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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:**

FRANCE

CONTENT

INTRODUCTION	3
PART A: KEY REVIEW FINDINGS.....	4
Inventory Submission	4
Key categories.....	4
Quality.....	4
Transparency.....	4
Completeness	5
Consistency: including recalculations and time-series.	5
Comparability	5
CLRTAP/NECD comparability	5
Verification and quality assurance/quality control approaches:	5
Follow-up to previous reviews	6
PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY ..	7
Cross-cutting improvements identified by the ERT	7
Sector specific recommendations for improvement identified by ERT	7
Energy and transport;	7
Industrial Processes.....	9
Solvents.....	10
Agriculture and Nature	12
Waste.....	13
Annex 1: List of additional material provided by the country during the review	14

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 and PM_{2.5} for the time series years 1990 – 2006 reflecting current priorities from the 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 LRTAP Convention and EU NEC Directive inventories of France, coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place from 5th 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. The waste sector for France was not reviewed as no review expert was available to undertake the review.
5. 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.
6. 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

Inventory Submission

7. France has reported emissions for its Protocol base years and a full time series up to 2006 (the latest year) for its protocol pollutants in the NFR format. France has also provided a full 1980 - 2006 time series for CO and NH₃, a 1990 - 2006 time series for PM₁₀ and PM_{2.5} and a 1988 - 2006 time series for NMVOC. France also provided a detailed IIR and references to a detailed methodology description for all sectors and pollutants in its OMINEA report. France reported SO₂ gridded data for the year 2000, but did not submit any gridded data for the year 2005.

8. The CLRTAP inventory submitted by France appears to be of good quality and very well documented in the background report (Ominea Report) in French. Due to language issues, it was not possible to fully take into account all the documentation provided by France. More detailed findings of the expert review team (ERT) are provided in the next sections.

Key categories

9. France has compiled and presented in its IIR a tier 1 level and trend Key Source Category Analysis for the following pollutants: NO_x, CO, NMVOC, SO₂, NH₃, TSP, heavy metals and POPs. Key source category analysis has not been done for PM₁₀ and PM_{2.5} separately. The level assessment has been performed for 2006, and the trend assessment for 2006, using 1990 as the base year for all pollutants. The analysis is similar to that of the CEIP for NO_x, SO₂, NH₃, NMVOC. The ERT encourages France to compile separate key category analysis for PM₁₀ and PM_{2.5}. In response to the draft review report France indicated that the analysis could be extended in the next submission with separate analysis for PM10 and PM2.5.

Quality

Transparency

10. The ERT recognises the level of effort undertaken by France in providing an inventory with a significant level of detail to undertake a detailed review. The documentation of the French inventory is very comprehensive. The IIR contains information on institutional arrangements, key source analysis, QA/QC procedures etc. A separate report is prepared for uncertainty estimates. Most methodologies and emission factors are described in the OMINEA report. Unfortunately, due to the limited language skills of the reviewers, it was not possible to understand all of this very detailed information. However, with the support from the French experts and the inventory team, the ERT identified a number of recommendations in relation to transparency which the ERT encourages the party to undertake in future submissions; including:

- Inclusion of more detailed sub-sectoral calculation tables and activity data provision in future submissions for source sectors including the subsectors in 3.B, 3.C and 3.D.3 and further details for 4B Manure Management and 4D1 Direct Soil Emissions
- Inclusion of trend analysis tables for each sector.

- Grouping of methodology descriptions at a NFR level with the details provided at SNAP level to facilitate transparency.
- The appropriate use of notation keys.
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Completeness

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

France has not identified any sources as not estimated (NE) in its inventory submission. However, France has included a large number of "0" rather than notation keys. The ERT encourages France to use notation keys for those sectors for which no estimates of emissions have been made either as a result of the source not existing in the country or where no activity data or methodology is available.

12. The ERT also noted that a small number of sectors for which emissions estimates had not been calculated were included in the energy (storage and handling of coal) sectors. The ERT encourages France to estimate these emissions for future submissions or where this is not possible, France is encouraged to use notation keys correctly (e.g. 4B2 Buffalo, 4B5 Camels and Llamas and 4B13 Other).

Consistency: including recalculations and time-series.

13. The expert review team (ERT) noted that recalculations of the time series 2000 to 2005 had been undertaken for a number of sectors and pollutants including significant changes for road transport NO_x and SO₂ from manufacturing industry. However, the detailed nature of these recalculations was not assessed due to the language difficulties experienced by the ERT.

Comparability

14. The inventory for France is comparable with those of other countries as defined in the EMEP/UNECE reporting guidelines. The allocation of source categories follows the split in the EMEP/UNECE reporting Guidelines. The ERT encourages France to continue with this approach to national inventory calculation.

CLRTAP/NECD comparability

15. A comparison between estimates reported for CLRTAP and under the National Emissions Ceilings Directive undertaken in stage 2 showed good agreements.

