailed descriptions of the processes underlying all methodologies used (especially for Tier 3, applied to calculate road transport (1.A.3.b) emissions, as stated in the IIR).

Sub-sector Specific Recommendations

Category issue 1: 1.A.3.a ii (i): Civil aviation (Domestic, LTO), 1.A.3.a i (i): International aviation (LTO), 1.A.3.d i (ii): Shipping - International inland waterways, 1.A.5.a: Small combustion - Other stationary (including military), 1.A.5.b: Off-road mobile - Other, Mobile (including military, land-based and recreational boats) - All pollutants reported as NE

75. No estimates were reported for the sectors: 1.A.3.a ii(i) (Civil Aviation (Domestic, LTO)) and 1.A.3.a i(i) (International Aviation (LTO)). In response to questions from the ERT, the Party explains that it currently has no data on LTO cycles and fuel consumption for national/international flights. It has requested these data from the Romanian Transport Ministry in order to complete the inventories with emission estimates arising from this category. The ERT encourages the Party to continue its efforts to obtain the missing data from the Romanian Ministry and report on progress or some estimates and description of methods, data sources and assumptions in the next Inventory submission.

76. No estimates were reported for the 1.A.3.d i(ii) (International Inland Waterways) sector. In response to questions from the ERT, the Party explains that Romania has only 2 navigable inland waterways and data required in order to split the fuel used into two sub-sectors (national and international) is not available at the moment. The available data is for fuel used in "Navigation" as a whole sector and it has been allocated to the 1.A.3.d (ii) category. The ERT welcomes the explanation provided by the Party and encourages Romania to provide such information within future IIRs and to explore the possibilities for estimating the split of the Navigation emissions estimates into the required sub-categories.

77. No estimates were reported for the sectors: 1.A.5.a (Small Combustion: Other stationary (including military)) and 1.A.5.b (Off-road Mobile: Other, Mobile (including military, land-based and recreational boats)). The ERT encourages the Party to estimate and report on the two sectors in the next Inventory submission.

Category issue 2: 1.A.3.b: Road transport

78. Taking into account the circumstances associated with the unavailability of historical data (prior to and including the year 2005) required for making the Tier 3 (with the use of Copert IV) road transport estimates, the ERT encourages the Party to take further steps in collaborating with the Romanian Transport Ministry to contract the relevant research programme from the Romanian Auto Registry (RAR) to provide reliable activity data for more sophisticated, Tier 3 emissions estimates.

INDUSTRIAL PROCESSES

Review Scope

Pollutants Reviewed		NOx SO ₂ , NMVOC, NH ₃ , TSP, PM ₁₀ PM _{2.5} , Pb, Cd, Hg, DIOX, PAH, HCB		
Years		2007 en 2008		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
2.A.1	cement production	X		
2.A.2	lime production	X		
2.A.3	limestone and dolomite use	X		
2.A.4	soda ash production and use	X		
2.A.5	asphalt roofing	X		
2.A.6	road paving with asphalt	X		
2.A.7.a	Quarrying and mining of minerals other than coal	X		
2.A.7.b	Construction and demolition	X		
2.A.7.c	Storage, handling and transport of mineral products	X		
2.A.7.d	Other Mineral products (Please specify the sources included/excluded in the notes column to the right)	X		
2.Bb.1	ammonia production	X		
2.B.2	nitric acid production	x		
2.B.3	adipic acid production	X		X
2.B.4	carbide production	X		X
2.B.5.a	Other chemical industry (Please specify the sources included/excluded in the notes column to the right)	x		
2.B.5.b	Storage, handling and transport of chemical products (Please specify the sources included/excluded in the notes column to the right)	X		X
2.C.1	iron and steel production	x		
2.C.2	ferroalloys production	X		
2.C.3	aluminium production	x		x
2.C.5.a	Copper Production	x		
2.C.5.b	Lead Production	x		x
2.C.5.c	Nickel Production	X		
2.C.5.d	Zinc Production	x		
2.C.5.e	Other metal production (Please specify the sources included/excluded in the notes column to the right)	X		
2.C.5.f	Storage, handling and transport of metal products (Please specify the sources included/excluded in the notes column to the right)	X		
2.D.1	pulp and paper	X		
2.D.2	food and drink	x		x
2.D.3	Wood processing	x		X
2.E	production of POPs	X		X
2.F	consumption of HM and POPs (e.g. Electrical and scientific equipment)	X		

