

UNITED
NATIONS

DRAFT



**Economic and Social
Council**

Distr.
GENERAL

CEIP/S3.RR/2008/SWE
23/02/2009

ENGLISH ONLY

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

EXAMPLE STAGE 3 REVIEW REPORT

This Example report contains guidance and [examples of text \(Example text is in blue\)](#) used for the 2008 Stage 3 review.

CONTENT

INTRODUCTION	3
PART A: KEY REVIEW FINDINGS.....	4
Inventory Submission	4
Key categories.....	4
Quality.....	5
Transparency.....	5
Completeness	5
Consistency, including recalculations and time-series	6
Comparability	6
CLRTAP/NECD comparability	7
Accuracy and uncertainties	7
Verification and quality assurance/quality control approaches	7
Follow-up to previous reviews	8
Areas for improvements identified by Party.....	8
PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY	10
Cross cutting improvements identified by the ERT	10
Sector specific recommendations for improvements identified by ERT	11
Energy and transport;	11
Industrial Processes	14
Solvents	16
Agriculture.....	18
Waste.....	20
List of additional materials provided by the Country during the Review.....	23

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 – 2006 reflecting current priorities from EMEP Steering Body and the Task Force on Emission Inventories and Projections (TFEIP).
3. This report covers the stage 3 centralised review of the UNECE LRTPA Convention and EU NEC Directive inventories of France, coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place from 6th October 2008 to 10th October 2008 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 – Justin Goodwin (EC), Energy - Stephan Poupa (Austria) and Ole Kenneth Nielsen (Denmark), Industry - Helena Hnilicová (Czech r.), Solvents - Patrik Fauser (Denmark), Agriculture +Nature - Bernard Hyde (Ireland), Waste - Celine Gueguen (France).
4. No review findings have been included in this report for Industrial processes as there were difficulties in completing a review of the industrial process sector due to the time demanding task and language difficulties experienced by the industrial processes expert.
5. 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

A one-two page summary including assessment of mandatory reporting requirements, timeliness, formats, completed tables. Key issues related to data quality, such as an assessment of transparency, major issues relating to completeness and use of methods, major inconsistencies in time series, issues with recalculations.

Provide a summary of the main findings of the review. Include both cross-sectoral and sector-specific findings. Include positive finding as well. Briefly explain the rationale for these findings and how the particular aspect of the inventory is not in conformity with the UNECE reporting guidelines and/or the EMEP/CORINAIR Guidebook. Give references to the relevant parts of this report where problems are explained in more detail, if needed. Indicate what would be required to enhance consistency with the guidebook and the UNECE reporting guidelines, as appropriate.

INVENTORY SUBMISSION

Generalist: *Information can be summarised and referenced to the stage 1 & 2 reports. Include the final decision on the data provided. Include details on the completeness of reported tables and whether data are provided in the agreed formats.*

6. **Party** has reported emissions for its Protocol base years (1990) and a full timeseries to 2006 (the latest year) for its protocol pollutants in the NFR format. In addition **Party** has also provided a full NFR 1990 - 2006 timeseries for CO and a 1990 - 2006 timeseries for PM₁₀ and PM_{2.5}. **Party** reported 2005 gridded emissions for Gothenburg protocol pollutants. **Party** also submitted a detailed IIR.

7. The CLRTAP inventory submitted by **Party** is of good quality and is in general well documented in the informative inventory report (IIR).

KEY CATEGORIES

Generalist: *Explain the reason for any differences between the CEIP and the Parties Key Category Analysis. Is the key category analysis a driving factor for the preparation of the inventory? Is **Error! Reference source not found.** using the analysis to prioritize the development of the inventory? If **Error! Reference source not found.** has provided a key category analysis consistent with the Guidebook, use this as the basis for considering key categories in the sectoral sections, but at the aggregation level of the tier 1 key category assessment used by the secretariat (e.g. stationary combustion) If **Error! Reference source not found.** has not provided a key category analysis, then use the secretariat's assessment as the basis for key categories in the sectoral sections.*

8. **Party** has compiled and presented in its IIR a level Key Source Category Analysis for the following pollutants: NOX, CO, NMVOC, SOX, NH₃, TSP, PM₁₀ and

PM_{2.5} heavy metals and Dioxins, PAHs and PCBs. All sectors have been included except sector 5, LULUCF. The level assessment is performed for 2006 for all pollutants.