Verification and quality assurance/quality control approaches:

16. The ERT notes that France has in place a QA/QC management plan covering all air pollutants and greenhouse gases. However, due to language difficulties, it was not possible for the ERT to establish what particular sector specific QA/QC procedures are undertaken for sectors in addition to those undertaken for the overall inventory. The ERT encourages the provision of sections A.3.2 to A.3.5 of the OMI/NEA report in English to facilitate the review process. Following the review, France confirmed that future report submission will include some general sections of OMI/NEA, and that the executive summary of IIR according to the new reporting guidelines on the IIR structure will be translated into English.

Follow-up to previous reviews

17. France did not provide a response to the Stage 2 S&A report. The ERT encourages France to provide information in response to its Stage 2 S&A report in future years.

PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

Cross-cutting improvements identified by the ERT

18. The ERT identifies the following cross-cutting issues for improvement:
- (a) Improve transparency through more precise descriptions of methodologies for sectors at a NFR level with additional detail for some key categories.
 - (b) Key source category analysis for PM₁₀ and PM_{2.5}.
 - (c) Provide more detailed trend analysis for emissions with descriptions of key fluctuations on a sector by sector basis.
 - (d) Improve the use of notation keys in the reporting templates.
19. Recommended improvements relating to specific source categories are presented in the relevant sector sections of this report.

Sector specific recommendations for improvement identified by ERT

Energy and transport;

Pollutants Reviewed		SO ₂ , NO _x , NMVOC, NH ₃ , PM ₁₀ & PM _{2.5}		
Years		1990 – 2006 + (Protocol Years)		
NFRCode	CRF_NFRName	Reviewed ²	Not Reviewed	Recommendation Provided
1.A.1	Energy industries	(x)		
1.A.2	Manufacturing industries and construction	(x)		
1.A.3	Transport	(x)		x
1.A.4	Commercial, Residential, Agriculture & Forestry	(x)		x
1.A.5	Other	(x)		
1.B.1	Fugitive emissions from solid fuels	(x)		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 codes have been reviewed and which have not in the respective columns.

General recommendations on cross cutting issues.

20. The ERT noted that many emissions have been reported as zero rather than using the appropriate notation keys. France indicated that there have been problems with the use of notation keys in the submission. The ERT recommends that the use of notation keys be improved in future submissions.

² Documentation provided in French, so full review not possible

21. The inventory for Energy appears to be of good quality and very well documented in the background report in French provided by France. Due to language issues, it was not possible to take fully into account the full documentation provided by France.

Sector specific recommendations:

1.B.2.b Natural gas:- SO₂

22. The ERT noted that SO₂ emission from sector 1B2b Natural gas fluctuates significantly (2005 – 16.5 Gg, 2006 – 6.5 Gg). France indicated in their response that it would try to get further information from the plant and include it in future submissions. The ERT welcomes this initiative and looks forward to seeing these presented in future IIRs.

1.A.4.b Residential mobile: – NMVOC

23. The ERT noted that the NMVOC emissions from households and gardening are very low compared to other countries. France responded that most emissions come from the use of four stroke engines but that the estimation could be improved. The ERT encourages France to improve the method using information on machine fleet, engine size, load factors, annual working hours and lifetimes and to present these in future IIRs.

1.A.3.b Road transport: – lead

24. France reports the emission of lead from road transport as “NO”. Most other countries estimate lead emission from road transport, due to trace elements of lead in the fuel. The ERT recommends that France should investigate the issue of trace amounts of heavy metals in the fuel for road transport.

1.B.1.a Coal Mining: - PM

France does not estimate emissions from coal mining and handling (reported as zero). Even though coal mining is no longer occurring in France, emissions from storage and handling still occur. France indicates that only PM emissions in connection with coal mining have been considered. The ERT encourages France to estimate emissions from coal storage and handling as soon as new knowledge becomes available. Following the review France acknowledged the difficulties, confirmed that emissions were not estimated but do occur and reassured the ERT that they would be considering international methods as they become available.

Industrial Processes

25. No review findings have been included 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.

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	X		X (general)
3.A.2	Industrial coating application	X		
3.A.3	Other coating application (Please specify the sources included/excluded in the notes column to the right)	X		
3.B.1	Degreasing	X		X (general)
3.B.2	Dry cleaning	X		
3.D.1	Printing	X		X (general)
3C	Chemical Products, Manufacture & Processing	X		
3.D.2	Domestic solvent use including fungicides	X		
3.D.3	Other product use	X		

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

General recommendations on cross cutting issues.

26. Method descriptions for some sub-sectors in 3.B, 3.C and 3.D. (SNAP 060203, 060204, 060310, 060401, 060402, 060407, 060412) cannot be found in the French IIR. The ERT encourages France to provide a description of the methods, data sources and assumptions for these sources in future IIRs. France responded to the draft review report that more detailed method/assumption descriptions would be further implemented in future IIRs and/or OMINEA annexes.