2.G	Other production, consumption, storage, transportation or handling of bulk products (Please specify the sources included/excluded in the notes column to the right)	X		X
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Note: Where a sector has been partially reviewed (e.g. some of the NFR codes) please indicate which pollutants have been reviewed and which have not in the respective columns.

General recommendations on cross-cutting issues

Completeness:

79. Although the ERT considers the Industrial processes sector to be generally complete, the ERT notes that NO_x from 2B4, 2B5b, 2D3, 2E and 2G, SO_x from 2B4, 2D3, 2E and 2G, NMVOC from 2B4, 2D3 and 2E and NH₃ from 2D3, 2E and 2G are reported as not estimated (NE). The ERT recommends that Romania estimate the missing emissions and report them in next submission. Where it is not possible to estimate emissions the ERT recommends that Romania include an explanation for the “NEs” in the future IIR submission.

Transparency:

80. The ERT considers the detail level in the IIR for the Industrial Processes sector in Romania’s submission to be insufficient. The ERT noted that there are no sectoral chapters in the Romanian IIR. The ERT notes that for the Industrial processes sector Romania has provided detailed information on activity data, default emission factors and emissions but insufficient information on methodologies, explanations of major changes in emission trends, notation keys, QA/QC, uncertainties and improvements in the IIR.

81. The ERT recommends that Romania includes an Industrial Processes chapter with the necessary level of detail in next submission, including descriptions of data sources, assumptions and methods, explanations of major changes in emission trends, notation keys, QA/QC, uncertainties and improvements at least for key categories and that Romania follows the recommended outline for IIRs in the IIR template.

82. The ERT also noted a lack of transparency in the key-source analysis. After having been consulted, the Party informed the ERT that the key-source tables in the Romanian IIR contained the share of the national total instead of the key sources and provided the ERT with the missing key source - 2D2 (for NMVOC) - of the Industrial Processes sector.

83. The ERT encourages Romania to correct these tables for future submissions.

Accuracy:

84. The ERT compliments Romania on using Tier 2 methods from the EMEP/EEA Guidebook for almost all key sources and tier 3 for plant-specific EFs to estimate the emissions for a number of key categories. The ERT encourages Romania to continue with this approach.

85. Romania has not yet implemented a formal QA/QC procedure, including a verification plan, for the national emissions inventory. However, several checks are routinely carried out to eliminate possible errors. The ERT compliments Romania on this, but encourages Romania to include a general QA/QC system and, where appropriate, sector-specific QA/QC checks in next submission.

86. There are no uncertainty estimates available for this sector. Romania has informed the ERT that it is planned to include uncertainty estimates in the next submission. The ERT compliments Romania on this planned improvement and encourages it to include this analysis in its next submission and to use it to prioritise improvements to the inventory.

Comparability:

87. Romania has provided its emissions inventory in accordance with the reporting requirements and submitted it in the requested NFR format.

Recalculations:

88. The ERT compliments Romania on its efforts to recalculate its inventory using the new 2009 Guidebook. However, the ERT notes that only 2007 emissions have been updated and that for earlier years the recalculations are currently in progress. The ERT encourages Romania to complete the recalculations for the former years and include the results in the next submission.

Improvement:

89. The ERT has found that there are no planned improvements specified in the IIR. The ERT encourages Romania to list desired improvements (e.g. uncertainty analysis) in its IIR to help to support improvement prioritisation.

Sector-specific Recommendations

Category issue 1: 2.B.3: Adipic acid production

90. In the CRF table of Romania's Greenhouse Gas Inventory 1989-2008, the notation key "NO" is used for this source, while in the NFR table the notation keys "NE" for NO_x and "NA" for the other pollutants are used. The ERT recommends that Romania correct this in the next submission.