QUALITY

Transparency

Generalist: Assess if the IIR and reporting templates are transparent. Analyse if the information contained in the IIR is detailed enough and if the methods used are described in such way that enables reviewers to fully assess underlying assumptions and rationale for choices of data, methods and other inventory parameters. Could the external sources used be better referenced? Are there any confidentiality issues raised by **Error! Reference source not found.**? This section of the report should have a clear emphasis on the IIR. Are sources identified in the templates as "Included Elsewhere (IE)" sufficiently referenced and identified? Is justification of the decision to aggregate them rather than report the data under specific NFR categories and intentions for future aggregation provided? Typical elements to watch for include the provision of additional information in the IIR with regard to comprehensive and precise methodological descriptions in individual sectors, explanations of the selection of methodologies and EFs. Details of any country-specific data (EFs and parameters) should be identified and referenced, and the basic assumptions on how these data are derived should be documented in the IIR. Documentation on recalculations, qualitative information and assumptions on uncertainties, the areas for improvement identified as well as a description of the QA/QC plan and information on QA/QC procedures already implemented or to be implemented in the future should also be included in the IIR.

9. The ERT recognises the level of effort undertaken by Party in providing an inventory of with a significant level of detail to undertake a detailed review. The Parties IIR is detailed and well presented. EF and activity time series are almost always presented in detail (SNAP level), assumptions are indicated and references are given. The ERT encourages Party to compliment the excellent work done on the IIR with some additional descriptions indicated below (for Agriculture and Waste), and the addition of sub-title levels for each of the detailed sources to aid navigation. The ERT also encourages Party to provide more detailed descriptions of recalculations in future IIRs.

10. Party uses zero-values in a number of areas in the reporting tables. The ERT encourages Party to use the appropriate notation keys (e.g. NO where emissions are "Not Occurring", NE where emissions are "Not Estimates" and IE where emissions are "Included Elsewhere") for reporting where estimates are not available or necessary. Following the review Party have indicated that notation keys are now being used for future reporting.

Completeness

Generalist: Assess the overall completeness of the inventory in terms of years/geographic coverage/sectors/source categories/pollutants. Highlight any significant gaps with regard to the sectors included, the time series, and in the descriptions and sections in the IIR.. Has the Country listed the sources not

estimated in the inventory with an a qualitative assessment of their importance, currently and in future and a description of intentions to calculate these in future or an explanation of why there are no such plans.

11. The ERT acknowledges the effort to which **Party** has gone to provide estimates of emissions for all sub-sectors and all pollutants reviewed.

12. **Party**'s inventory for the pollutants reviewed is generally complete. However, completeness was difficult to fully asses because of the limited use of notation keys in the reported tables. The ERT identified some possible missing sources in the waste (cremation, sludge spreading and open burning of wastes) and solvents (including electronic components manufacturing under Degreasing and Dry Cleaning) sectors. The ERT considers these sources have little influence on the national total but encourages **Party** to provide rational for excluding and/or descriptions of plans to estimate these sources/regions/pollutants/species in the IIR.

13. The ERT recommends that the party performs additional reviews to identify potential gaps in the inventory. The usage of notation keys is highly recommended to support the finding of such gaps.

Consistency, including recalculations and time-series

Generalist: *Are the recalculations sufficiently justified? This section should have a clear assessment as to whether the recalculations have resulted in real improvements of the inventory. What is the impact on the trend? Have any significant differences been identified between the recalculations reported by **Error! Reference source not found.** (or not reported) and those calculated by the secretariat? If so, has the reason for this difference been adequately examined and explained? Is the inventory compiled on a consistent basis for all pollutants and sectors? Is a consistent energy balance and statistics used for all pollutants and years.?*

14. **Party** have undertaken a number of recalculations for their 2008 submission in the energy, agriculture and waste sectors for the years XX, XX and XX. However, descriptions have not been provided in enough detail for the Energy or Waste sectors. The ERT encourages **Party** to provide additional detail on the rational for the recalculations as well as the impacts of the changes on the national estimates and timeseries in its future IIR submissions.

15. Where the time series is not consistent **Error! Reference source not found.** has [Not] provided an adequate explanation.

Comparability

Generalist: *Assess whether the inventory is comparable with those of other Countries, as defined in the EMEP/UNECE reporting guidelines, including failure to use agreed reporting formats (e.g. methodologies and formats agreed by the EMEP SB/EB for estimating and reporting inventories). Does the allocation of the source categories follow the split in the EMEP/UNECE reporting Guidelines. Include recommendations to the Country if applicable.*

16. The ERT notes that the inventory of Party is comparable with those of other reporting parties. The allocation of source categories follows that of the EMEP/UNECE reporting Guidelines. The ERT encourages Party to continue with this approach to national inventory calculation.

CLRTAP/NECD comparability

Generalist: Assess whether there are differences between the CLRTAP and NECD inventories, by sector and total (if data is available from CEIP)

17. The ERT noted that there are some differences between the estimates provided by Party under LRTAP and NECD for energy as a result of the recalculations of the later LRTAP submission.

