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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

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 SO_2, NOx, NMVOC, NH_3, plus PM_{10} & $PM2_{.5}$ for the time series years 1990 – 2011, 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 France coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place from 17th June 2013 to 21st June 2013 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 – Kristina Saarinen (Finland), Energy – Emilia Hanley (Ireland), Transport – Nina Holmengen (Norway), Industry – Kees Peek (Netherlands), Solvents – Ardi Link (Estonia), Agriculture & Nature – Michael Anderl (Austria), Waste – Katja Hjelgaard (Denmark).

4. Kevin Hausmann 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 French inventory is generally in line with the EMEP EEA inventory Guidebook and the UNECE Reporting Guidelines. Emissions reported under the CLRTAP and the NECD are consistent. The inventory includes improvements related to the recommendations from the previous review in 2009. The ERT acknowledges the effort France has taken to provide the inventory and commends the Party for the work carried out thus far.

6. The ERT recognises the level of effort undertaken by France in providing an inventory of with a significant level of detail to enable an in-depth review.

7. Emissions for a number of source categories are reported as “not estimated” (NE). As the completeness of the inventory is essential for reviewing compliance under the conventions, emission values or at least an assessment of the quantitative importance of the sources currently not estimated is needed.

8. The ERT notes that France has carried out recalculations for the time series in several source sectors. The IIR provides information on criteria used to launch recalculations, impacts of recalculations on emission levels as well as justifications for the recalculations carried out. The ERT commends France for this clear presentation.

9. France has carried out improvements in the inventory since the last review in 2009 and the ERT commends France for the work done. The ERT also notes some needs for further improvements, some of which are listed in Part B of this report and in the source specific recommendations below.

INVENTORY SUBMISSION

10. France submitted the inventory under the NECD on 20.12.2012 and under the CLRTAP on 15.02.2013, both within the deadlines of 31.12.2012 and of 15.2.2013, respectively. The submissions included NFR tables from 1980 to 2011 (the latest year) for the NECD pollutants NO_x, SO_2, NH_3, NMVOC, and under the CLRTAP also for the following heavy metals As, Cd, Cr, Cu, Hg, Ni, Pb, Se and Zn and POPs: HCB, PCDD/F, PAH-4 and PCB, as well as for CO, TSP, PM_{10}, and $PM_{2.5}$ in NFR format.

11. France provided a detailed IIR as well as gridded and LPS data on 15.3.2013, projected emissions on 12.2.2013.

12. The ERT finds the inventory to of good quality and well documented in the informative inventory report (IIR). Due to the high quality of the IIR and the Party’s responsiveness the ERT were able to review the inventory in detail and provide a number of detailed recommendations.

KEY CATEGORIES

13. France has compiled and presented in its IIR a key category analysis (KCA) for the latest inventory year 2011 and for the trend for the following pollutants: NO_X, CO, NMVOC, SO_2, NH_3, TSP, PM_{10} and $PM_{2.5}$, As, Cd, Cr, Cu, Hg, Ni, Pb, Se, Zn, PCDD/F and PAH-4 including all sectors. The analysis was made at tier 1 level for both emission levels and emission trends. The KCA by the Party and the CEIP produced similar results.

14. According to the UNECE Reporting Guidelines Parties should identify in their IIR national key categories as described in the Guidebook for the base year and the latest inventory year. France has, however, not presented a KCA for the base years of the pollutants in the IIR. The ERT recommends that France adds the KCA for the base years of the pollutants in the IIR of the next submission.

15. France states in the IIR that the key category analysis is used to prioritize improvements in the inventory. The ERT commends France for analysing the key sources and using the results in inventory improvement.

QUALITY

Transparency

16. The ERT recognises the level of effort undertaken by France in providing an inventory with a significant level of detail to enable an in-depth review. The ERT found the inventory and the IIR to be of good quality and very comprehensive. However, to further improve the transparency of the inventory the ERT recommends that France provides some additional information in the IIR for the methodologies used to calculate emissions, as described below, and improves the internal referencing in the IIR to enable better use of the document.