Category issue 2: 2 B 5 b: Other chemical industry

91. NMVOC and NH₃ emissions from the NRF code 2.B.5.b (Storage, handling and transport of chemical products) are included elsewhere (IE). However, it is not clear why these emissions are included elsewhere and where they are located. The ERT recommends that Romania include an explanation in the IIR about the use of these notation keys.

Category issue 3: 2.C.3: Aluminium production

92. The ERT notes that Romania has used plant-specific data from aluminium production plants to estimate the emissions. The ERT compliments Romania on this

approach and encourages Romania to continue with the use of plant-specific data (Tier 3) instead of the Tier 2 EFs to estimate emissions in the next submissions.

Category issue 4: 2.C.5.b: Other metal industry

93. The ERT notes that Romania has used the Tier 1 emission factor from the EMEP/EEA Guidebook to calculate the Pb emissions from lead production. Because lead production is a key source for Pb, the ERT encourages Romania to use a Tier 2 or plant-specific emission factor to calculate the PB emissions from lead production in the next submission.

Category issue 5: 2.D.2: Food and drink

94. According to the table “activity data Industrial processes” the production level of the food and drink sector (2.D.2) decreased from 197,508,554 in 2007 to 25,747,864 hl in 2008. In response to questions from the ERT, the Party explains that there was a mistake during the compiling of the inventory. After the correction, the new activity data are 24,591,554 hl in 2007 and 25,747,864 hl in 2008. The ERT recommends that Romania correct this mistake for future submissions.

SOLVENTS (NOT PROVIDED)

AGRICULTURE

Review Scope

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2006 + (Protocol Years)		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
4 B 1 a	Cattle dairy	a	-	Yes
4 B 1 b	Cattle non-dairy	a	-	Yes
4 B 2	Buffalo	a	-	Yes
4 B 3	Sheep	a	-	Yes
4 B 4	Goats	a	-	Yes
4 B 6	Horses	a	-	Yes
4 B 7	Mules and asses	a	-	Yes
4 B 8	Swine	a	-	Yes
4 B 9 a	Laying hens	a	-	Yes
4 B 9 b	Broilers	a	-	Yes
4 B 9 c	Turkeys	a	-	Yes
4 B 9 d	Other poultry	a	-	Yes
4 B 13	4 B 13 Other	a	-	Yes
4 D 1 a	Synthetic N fertilisers	a	b	Yes
4 D 2 a	Farm-level agricultural operations including storage, handling and transport of agricultural products	a	-	No
4 D 2 a	Off-farm storage, handling and transport of bulk agricultural products	a	-	No
4 D 2 c	N excretion on pasture range and paddock unspecified (Please specify the sources included/excluded in the notes column to the right)	a	-	Yes
4 F	Field burning of agricultural wastes	a	-	Yes
4 G	Agriculture other(c)	a	-	Yes
11 A	(11 08 Volcanoes)	a	-	No
11 B	Forest fires	a	-	Yes
11C	Other natural emissions	a	-	Yes

Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which pollutants have been reviewed and which have not in the respective columns.

(a) reviewed main pollutants, PM₁₀ and PM_{2.5}

(b) not reviewed POPs, dioxins, furans, HM

General recommendations on cross-cutting issues

95. The CLRTAP submission included emissions only for 2007 and 2008. For these years, Romania provides information on methodologies, emission factors (EFs), key sources and activity data in the IIR. Estimations are available for the following categories: 4B (tier 1) and 4D (tier 2 for 4D1a). Key sources were identified for NH₃ emissions (4B1a, 4B8, 4B9a, 4B3, 4B6) and NMVOC emissions (4B8, 4B1a, 4B9a). Natural sources are reported as NE. The ERT encourages Romania to estimate the whole time series for agricultural sources in future submissions, and encourages using tier 2 or higher for key sources. The ERT also recommends that Romania include missing pollutants and provide descriptive information in the IIR (including time series of activity data, emission drivers, and recalculations) and

documentation. The ERT thanks Romania for its responsiveness and for facilitating the review process by providing additional information.