Accuracy and uncertainties

Generalist: Assess whether the inventory is accurate, as defined in the UNECE reporting guideline. Ensure that emissions are not systematically neither over nor under true emissions and that uncertainties are reduced as far as practicable. Assess if the information provided on uncertainties is appropriate and as required by the UNECE reporting guidelines, e.g. indicating if uncertainty estimates have been provided, if the Guidebook guidance has been applied (tier 1 and/or tier 2). Does **Error! Reference source not found.** instead use a qualitative uncertainty analysis? Have these uncertainties been reduced compared to previous years? Does **Error! Reference source not found.** use its uncertainty analysis to prioritise further improvements in the inventory? Any identified shortcomings should be followed by a recommendation. If information on uncertainty is particularly important for a particular sector, additional information should be included under that sector.

18. Party have not compiled uncertainty estimates for their UNECE submission. During the review Party indicated that it planned to extend the uncertainty assessment from the greenhouse gases to the other emission estimates. The ERT encourages Party to compile at least tier 1 estimates for future submissions.

Verification and quality assurance/quality control approaches

Generalist: Assess whether **Error! Reference source not found.** has provided information on quality assurance/quality control (QA/QC) procedures in line with the Guidebook Inventory Management chapter. Does **Error! Reference source not found.** have a QA/QC plan in place in accordance with the Guidebook? Are these procedures, including source-specific procedures, implemented according to the Guidebook (e.g. appropriate tier)? If not, does **Error! Reference source not found.** have plans to implement them in the future?

19. **Error! Reference source not found.** has elaborated [and implemented] a quality assurance/quality control (QA/QC) plan in accordance with the EMEP/CORIANIR Guidebook (Inventory Management Chapter). This [includes][does not include] general QC procedures (tier 1)[as well as source category-specific procedures (tier 2) for key categories and for those individual categories in which significant methodological and/or data revisions have occurred].

20. The ERT commends Party on its general quality assurance/quality control (QA/QC) activities. However, sector specific checks are not documented in the IIR. ERT encourages Party to provide information on sector specific information on QA/QC procedures in future submissions.

FOLLOW-UP TO PREVIOUS REVIEWS

Generalist: *Indicate major improvements for the inventory as a whole resulting from previous reviews or highlight major pending issues, if any (e.g. previous inventory review reports issues addressed during earlier stages of the review, previous years S&A reports).*

21. Party provided detailed responses to the questions identified in stage 2 on outliers of implied emissions factors. Due to the quality of the IIR and Party's responsiveness the ERT were able to review the inventory in detail and provide a number of detailed recommendations.

AREAS FOR IMPROVEMENTS IDENTIFIED BY PARTY

Generalist: *Complete based on own assessment and collation of general parts of sectoral sections highlighting the most important recommendations.*

22. [The IIR identifies [several] areas for improvement.] [In its response to previous reviews and review stages this year, **Error! Reference source not found.** indicates that it is working to improve its estimates on XX.] These include:

23. More plant specific emission factors to be incorporated and further development of country specific emission factor across the time series for some energy sectors. Following the review Party have indicated that this is part of their continuous improvement activities.

24. A review of the potential underestimation of fuel oil combustion in refineries and development of projects to incorporate high quality facility level data (e.g. EUETS) into the national estimates and to generate country specific emission factors.

25. Review of the compatibility between the inventory and the energy balance including continuing efforts to uses fuel consumption data obtained directly from several sources - Large Combustion Plants (LCP) and EUETS.

26. Improvements to the estimates in the solvent sector for paint application, degreasing and dry cleaning, printing industry and rubber processing.

27. The applicability of the emission factors used in the calculation of NH₃ emissions from for grazing for 4B Manure Management.

28. Integration of some of the missing sources (cremation of corpses and carcasses, incineration of waste oils) in the next submission and to improve it knowledge concerning industrial waste-water treatment.

PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

CROSS CUTTING IMPROVEMENTS IDENTIFIED BY THE ERT

Generalist: Complete based on own assessment and collation of general parts of sectoral sections highlighting the most important recommendations:

29. The ERT identifies the following cross-cutting issues for improvement:
30. More detailed description of the time series of key sources into the IIR
31. Further details of methodologies for some sectors missing from the current IIR as detailed below (including for 1.B fugitive emissions) & assumptions on solvent content of paints, corrections of small errors on Waste for industrial waste water. Party have included details in the latest version of the IIR.
32. Provision of sub category level chapters to aid navigation in the document.
33. Inclusion of missing sources (including cremation, sludge spreading) and review methods for Landfil NH₃
34. The use the appropriate notation keys (e.g. NO where emissions are “Not Occurring”, NE where emissions are “Not Estimates” and IE where emissions are “Included Elsewhere”. Following the review Party have indicated that this issue has been addressed for future reporting.
35. Elaborate on the rational and explanation of recalculations and its implication to trends could for some sectors in the IIR.
36. To perform and present uncertainty analysis and use it to as a tool to focus planned improvements to the key categories.
37. To continue to develop projects for the incorporate high quality facility level data (e.g. EUETS) into the national estimates and to generate country specific emission factors.
38. 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 AND TRANSPORT;

Review Scope

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2006 + (Protocol Years)		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
1.A.1	Energy industries	x		
1.A.2	Manufacturing industries and construction	x		
1.A.3	Transport	x		
1.A.4	Commercial, Residential, Agriculture & Forestry	x		
1.A.5	Other	x		
1.B.1	Fugitive emissions from solid fuels	x		
1.B.2	Fugitive emissions from oil and natural gas	x		
Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns.				