17. The ERT commends France for providing information of where the sources reported as included elsewhere (IE) are allocated. The ERT recommends that France studies possibilities to provide estimates for the emissions currently reported as “included elsewhere” under their proper reporting categories.

Completeness

18. The ERT acknowledges the effort which France has taken to provide estimates of emissions for all sectors and all pollutants reviewed. The French inventory is in general complete, for the years submitted and for the geographical coverage. However, the ERT found some inventory completeness related questions as listed below.

19. The ERT commends France for providing explanations in the IIR for the use of the notation key NE. Regarding sources not estimated the ERT notes the following:

(a) The ERT notes that France reports emissions under NFR 2A5 as NE and does not include these under any other source category. The ERT recommends that France estimates and reports emissions (NMVOC) in the next submission.

(b) For ferroalloys production, France reports HCB as NE. The ERT recommends that France investigates the relevance of emissions from this source for France and provides emission estimates if emissions occur.

(c) France reports PCBs, HCB, some heavy metals and ammonia as NA for some source categories that may contribute to emissions. The ERT recommends that France investigates the relevance of emissions for the French sources and provides emission estimates if emissions occur. The ERT found the following examples of sources reported as NA for which emissions may occur:

- Road transport, petroleum products, coke oven (also a source of PAHs) and ferroalloys production for PCBs,
- Chemical and metal industries for HCB,
- Heavy metals from mobile combustion in manufacturing industries and construction as well as from railways (except Cu), and
- Ammonia from mobile combustion in manufacturing industries and construction, railways and mobile sources in household and gardening.

Consistency, including recalculations and time-series

20. France has carried out recalculations in the following sectors: energy, industrial processes, product use, agriculture, and waste. The IIR provides information on criteria used to launch recalculations, impacts of recalculations on emission levels as well as justifications for the recalculations carried out. The ERT commends France for this clear presentation. However, the ERT notes that explanations of the dips and jumps in time series are not presented.

Comparability

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

CLRTAP/NECD comparability

22. The ERT notes that the French inventories submitted under the NECD and the CLRTAP include no differences between the estimates. The ERT commends France for the achieved consistency of the inventories.

Accuracy and uncertainties

23. France has compiled uncertainty estimates for the following pollutants: As, Cd, CO, Cr, Cu, Hg, NH_3, Ni, NMVOC, NOX, PAH-4, PCDD/F, Pb, $PM_{2.5}$, PM_{10}, Se, SO_2, TSP, and Zn. According to the IIR the uncertainty estimates of total national

emissions are developed using tier 1 methodology. The ERT commends France for providing an uncertainty analysis.

24. According to the IIR, France includes bottom-up data (emissions reported by the plants) in the preparation of the inventory. To the question raised by the ERT on how the uncertainties of bottom-up data are taken into account in the UC analysis, France replied that the uncertainties are considered at SNAP level and then aggregated at NFR sectors and that lower uncertainties are considered for plant level data taking into account the different situations and pollutants. The ERT recommends that France considers moving to a tier 2 analysis to better reflect the underlying data.

25. To enable better understanding of the uncertainty calculations, the ERT recommends that France includes further details of the uncertainty estimates for activity data, emission factors and/or emission data.

26. France has not included the base years of pollutants in the uncertainty analysis, therefore the ERT recommends that France provides uncertainty estimates for the base years of pollutants.

Verification and quality assurance/quality control approaches

27. France has elaborated and implemented a quality assurance/quality control (QA/QC) based on ISO 9001. The quality work includes 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. Quality assurance activities are in place with extensive reviews. According to the IIR, the inventory is peer reviewed and published nationally before the submission. The ERT commends the Party on the comprehensive QA/QC activities.

FOLLOW-UP TO PREVIOUS REVIEWS

28. France has not provided comments on earlier Stage 2 review reports.

29. The ERT notes that France has carried out most of the recommendations given by the previous ERT in 2009. The ERT commends France for these efforts and recommends France to complete the work in the energy and industrial processes sectors as explained below.