Completeness:

96. The inventory is not complete because only 2007 and 2008 emissions are reported. Some sources have not been estimated (see sectoral suggestions) However, during the review process, the Party explained that most of the data needed for agriculture sector for 1990-2006 were available but not as detailed as required. Romania has also clarified that the emission time series is part of the improvements. The ERT recommends that Romania provide a complete and consistent time series in future submissions. The ERT recommends that Romania estimate all pollutants following the EMEP/EEA Guidebook. Transparency: The ERT commends Romania for providing detailed and transparent information in the IIR for EFs, methodologies and activity data for the years 2007 and 2008. The ERT encourages Romania to incorporate more detailed descriptions of methods, assumptions, data sources, emission trend drivers and recalculations in its future IIRs. The Party indicated that notation keys were not used correctly for some sources in 4B. The ERT also recommends that Romania make appropriate use of notation keys and include additional explanations in the IIR where notation keys are used.

Accuracy:

97. The Party has provided estimates for key sources in the IIR for the agriculture sector. However, the Party does not provide an uncertainty analysis and QA/QC checks for the agriculture sector. The Party used a tier 1 default approach for estimating emissions from 4B and tier 2 approaches for 4D1a. Key sources were identified for NH₃ emissions (4B1a, 4B8, 4B9a, 4B3, 4B6) and NMVOC emissions (4B8, 4B1a, 4B9a). The ERT encourages Party to undertake uncertainty analysis and to implement QA/QC checks to help guard against errors, inform the improvement process and to provide an indication of the reliability of the inventory data. The ERT also encourages Romania to implement tier 2 or 3 methods for all key categories where data is available.

Comparability:

98. The Party has prepared the agriculture inventory following methodologies recommended in the EMEP/EEA Guidebook and reported it in accordance with the UNECE reporting guidelines.

Recalculations:

99. The ERT acknowledges the effort which has been undertaken for the preparation of the emission inventory and encourages the Party to include in the IIR information regarding this process. Recalculations are expected in the future because of improved methodologies, activity data and EFs following the EMEP/EEA 2009 Emission Inventory Guidebook. The ERT encourages the Party to include recalculated estimates for all years and pollutants, using where necessary correct notation keys and reported details in the IIR additional information.

Improvement:

100. No specific improvements were reported in the IIR. However, further information was received from the Party during the review process. Romania has explained that data for a complete time series is being collected and that a complete emission time series is expected for future submissions. The collection of data is supposed to be completed by the end of the year. Romania has clarified that planned improvements are focused on recalculations of emissions resulting from corrections of activity data (agriculture statistics), improving the collection methodology, recalculations of emissions resulting from methodology changes (including additional emission sources), and applying a higher tier of estimation methodology, especially for key sources. The ERT welcomes and encourages the effort Romania is making to implement a complete and consistent time series of emissions.

Sector-specific recommendations

101. As a result of the lack of information for the years 1990 – 2006, the following general comments and recommendations only apply to the reported years: 2007 and 2008.

Category issue 1: 4.B Manure management

102. Romania estimated NH₃, NO, NMVOC, PM₁₀ and PM_{2.5} emissions for 4B only for 2007 and 2008. The ERT encourages Romania to estimate the whole time series for all pollutants and to report, in the IIR, additional explanations. The ERT also recommends that the Party be consistent with methodologies and EFs while preparing the complete emission time series.

103. The ERT asked for clarification of the notation keys used for different sources. Romania explained that IE notation was used for NFR 4B2 Buffalo because this category was included under 4B1b Cattle non-dairy, and the data from the National Institute of Statistics (NIS) did not allow making a split between “Buffalo” and “Cattle non-dairy”. The ERT encourages the Party, in the absence of country-specific statistics, to use the EUROSTAT agricultural database where disaggregated information from 2004 on the number of buffaloes is available. (<http://epp.eurostat.ec.europa.eu/portal/page/portal/agriculture/data/database>)

104. During the review process, Romania identified an error in the notation keys used for 4B9bTurkeys and 4B9d Other poultry, which will be reported as NE in the next submission. NE was also used for 4B7 mules and asses and 4B13 other categories. The Party has explained that for all these sources data from the NIS was not available. The ERT encourages Romania to look for animal associations or FAO agricultural statistics which have information on the number of animals for these missing categories.