General recommendations on cross cutting issues.

To be completed by Sector experts: Summarise the cross cutting findings for your sector here based on the sectoral checklist findings in the transcript. Provide general indications and improvement recommendations based on the detail in the transcript.

39. **Completeness:** The ERT consider the Energy sector to be complete and comprehensive with good levels of detail in the methodology descriptions.

40. **Transparency:** Party uses zero-values in a number of areas in the reporting tables. The ERT encourages Party to use the appropriate notation keys (e.g. NO where emissions are “Not Occurring”, NE where emissions are “Not Estimates” and IE where emissions are “Included Elsewhere”) for reporting where estimates are not available or necessary.

41. Party have provided a detailed and generally transparent emissions inventory. Estimates are provided at the most detailed level for all energy sectors. Party’s methodology and emission factors in the IIR are considered by the ERT to be transparent and well described for the Energy Sector. The ERT encourages Party to include more detail in the IIR including: in the

42. **Uncertainty:** The ERT encourages Party 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.

43. **QA/QC procedures:** The Party has some basic QA/QC checks The ERT encourages Party to implement sector specific OA/QC procedures for

44. **Recalculations:** Party has recalculated its inventory for almost all sectors in the year 2005. However, the IIR does not include all the necessary explanations. The ERT encourages Party to provide more detailed explanation of recalculations, including the rational, the impact on the sector and implication to trends for the Energy sector in its IIR.

45. **Improvement:** The ERT commends Party for its improvement in The ERT notes the Parties intention to improve..... The ERT encourages Party to check/review, include new information, implement planned improvements... etc..

Sub-Sector Specific Recommendations.

To be completed by Sector experts: Describe if the methodologies used are appropriate and in line with the EMEP/CORINAIR Guidebook. If not, what would be required to make them in line with the EMEP/CORINAIR Guidebook? Are emission factors used (country-specific, EMEP/CORINAIR default, combination) appropriate? Are activity data (plant-specific, national statistics) appropriate? Also consider issues identified in previous stages of review process and previous review reports. Any identified shortcomings should be followed by a recommendation.

General format for text: The ERT have identifier a problem with..... The ERT recommend the following solution..... The Country responded..... Or the ERT commends the Country for.... and encourages the country to continue improving the inventory.....

1.A.3a Air Transport:- All Pollutants

46. During the review Party stated that civil aircraft emissions for cruise between mainland Party and Madeira/the Azores are partially (50 %) included in the national totals. The ERT recommends Party to improve the documentation in the IIR for the procedures used in connection with the handling of territories.

1.A.2 & 1.A.4 Wood Combustion:- All Pollutants

47. The ERT noted that Party do not estimate emissions of SO₂ from fuel wood. Although this is likely to be a small source of SO₂ compared to the national totals emission factors are provided in the EMEP/CORINAIR guidebook. The ERT encourages Party to apply these default factors and to estimate SO₂ emissions from wood combustion in future submissions. Party intends to address this in the 2010 submission.

1.A.3.b Road transport - NMVOC

48. The ERT noted that the COPERT 3 transport model is used. Party expects to have had the first draft results from COPERT 4 by the end of 2008 and plans to consider including the new estimates in the national inventory as soon as possible. The ERT welcomes Party's efforts to keep the inventory at the best available scientific level.

1.A.1 & 1.A.2 Industrial Combustion - All Pollutants

49. Party have indicated, in their IIR, that a potential underestimation of fuel oil and gas combustion in refineries has been identified. Party have initiated a project to streamline the collection of information for refineries as part of a programme to look at the consistency between EU-ETS and the inventory. Party also plan to extend this project to co-ordinate the collection of data from large units between DGEG and APA. The ERT commends Party's efforts in ensuring consistency between EUETS, the energy balance and the emission inventory and encourages Party to continue this effort.