AREAS FOR IMPROVEMENTS IDENTIFIED BY FRANCE

30. In the IIR, France has identified improvement needs, for instance to further develop the uncertainty analysis (tier 2 using the Monte Carlo analysis) and to improve current data collection as well as QA/QC activities. France has an inventory improvement plan with estimated schedules for the activities, but it is not currently included it in the IIR. The ERT recommends that France includes more information on source sector specific improvements needed in its IIR.

PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

CROSS CUTTING IMPROVEMENTS IDENTIFIED BY THE ERT

31. The ERT identifies the following cross-cutting issues for improvement:

(a) Add the KCA for the base years of the pollutants in the IIR of the next submission.

(b) Provide estimates for the emissions currently reported as “included elsewhere” under their proper reporting categories.

(c) Investigate the relevance of emissions currently reported as NE and provide emission estimates if emissions occur.

(d) Consider moving to a tier 2 uncertainty analysis and to provide detailed information on the uncertainty estimates for activity data, emission factors and/or emission data.

(e) Provide activity data in the energy sector chapters of the IIR.

(f) Estimate and report emissions (NMVOC) from NFR 2A5 in the next submission.

SECTOR SPECIFIC RECOMMENDATIONS FOR IMPROVEMENTS IDENTIFIED BY ERT

ENERGY

Review Scope

Pollutants Reviewed		SO_2, NOx, NMVOC, NH_3, CO, PMs, HMs, POPs		
Years		1990 – 2011		
NFRCode	**CRF_NFRName**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
1.A.1.a	public electricity and heat production	x		x
1.A.1.b	petroleum refining	x		
1.A.1.c	Manufacture of solid fuels and other energy industries	x		
1.A.2.a	iron and steel	x		
1.A.2.b	non-ferrous metals	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		
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		
1.A.4.a.ii	commercial / institutional: mobile		x	
1.A.4.b.i	residential plants	x		
1.A.4.b.ii	household and gardening (mobile)		x	
1.A.4.c.i	Agriculture/forestry/fishing. stationary	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		
1 B 2 a iv	Refining / storage	x		
1 B 2 a v	Distribution of oil products	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	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.

32. The CLRTAP inventory submitted by France appears to be of a very good quality, high level of transparency and very well documented in the 2013 IIR report (Ominea Report, 10th Edition, 2013) in French (with general overview in English as well). Due to language issues, it was not possible to fully take into account all the detailed sectoral information in chapters included in the report. The summary and overview sections describe thoroughly how the French national inventory system, roles of various national bodies and processes involved are organised to produce an inventory of such level of detail and accuracy. If the report was available fully in English, the ERT considered it exemplar.

Transparency:

33. The inventory submission for 2013 (NFR tables and IIR) and France's responses to the ERT questions enabled the ERT to implement the stage 3 review and to provide some recommendations. The ERT understands the level of effort required by France to answer questions during the review process, and would like to thank the Party for its efficient assistance.

34. France provided a detailed and generally transparent emissions inventory. Estimates, activity data and emission factors are provided at the most detailed level for all energy sectors.

Completeness:

35. The ERT considers the Energy sector to be complete and comprehensive with various tables containing activity data for each fuel type specification (including calorific value), relevant category and pollutant emission factors etc. at the most aggregated level. In addition, France provides elaborate discussions on methodological choices and descriptions for pollutant calculations in all the Energy sub-sectors. France has not identified any Energy sources as not estimated (NE) or zero values in its 2013 inventory submission.

Consistency including recalculation and time series:

36. The expert review team (ERT) notes that recalculations of the time series 1990 to 2010 had been undertaken for a number of sectors and pollutants including significant changes for pollutants and years: SOx (2007-2010), NMVOC (2007-2010), 3 PM (1990-2010), CO (2009-2010), Pb (2000-2010), Cd (2005-2010), Hg (1990-2010), PCDDF (2009), PAHs (1990-2010), HCB (2005-2010), PCB (2005). Reasons for these recalculations were translated from French and explained by the Party upon the ERT's request.

Comparability:

37. 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.