105. The ERT identified key sources for 4B and asked if it was possible to apply a tier 2 approach. Romania has explained that it is not possible to implement tier 2 for this key category because there are no detailed data on a manure management system. However, Romania has indicated that if, in the future, the required data becomes available it will implement tier 2. The ERT encourages Romania to use a tier 2 for these key categories and recommends that Romania use future national

statistics (Census, Farm Structure Survey, FSS) for gathering data on production methods that are likely to be requested through the 2010 Survey of Agricultural Production Methods (SAPM) where information regarding animal production systems and agronomic practices will be available.

Category issue 2: 4.D Agricultural Soils

106. Romania estimates emissions for NH₃ using a tier 2 approach for 4D1a synthetic N fertilizers. Only estimations for 2007 and 2008 are available. The ERT has identified NO, NMVOC, PM₁₀, and PM_{2.5} emissions from 4D1a synthetic N fertilisers which are not estimated. The ERT recommends that Romania estimate emissions for these missing pollutants using the tier 1 default approach as provided in the EMEP/EEA 2009 Guidebook. The ERT also suggests that the Party be consistent with methodologies and EFs while preparing the complete time series (1990 – 2009).

107. During the review process, the Party specified that different fertiliser types were considered in the methodology (phosphatic fertilisers, nitrogen fertilisers and other NPK fertilisers). Romania also clarified that it assumed the average spring temperature for the entire agricultural areas (agricultural fields) to be a mean spring temperature of 10 degrees but that in the future, detailed data on spring average temperature variation in different areas of the country will be used. The ERT commends Romania for these developments and encourages the Party to provide information on the breakdown of national fertiliser consumption into the relevant compounds in use and accounted for in emission estimates under 4D1a synthetic N-fertilizers source.

108. Romania has reported the 4 D 2 c N excretion on pasture range and paddock source as NA notation and explained that data is not at a level detailed enough to allow emission estimations. The ERT has identified NO and NH₃ emissions from the 4 D 2 c N excretion on pasture range and paddock source which could occur but are not estimated and that the correct notation for this source should be NE. The ERT encourages Romania to collect more detailed data and estimate emissions using defaults values provided in the EMEP/EEA 2009 Guidebook or in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. For instance, country-specific information regarding animal excretion rates could be estimated by livestock categories and defined by livestock population characteristics from Romania, based on a comparison with other similar European country information. The ERT also encourages Romania to consider information from the SAPM.

Category issue 3: 4.F Field burning of agricultural wastes

109. Romania has reported natural sources as NE. During the review process, the Party explained that stubble field burning was forbidden by Romanian environmental laws, except for special situations like phyto-sanitary reasons. However, it has also clarified that some data regarding the areas burned in 2007 and 2008 were collected from territorial agencies and from Inspectorate of Emergency Situations. The Party considers emissions arising from this activity to be insignificant. Despite this, the ERT encourages the Party to collect available data and estimate emissions from these sources following the EMEP/EEA 2009 Guidebook.

Category issue 4: 4.G Agriculture other

110. The Party has used the NE notation for the 4G source. During the review process, Romania explained that data (use of pesticides) was available for 2008, but was received after the inventory submission and that it intended to collect historical data to complete the time series and to estimate emissions from 4G for the next submission. The ERT acknowledges the effort to provide estimates of emissions from this source.

Category issue 5: 11 Natural sources

111. Romania has reported natural sources as NE. The ERT recommends that Romania describe in the IIR the sources which need to be accounted for in the inventory.