50. **1.A.2 Industrial Combustion:- Stationary Engines - CO**

51. The ERT identified that the emission factors for CO from stationary engines using gasoline or gas oil (Table 2.78) seem to be very low. The ERT concluded that the lower value of a very broad range (12-1130 large plants, 12-631 small plants) from the EMEP/Corinair Guidebook has been used. The country responded that the same value for boilers was used in accordance to CORINAIR 90. The information in the EMEP guidebook was not clear enough to set a specific value for stationary engines and that it will revise this figure using references from the new Guidebook, US-EPA or even country specific information. The ERT encourages Party to review the emission factors for stationary engines.

52. Following the review Party concluded that 1.A.2 could not be split into stationary and mobile combustion. The ERT encourages Party to continue to investigate the feasibility of separating stationary and mobile fuel consumption data in the future.

53. **1.B. Fugitive emissions – NMVOC**

54. During the review the ERT highlighted the absence of a methodology description for category 1.B fugitive emissions in the IIR. Party, provided a document during the review describing the methods for emission estimation from refineries, storage and distribution of oil products. The ERT encourages Party to include this documentation in future submissions and that the inventory and documentation covers the missing subsectors identified (transmission/distribution of natural gas/city gas and storage and handling of coal). Following the review Party have indicated that they will include this information in future submissions.

INDUSTRIAL PROCESSES

Review Scope

Pollutants Reviewed		55. SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		56. 1990 – 2006 + (Protocol Years)		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
2.A.1	cement production			
2.A.2	lime production			
2.A.3	limestone and dolomite use			
2.A.4	soda ash production and use			
2.A.5	asphalt roofing			
2.A.6	road paving with asphalt			
2.A.7	other including non fuel mining & construction (please specify in a covering note)			
2.B.2	nitric acid production			
2.B.3	adipic acid production			
2.B.4	carbide production			
2.B.5	other (please specify in a covering note)			
2.C.1	iron and steel production			
2.C.2	ferroalloys production			
2.C.3	aluminium production			
2.C.4	sf ₆ used in aluminium and magnesium foundries			
2.C.5	other (please specify)			
2.D.1	pulp and paper			
2.D.2	food and drink			
2.D.3	Wood processing			
Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns.				

General recommendations on cross cutting issues

To be completed by Sector experts: Summarise the cross cutting findings for your sector here based on the sectoral checklist findings in the transcript. Provide general indications and improvement recommendations based on the detail in the transcript.

57. **Completeness:** The ERT consider the industrial processes sector to be complete and comprehensive with good levels of detail in the methodology descriptions.
58. **QA/QC procedures:** The Party has some basic QA/QC checks The ERT encourages Party to implement sector specific QA/QC procedures for
59. **Recalculations:** No recalculations are stated in IIR. There is no difference between 2007 and 2008 reporting of 2005 emissions on category levels. Time series are consistent.

60. **Uncertainty:** The ERT encourages Party to undertake uncertainty analysis for the industrial processes in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

61. **Transparency:** Party uses zero-values in a number of areas in the reporting tables. The ERT encourages Party to use the appropriate notation keys (e.g. NO where emissions are “Not Occurring”, NE where emissions are “Not Estimates” and IE where emissions are “Included Elsewhere”) for reporting where estimates are not available or necessary. The IIR is generally transparent and well presented/organised although some additional detail has been recommended below. The ERT encourages Party to include more detail in the IIR including: in the

62. **Improvement:** The ERT commends Party for its improvement in The ERT notes the Parties intention to improve..... The ERT encourages Party to check/review, include new information, implement planned improvements... etc..

Sector Specific Recommendations

To be completed by Sector experts: *Describe if the methodologies used are appropriate and in line with the EMEP/CORINAIR Guidebook. If not, what would be required to make them in line with the EMEP/CORINAIR Guidebook? Are emission factors used (country-specific, EMEP/CORINAIR default, combination) appropriate? Are activity data (plant-specific, national statistics) appropriate? Also consider issues identified in previous stages of review process and previous review reports. Any identified shortcomings should be followed by a recommendation.*

General format for text: *The ERT have identifier a problem with..... The ERT recommend the following solution..... The Country responded..... Or the ERT commends the Country for.... and encourages the country to continue improving the inventory.....*

63. e.g. 3.B. Dry Cleaning and Degreasing – NMVOC

64. The ERT noted that electronic components manufacturing is not specifically mentioned in the current IIR. The ERT encourages Party to clarify in future IIRs and emissions reports whether electronic components manufacturing is accounted for under Degreasing and Dry Cleaning.

65. e.g. 3.C. Chemical Products, Manufacture & Processing – NMVOC

66. During the review Party identified specific ongoing improvements to the rubber processing activity calculations. The ERT encourages Party to include details in the next submission of these improvements.

67. The ERT encourages Party to include in future submissions, the table supplied during the stage 3 review, with relative distribution of benzene and gasoline in rubber processing, cf. annex A.