38. Regarding CLRTAP/NECD comparability, a comparison between estimates reported for CLRTAP and under the National Emissions Ceilings Directive undertaken in stage 2 showed very good agreements.

39. Furthermore as described in the technical description part of the IIR, the internal inventory system ensures that the pollutant inventories can be translated into various formats for different reporting requirements and purposes i.e. UNFCCC and UNFCCC-KP, UNECE and NEC, UNECE (EMEP), LCP, SECTEN, NAMEA, CLIMATE PLAN.

Accuracy and uncertainties:

40. France described a stringent system applied in data compilation and processing in order to produce a robust and very accurate inventory, to the highest standards ensured by broad QA/QC measures in place. A separate chapter extensively covers the QA/QC programme (according to ISO 9001 standard) fostering qualities like accuracy, comparability, completeness, consistency and transparency at all stages of the Party's inventory preparation.

41. The assessment of uncertainties for the Energy sector carried out for the Party's inventories is mainly based on expert judgements (IPCC Tier 1 method). However, a broad discussion on qualitative uncertainty analysis has been presented in the IIR.

Improvement:

42. The ERT commends Party for its improvement in notation keys use instead of zero values as it was the issue identified by Energy ERT during the 2008 review. The ERT recommends that France further improves the use of notation keys in future submissions for sector 1B1a (see below).

43. Also, following previous review recommendations, some general sections and the executive summary of France's IIR (OMINEA 10th Edition, 2013) were translated into English. The ERT encourages Party to further include more sector specific translations in English in order to improve future review extent and to avoid double translating and answering questions by the Party that otherwise could be found in IIR if it was available fully in English.

Sub-Sector Specific Recommendations

Category issue 1: 1 A 1 a Public Electricity and Heat Production - Heavy Metals

44. During the review the ERT learned that France does not report heavy metals emitted during combustion of the following fuels: natural gas, gas-oil, diesel oil and gasoline (HMs under this sector are reported for combustion from other solid/liquid/gaseous fossil fuels, hence the values exist in the Annex IV table but are underestimated by not including the above mentioned fuels). The Party informed the ERT that previously there were no measurements as those emissions exist in a trace concentration but more recently; measurements of HM contents in such fuels have been done and published by other Parties. France will reconsider this issue and propose to complete the HM emissions by taking into account such new information

on trace HM in gasoline, diesel/gas oil and natural gas. The ERT welcomes this effort and recommends including those fuel emissions of HMs in the future inventory.

Category issue 2: 1 B 1 a Fugitive emission from Solid Fuels: Coal Mining and Handling - All pollutants relevant to the category

45. During the previous Stage 3 review (2008; for 1990-2006 data), the energy expert's finding regarding not reported emissions from coal mining and handling (even though coal mining is no longer occurring in France, emissions from storage and handling still occur) France reassured the 2008 ERT that it would be considering international methods as they become available. Following up on the 2008 ERT's recommendation, the ERT during the 2013 review noted that in Annex IV Table 1 emissions for the above category are still not estimated and are reported as NA (zero values were reported in 2008). The Party agreed with the ERT that the notation key in this category should be reported as NE (instead of current NA) until estimates are made and also France assured that at the same time it will follow possible international investigation of this issue as it becomes available for the next submission.

Category issue 3: 1 B 2 b Natural gas, fugitive emissions (during exploration, production, transport) - SOx

46. During the previous Stage 3 review (2008; for 1990-2006 data), the energy expert found fluctuations (peak in 2005) in the SOx fugitive emissions from natural gas handling. France indicated in their response then that it would try to get further information from the plant and include it in future submissions. Following up on the 2008 ERT's recommendation, the ERT during the 2013 review identified two peaks: in 2000 and in 2005 for SOx emissions in this category. France provided an answer that the peaks in 2000 and 2005 may be caused by an issue of inefficiency for these years and further investigation and exchanges with the plant managers are still necessary to confirm it. The ERT welcomes the effort in gathering historic plant specific data and recommends that France includes the status of the plant-Party's experts information exchange on the circumstances around the fluctuations in its future inventory report.