WASTE

Review Scope

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5} , TSP, DIOX, PAH, Hg, Pb, CO		
Years		1990 – 2008 + (Protocol Years)		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
6.A	solid waste disposal on land	x		Yes
6.B	waste-water handling	x		Yes
6 C a	6 C a Clinical waste incineration (d)	x		Yes
6 C b	Industrial waste incineration (d)	x		Yes
6 C c	Municipal waste incineration (d)	x		Yes
6 C d	Cremation	x		Yes
6 C e	Small scale waste burning	x		Yes
6.D	other waste (e)	x		Yes
7	Other	x		Yes

Note: Where a sector has been partially reviewed (e.g. some of the NFR codes) please indicate which pollutants have been reviewed and which have not in the respective columns.

General recommendations on cross-cutting issues

112. The CLRTAP submission from Romania regarding Chapter 6 (Waste) presents emissions for major pollutants and for major activities following the EMEP Guidebook 2009. The IIR for Romania presents EFs and AD for the major sources so that emission calculation can be followed. Key sources are clearly mentioned for the waste sector. References to the sources of the AD are also mentioned and some general explanations for several waste categories are presented. The ERT appreciated the very good and complete report of AD and EFs in the tables. However, explanations about the methodologies used are missing and prevent good comprehension of the emission sources. Moreover, the methods and details of the processes estimated in each category should be more clearly described. The ERT also encourages Romania to get missing AD of sector 6Cd and to develop country-specific EFs. Finally, the ERT encourages Romania to submit also years before 2007 for the Waste chapter in the next submission.

Completeness:

113. The inventory regarding Waste is not considered complete. Sectors 6A and 6B need estimations of emissions for open burning and flaring emissions. No emissions are reported for sector 6Cd because data were not available; the ERT encourages Romania to get these data to improve the completeness of the inventory.

Transparency:

114. The Romanian IIR provides information about emission sources for Waste for the first time but descriptions of the methodologies for calculating several emissions are missing. The ERT encourages Romania to provide additional information on methodologies for the waste sector, assumptions, drivers for trends and specific information for notation keys (NE) and to include documentation of the planned and

expected improvements in the IIR. In addition, notation keys have to be changed for sectors 6Cc (to NO instead of NA) and 6Cd (to NE instead of NA).

Accuracy:

115. Romania uses a Tier 1 default approach for all sources using methods and default EFs from the EMEP/EEA Guidebook 2009. Romania has provided a clear picture of the key sources in the IIR for the Waste sector. Romania does not provide an uncertainty analysis or basic QA/QC checks for the waste sector. The ERT encourages Romania to implement higher tier 2 or 3 methods for key categories where data is available, undertake uncertainty analysis and to implement QA/QC checks.

Comparability:

116. The ERT commends Romania on following the recommendations of the Guidebook for the Waste chapter and on providing completed NFR tables for the waste sector with minimal use of notation keys.

Recalculations:

117. Although significant recalculations have been undertaken for 2007, no explanations about these changes are provided in the IIR. The ERT encourages Romania to explain these recalculations including justifications them and their impact on the inventory as a whole in its future IIRs.

Improvement:

118. No specific improvements were identified in the IIR for the waste sector. The ERT encourages Romania to provide additional information on planned and expected improvements in the IIR.

Sector-specific Recommendations**Category issue 1: 6A Solid waste disposal on land - All pollutants**

119. Details on AD for sector 6A is included in the NFR using CH₄ as methodology for the calculation of emissions for NMVOC and NH₃. However, this is not described in the IIR. During the review process Romania confirmed that it would add emission estimation methodology in the 2011 IIR submission.

Category issue 2: 6.B Wastewater handling - NO_x, SO₂, CO

120. Emissions of NMVOC and NH₃ are reported by Romania for sector 6B. During the review Romania explained that the gas (CH₄) resulting from sludge digestion (Waste waster handling) was stored and used for its own energy supply and that no data were available for the amount of CH₄ burned. Burning of CH₄ produces NO_x, SO₂, NMVOC and CO emissions which have to be reported under Energy if there is an Energy recovery system or under 6B if energy is not recovered (Flaring, Furnace). The ERT encourages Romania to check that emissions from the combustion of CH₄ are included in the inventory and to improve the transparency of

this sector with more AD and a better description of the methods, data sources and assumptions..