SOLVENTS

Review Scope

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2006 + (Protocol Years)		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
3.A.1	Decorative coating application	3A		x
3.A.2	Industrial coating application			
3.A.3	Other coating application (Please specify the sources included/excluded in the notes column to the right)			
3.B.1	Degreasing	3B		x
3.B.2	Dry cleaning			
3.C	Chemical Products, Manufacture & Processing	3C		X
3.D.1	Printing	3D		x
3.D.2	Domestic solvent use including fungicides			
3.D.3	Other product use			
Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns.				

General recommendations on cross cutting issues

To be completed by Sector experts: Summarise the cross cutting findings for your sector here based on the sectoral checklist findings in the transcript. Provide general indications and improvement recommendations based on the detail in the transcript.

68. **Completeness:** The ERT consider the solvent sector to be complete and comprehensive with good levels of detail in the methodology descriptions.
69. **QA/QC procedures:** The Party has some basic QA/QC checks The ERT encourages Party to implement sector specific OA/QC procedures for
70. **Recalculations:** No recalculations are stated in IIR. There is no difference between 2007 and 2008 reporting of 2005 emissions on category levels. Time series are consistent.
71. **Uncertainty:** The ERT encourages Party to undertake uncertainty analysis for the solvent sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.
72. **Transparency:** Party uses zero-values in a number of areas in the reporting tables. The ERT encourages Party to use the appropriate notation keys (e.g. NO where emissions are “Not Occurring”, NE where emissions are “Not Estimates” and IE where emissions are “Included Elsewhere”) for reporting where estimates are not available or necessary. The IIR is generally transparent and well presented/organised although some additional detail has been recommended below. The ERT encourages Party to include more detail in the IIR including: in the

73. **Improvement:** The ERT commends Party for its improvement in The ERT notes the Parties intention to improve..... The ERT encourages Party to check/review, include new information, implement planned improvements... etc..

Sector Specific Recommendations

To be completed by Sector experts: Describe if the methodologies used are appropriate and in line with the EMEP/CORINAIR Guidebook. If not, what would be required to make them in line with the EMEP/CORINAIR Guidebook? Are emission factors used (country-specific, EMEP/CORINAIR default, combination) appropriate? Are activity data (plant-specific, national statistics) appropriate? Also consider issues identified in previous stages of review process and previous review reports. Any identified shortcomings should be followed by a recommendation.

General format for text: The ERT have identifier a problem with..... The ERT recommend the following solution..... The Country responded..... Or the ERT commends the Country for.... and encourages the country to continue improving the inventory.....

3.A. Paints and Coatings – NMVOC

74. The ERT encourages Party to assess the remains in cans, tubes, containers for paints, adhesives and other solvent containing products. At present it is assumed that the entire amount of product is emitted. If a fraction is left and the container is incinerated, which is more realistic, the EF will be reduced.

75. The ERT encourages Party to include an explanation in the report on how the value for solvent content in solvent based paint, in Table 4.2, is found.

3.B. Dry Cleaning and Degreasing – NMVOC

76. The ERT noted that electronic components manufacturing is not specifically mentioned in the current IIR. The ERT encourages Party to clarify in future IIRs and emissions reports whether electronic components manufacturing is accounted for under Degreasing and Dry Cleaning.

3.C. Chemical Products, Manufacture & Processing – NMVOC

77. During the review Party identified specific ongoing improvements to the rubber processing activity calculations. The ERT encourages Party to include details in the next submission of these improvements.

78. The ERT encourages Party to include in future submissions, the table supplied during the stage 3 review, with relative distribution of benzene and gasoline in rubber processing, cf. annex A.

AGRICULTURE.

Review Scope:

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2006 + (Protocol Years)		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
4.B	Manure Management	NH ₃		
4.D1	Direct Soil Emissions	NH ₃		
4.F	Field burning of agricultural wastes	NMVOC, CO, PM ₁₀ , PM _{2.5}		
5E	Other	CO, NMVOC		
Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns.				

General recommendations on cross cutting issues

To be completed by Sector experts: Summarise the cross cutting findings for your sector here based on the sectoral checklist findings in the transcript. Provide general indications and improvement recommendations based on the detail in the transcript.

79. **Completeness:** The inventory is complete with respect to the most important sources of emissions. The IIR is generally transparent for the Agriculture sector with some exceptions outlined below for 4B and 4D.

80. **QA/QC procedures:** The Party has some basic QA/QC checks The ERT encourages Party to implement sector specific OA/QC procedures for

81. **Recalculations:** The ERT note that recalculations were undertaken in response to an in-country review of the 2006 Inventory Submission under the UNFCCC and of the Informative Inventory Report under the Kyoto Protocol for Party. This has resulted in a revision of nitrogen excretion ratios for 4B3 sheep and a revision of activity data and volatilisation rates for fertilizer use in 4D1 Direct Soil Emissions. The ERT acknowledges the effort undertaken for this revision and encourages Party that any further recalculations as a result of the UNFCCC review process which have an effect on emission reporting under CLRTAP and or NECD are included in future submissions.