27. The ERT also encourages France to include more detailed activity data and descriptions of the methodology and data sources applied at the SNAP level, when possible, to facilitate transparency. France responded that although detailed information on methodologies and emission factors is already provided in OMINEA at SNAP level, more detailed information on activity levels could be provided in future IIRs and/or OMINEA at an appropriate level for key categories.

28. The ERT encourages the Party to present a more detailed description of the methodology and to supply tables with activity data and also a more complete set of emission factors at an appropriate sectoral level for key categories for a number of the solvent sectors. France responded that although detailed information on methodologies and emission factors is already provided in OMINEA at SNAP level, more detailed information on activity levels could be provided in future IIR and/or OMINEA at an appropriate level for key categories.

Sector specific recommendations:

Installation solvent use – NMVOC

29. During the review France provided further explanations of the data sources and methodologies for its solvent use estimate. Explanations included a description of

the approaches using data on production, import and export when available and solvent contents of the different kinds of products and the annual solvent management plan provided by all installations consuming more than 30 tonnes of solvents per year. For sectors for which all installations are identified, a bottom-up approach is used. The ERT encourages France to provide this information in their future IIRs.

3.D.2 Manufacturing of solvent containing products and use in industries and households – NMVOC

30. During the review, France provided further explanations of the data sources and methodologies for its solvent use estimate. The national amounts of solvents consumed per sector are estimated (based on the production, import and export when available and solvent contents of the different kinds of products) for selected sectors (these can be specified). When all installations are known, the activity level is built from a bottom-up approach considering all emission reports. For the domestic component emissions are estimated with an average national emission factor (in kg VOC/inhabitant). The ERT encourages France to refine this methodology so as to take account of data on purchases/sales of solvent containing products on the domestic market. Furthermore, the ERT encourages France to provide this information in their future IIRs although the ERT acknowledges that detailed activity data is difficult to collect for most CLRTAP Parties.

Agriculture and Nature

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 , PM ₁₀ , PM _{2.5}		x
4.C	Rice Cultivation	NH ₃ , NO _x		
4.D1	Agricultural soils	NH ₃ , NO _x , PM ₁₀ , PM _{2.5}		x
5B	Forest and Grassland Conversion	NO _x , CO		x
5E	Other	NMVOC		

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

General recommendations on cross cutting issues.

31. The ERT noted that France has a very good Agriculture inventory, which covers a wide set of pollutant and source combinations.

32. France has not used notation keys for sectors 4B2, 4B5, 4B13 for NH₃, TSP and PM. For other sub sector sources, estimates are not calculated for one or more pollutants (4B2 Buffalo, 4B5 Camels and Llamas and 4B13 Other). It is recommended that the party use the Notation keys instead of zero for these sources in future submissions. France responded by indicating that it would take the recommendation on board for future submissions.

Sector specific recommendations

4.B Manure Management and 4.D.1 Direct Soil Emissions – NH₃

33. The ERT encourages France to provide more detailed time series activity data tables, or references to such tables, in respect to livestock population statistics for sector 4B Manure Management and fertilizer compound statistics in respect to emission estimates for sector 4D1 Direct Soil Emissions.

34. The ERT also encourages France to use the appropriate notation keys for sectors 4B2, 4B5, 4B13 for NH₃, TSP and PM and for 4.B.8 Swine: – NH₃, PM₁₀

35. The ERT notes that recalculations have been undertaken for sector 4B8 Swine which have resulted in an increase of 21% in emissions of all pollutants since 1999.

5.B Deforestation: CO and NO_x

36. During the review France confirmed that activity data is not consistent across the time series (years 1989 and 1990). France also indicated that it would harmonize the two activity data sets for future submissions. The ERT encourages France to undertake this harmonization of the two datasets and to provide explanatory information in its next IIR.

Waste

37. The waste sector for France was not reviewed as no independent review expert was available to undertake the review.

Annex 1: List of additional material provided by the country during the review

- Answer to questions asked during the review presented in the following document: Answer to FRA_sector4_q2_JG2.doc
- http://www.unifa.fr/04_chiffres/index.htm
- <http://agreste.maapar.lbn.fr/ReportFolders/ReportFolders.aspx>
- OMINEA_5e_edition_fev2008.pdf
- CCNUCC_France_dec2007.pdf
- Technical Report No. 62. Ammonia Emissions to Air in Western Europe, July 1994. European Centre for Ecotoxicology and Toxicology of Chemicals.
- France Stage 2 S&A report
- France Stage 1 Annual Status Report
- Global estimates of gaseous emissions of NH₃, NO and N₂O from agricultural land. INTERNATIONAL FERTILIZER INDUSTRY ASSOCIATION, Food and Agriculture Organization of the United Nations, Rome, 2001. ISBN 92-5-104698-1.
- Note of emission methodologies provided to the ERT during the review