Category issue 3: 6.C.a Clinical Waste incineration - All pollutants

121. AD, EFs and emissions are reported in the IIR. The ERT encourages Romania to add descriptions of the methodologies and the description of the incineration process and trends in the IIR sector to improve the transparency of the IIR.

Category issue 4: 6.C.b: Industrial Waste incineration - All pollutants

122. AD, EFs and emissions are reported in the IIR. The ERT encourages Romania to add descriptions of the methodologies and the description of the incineration process and trends in the IIR sector to improve the transparency of the IIR.

Category issue 5: 6.C.c Municipal Waste incineration - All pollutants

123. Romania has confirmed that there are no facilities for municipal waste incineration in Romania. ERT encourages Romania to change the notation keys for the sector to "NO" instead of "NA". The ERT also recommends that the Party add estimates of emissions if such facilities do appear in Romania.

Category issue 6: 6.C.d Cremation - All pollutants

124. No emissions are reported in this sector because AD are not available. The ERT encourages Romania to collect the AD for this sector to improve completeness of the inventory. Moreover, the ERT recommends that the Party change notation keys to "NE" instead of "NA".

Category issue 7: 6.C.e Small-scale waste burning - All pollutants

125. The IIR explains that there is some small-scale waste burning in the agriculture sector and that a statistical survey to collect data ended in March 2010. However, it is unclear whether the explanation provided in the IIR belongs to the calculation of emissions for sector 6Ce. The ERT recommends that Romania clarify the methods, data sources and assumptions used for this category to improve the transparency of future IIRs.

Category issue 8: 6.D Other Waste(s) - All pollutants

126. The IIR does not provide an explanation of the methods, data sources and assumptions used for this sector. It is not clear which processes are included in this category. AD are provided for compost but no explanation for the methodology is presented in the IIR. The ERT recommends that Romania clarify the methods, data sources and assumptions used for this category to improve the transparency of future IIRs.

Category issue 9: 7 Other (new sector from Guidebook 2009) - All pollutants

127. Chapter 7 may be used to report emissions from, for example, NH₃ emissions from Cats and Dogs, from Zoo animals and human ammonia emissions etc. In addition, although the Guidebook has methods for Car and house fires under chapter 6, it may be more transparent to include these under Chapter 7 as Chapter 6D is

more focused on compost and sludge. The ERT encourages Romania to consider including some of these emissions in the next submissions.

LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW

General

1. Responses to questions from the generalist reviewer during the stage 3 review: RO-General-23-06-10-Q1.doc

Energy

2. Response to preliminary question raised prior to the review: Romania-Energy-22.06.2010.doc
3. Document sent by Romania: Romanian_Energy_Balance_2007.pdf
4. Document sent by Romania: Romanian_Energy_Balance_2008.pdf
5. Document sent by Romania: RO_LCP_AnnexVIIIB_Art15.3.xls
6. Romania Stage 2 S&A report
7. Romania Stage 1 report 2008
8. Romania IIR 2008

Transport

9. Responses to questions raised during the stage 3 review
10. Romania Stage 2 S&A report
11. Romania Stage 1 report 2008
12. Romania IIR 2008

Industrial processes

13. Response to preliminary question raised prior to the review: Romania_Industrial processes_22[1].06.2010.doc

Agriculture

14. Response to preliminary question raised prior to the review: Romania q1-q8 (ReviewQ&ATemplate-v2 Romania 18_06_2010.doc)
15. Response to questions raised during the review: Romania only q9 (Romania_Agro_23_06_2010 clarify question 06.doc).

Waste

16. Response to preliminary question raised prior to the review: RO_waste_23 06 2010 Réponses.doc
17. Response to questions raised during the review: RO_waste_24 06 2010 Resolved.doc
18. Romania Stage 2 S&A report
19. Romania Stage 1 report 2008
20. Romania IIR 2008