82. **Uncertainty:** The ERT encourages Party to undertake **uncertainty** analysis for the solvent sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

83. **Transparency:** Party uses zero-values in a number of areas in the reporting tables. The ERT encourages Party to use the appropriate notation keys (e.g. NO where emissions are “Not Occurring”, NE where emissions are “Not Estimates” and IE where emissions are “Included Elsewhere”) for reporting where estimates are not available or necessary. The IIR is generally transparent and well presented/organised although some additional detail has been recommended below. The ERT encourages Party to include more detail in the IIR including: in the

84. **Improvement:** The ERT commends Party for its improvement in The ERT notes the Parties intention to improve..... The ERT encourages Party to check/review, include new information, implement planned improvements... etc..

Sector specific recommendations

To be completed by Sector experts: Describe if the methodologies used are appropriate and in line with the EMEP/CORINAIR Guidebook. If not, what would be required to make them in line with the EMEP/CORINAIR Guidebook? Are emission factors used (country-specific, EMEP/CORINAIR default, combination) appropriate? Are activity data (plant-specific, national statistics) appropriate? Also consider issues identified in previous stages of review process and previous review reports. Any identified shortcomings should be followed by a recommendation.

General format for text: The ERT have identifier a problem with..... The ERT recommend the following solution..... The Country responded..... Or the ERT commends the Country for.... and encourages the country to continue improving the inventory.....

4.B Manure management:- NH₃

85. The ERT noted that the methodology description for NH₃ emissions from 4B Manure Management was not clearly presented. During the review Party acknowledged that it will consider revising the description in its next submission. The ERT encourages Party to undertake a revision of the description of the methodology for future submissions.

86. The ERT questioned the applicability of the emission factors used in the calculation of NH₃ emissions for grazing, housing and outside storage and land spreading of manures for 4B Manure Management. During the review Party indicated that it would undertake a review of the applicability of the emission factors. The ERT encourages Party to undertake this initiative and to report on its findings in future submissions.

87. Party is encouraged by the ERT to provide more detailed information in its next IIR submission on the data used for calculations and the inclusion of activity data for 4B Manure Management.

4.D.1 Agricultural Soils:- NH₃

88. The ERT encourages Party to provided detailed information on the breakdown of national fertilizer consumption into the relevant compounds in use, which are accounted for in emission estimates under 4D1 Direct Soil Emissions.

WASTE

Review Scope:

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2006 + (Protocol Years)		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
6.A	solid waste disposal on land	x		x
6.B	waste-water handling	x		x
6.C	waste incineration	x		x
6.D	other waste (e)	x		no
Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns.				

General recommendations on cross cutting issues.

To be completed by Sector experts: Summarise the cross cutting findings for your sector here based on the sectoral checklist findings in the transcript. Provide general indications and improvement recommendations based on the detail in the transcript.

89. **Completeness:** Party includes all of the most important sources in its waste inventory. However, some NRF6 sources, which are documented in the EMEP/CORINAIR guideline, are not included in Party's estimates. These include cremation, sludge spreading and Party do not provide any rationale for their exclusion. The ERT encourages Party to improve the completeness of the inventory by including these sources and to describe in its IIR where sources have not been included.

90. The ERT noted a few small editorial errors in graphic, equation and units. However these have no impact on calculated emission values. The ERT encourages Party to improve transparency further by correcting these mistakes in the next submission.

91. **QA/QC procedures:** The Party has some basic QA/QC checks The ERT encourages Party to implement sector specific QA/QC procedures for

92. **Recalculations:** The ERT note that recalculations were undertaken in response to an in-country review of the 2006 Inventory Submission under the UNFCCC and of the Informative Inventory Report under the Kyoto Protocol for Party. The ERT acknowledges the effort undertaken for this revision and encourages Party that any further recalculations as a result of the UNFCCC review process which have an effect on emission reporting under CLRTAP and or NECD are included in future submissions.

93. **Uncertainty:** The ERT encourages Party to undertake **uncertainty** analysis for the solvent sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

94. **Transparency:** This first Parties IIR shows a high level of transparency in terms of methodologies and data. EF and activity time series are almost always

presented in details, assumptions are indicated and references are given (except for industrial waste water). The ERT encourages Party to compliment the excellent work done on the IIR with the addition of sub-title levels for each of the detailed sources to aid navigation.

95. The ERT encourages Party to include more detail in the IIR including: in the

96. Party uses zero-values in a number of areas in the reporting tables. Party uses zero-values in a number of areas in the reporting tables. The ERT encourages Party to use the appropriate notation keys (e.g. NO where emissions are “Not Occurring”, NE where emissions are “Not Estimates” and IE where emissions are “Included Elsewhere”) for reporting where estimates are not available or necessary.

97. **Improvement:** The ERT commends Party for its improvement in The ERT notes the Parties intention to improve..... The ERT encourages Party to check/review, include new information, implement planned improvements... etc..

Sector Specific Recommendations

To be completed by Sector experts: Describe if the methodologies used are appropriate and in line with the EMEP/CORINAIR Guidebook. If not, what would be required to make them in line with the EMEP/CORINAIR Guidebook? Are emission factors used (country-specific, EMEP/CORINAIR default, combination) appropriate? Are activity data (plant-specific, national statistics) appropriate? Also consider issues identified in previous stages of review process and previous review reports. Any identified shortcomings should be followed by a recommendation.

General format for text: The ERT have identifier a problem with..... The ERT recommend the following solution..... The Country responded..... Or the ERT commends the Country for.... and encourages the country to continue improving the inventory.....

6A1&2 Landfills: – NH₃

98. Landfills disposal has been identified by Party as key category for NH₃. The ERT noted that no other Parties identify this sector as a key category for NH₃. The ERT noted that the Parties methodology applied for calculating NH₃ emissions from landfill disposal of municipal and industrial waste applies a FOD similar to the one used to calculate CH₄. As NH₃ emissions do not have a direct relation with the DOC content, the ERT considers the adaption of the CH₄ FOD inappropriate. The ERT recommends that Party revises its methodology and to estimates NH₃ emissions from landfills on the basis of CH₄ emission values (calculated under UNFCCC) and the NH₃/CH₄ ratio estimated on the basis of measurements. Following the review Party revises their methodology using a NH₃/CH₄ ratio proposed by Eggleston (1992) (0.0073 kg NH₃/kg CH₄).

6A3: – NMVOC and all pollutants

99. The ERT identified some problems concerning apparent inconsistency in activity time series from Landfills. During the review Party identified a problem with the “open burning of industrial waste on land” which is allocated to landfill emissions in its submission. The data actually refers to the incineration of industrial waste in

dedicated MSW units and other industrial units. The ERT recommends Party to review the methods (appropriateness of EF and AD) to make sure that emissions are not already included in the estimates of municipal waste incineration. The ERT also encourages Party to consider allocating these emissions under 6C incineration.

6A3 : – all pollutants

100. Waste-water treatment sludges are included Party as an industrial waste and considered under the subcategory “open burning of industrial waste”. The ERT indicated that emission factors for incineration of waste-water sludges are different from those used for incineration of municipal solid waste (EMEP/CORINAIR 090205) and open burning of wastes. The ERT encourages Party to use plant specific emission values for incineration of wastes when available. Where these are not, the ERT encourages Party to estimate the part of each category of waste (municipal + non-hazardous industrial waste, wastewater sludge) and apply the appropriate emission factors. The ERT also encourages Party to consider allocating these emissions under 6C incineration.

6B1&2 Wastewater handling

101. Party calculates NH₃ emissions from individual private wastewater treatment (and more particularly latrines and septic tanks) using the methodology presented in CORINAIR (v.2006) for Latrines. Party assumes that as both latrines and septic tanks are considered to have equivalent anaerobic conditions in the 2006IPCC guidelines they are equivalent in term of NH₃ emissions. However the ERT notes that there are important difference between latrines and septic tanks for NH₃ emission estimation, as latrines are "dry" systems" without water supply and septic tanks are not and according to the EMEP/CORINAIR guidebook NH₃ is reduced in wet systems. The ERT encourages Party to split its estimates for latrines and septic tanks and apply appropriate emission factors for NH₃. Following the review Party have revised NH₃ emissions from individual private wastewater according to the recommendations of the ERT.

102. The ERT encourages Party to provide, in future IIRs, a description of data sources, methods and activity data used for its estimates of Industrial waste water treatment, in a similar manner to those provided for other categories in the IIR.

6.C Hazardous waste incineration:

103. The ERT notes that Party use some measurement data for the development of emission factors for emissions from incineration plant. The ERT encourages Party to check if those values , obtained from industrial plants, match with previously used EF and that a consistent timeseries can be constructed.

LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW

To be completed by Sector experts and generalist: To include references of material send to the ERT by the party or considered by the ERT (e.g. web material).

1. Response to preliminary question raised prior to the review: Party q1 responses.doc
2. Response to questions raised during the review: Party q2-Ag-jg_20081008.doc
3. Party Stage 2 S&A report
4. Party Stage 1 report 2008
5. Party IIR 2008
6. Solvents: cf. question above:

Product	Solvent
New tires	100% Benzene
Reconstructed tires	100% Benzene
Other rubber products	1,7% Gasoline
	98,3% Benzene