TRANSPORT

Review Scope

Pollutants Reviewed		Main pollutants, particulate matter, HM and CO		
Years		1990 – 2011		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
1.A.3.a.i.(i)	international aviation (LTO)	x		
1.A.3.a.i.(ii)	international aviation (cruise)		x	
1.A.3.a.ii.(i)	civil aviation (domestic, LTO)	x		
1.A.3.a.ii.(ii)	civil aviation (domestic, cruise)		x	
1.A.3.b.i	road transport, passenger cars	x		
1.A.3.b.ii	road transport, light duty vehicles	x		
1.A.3.b.iii	road transport, heavy duty vehicles	x		
1.A.3.b.iv	road transport, mopeds & motorcycles	x		
1.A.3.b.v	road transport, gasoline evaporation	x		
1.A.3.b.vi	road transport, automobile tyre and brake wear	x		
1.A.3.b.vii	road transport, automobile road abrasion	x		
1.A.3.c	railways	x		x
1.A.3.d.i (ii)	international inland navigation	x		x
1.A.3.d.ii	national navigation	x		
1.A.4.b.ii	household and gardening (mobile)	x		x
1.A.4.c	agriculture / forestry / fishing	x		
1.A.4.c.ii	off-road vehicles and other machinery	x		
1.A.4.c.iii	national fishing	x		
1.A.5.b	other, mobile (including military, land based and recreational boats)	x		
1 A 3 d i (i)	International maritime navigation		x	
1 A 3	Transport (fuel used)		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

47. The French inventory is complete and transparent, with a high level of detail regarding the description of methodologies used to make estimates for mobile sources.

Transparency:

48. The emissions from mobile sources are transparently reported in the NFR, with only limited use of aggregated emission estimates (IEs). The ERT has made two source specific recommendations in this regard; see category issue 1 and 2. The IIR and the OMINEA report combined give thorough and detailed descriptions of methodologies and emission factors used for calculating emissions. However, due to language issues, the documentation has not been readily available to the ERT.

Completeness:

49. The completeness of the French emission inventory is good. All expected major emission sources are included for the major pollutants, particulates, heavy

metals, and POPs. Despite the fact that emissions can possibly be expected, ammonia and heavy metals are reported as NA for some sources; see category issue 3 and 4.

Consistency including recalculation and time series:

50. Time series consistency is maintained for mobile sources in the French emission inventory. No inconsistencies have been identified by the ERT.

Comparability:

51. The methodologies used for calculating emissions from mobile sources are consistent with the ones in the Guidebook, with an extensive use of higher tier methodologies. No over- or underestimates have been identified by the ERT.

Accuracy and uncertainties:

52. France provides only an aggregated key source analysis, which impedes the interpretation of key sources. This is especially noticeable for road transport. The ERT encourages France to perform the analysis at a disaggregated level to increase the information value of the key source analysis.

Improvement:

53. The previous review report from 2009 raised two particular issues for mobile sources:

(a) The ERT noted in 2009 that the NMVOC emissions from households and gardening were 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 of 2009 encouraged 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. During this 2013 review, France informed the ERT that the emission estimates from 1A4b ii are actually based on the number of appliances, the power, the annual working hours, the load factor and the consumption factor. The number of appliances is based on hypothesis because there is not a lot of data on this sector. The NMVOC emissions from household and gardening are now comparable to those of other countries.

(b) France reported emission of lead from road transport as “NO”, and the 2009 ERT recommended that France should investigate the issue of trace amounts of heavy metals in the fuel for road transport. The ERT notes that Pb emissions from road transport are now reported.

54. The ERT comments France for the improvement implemented since the last stage 3 review.

55. France provides an elaborate improvement plan in the IIR, including planned improvements for mobile sources.

Sub-Sector Specific Recommendations

Category issue 1: 1A3d i (ii) – All pollutants

56. Emissions from 1A3di (ii) International inland waterways are reported as included in national navigation due to lack of disaggregated activity data. This reduces the transparency of the French emission inventory. During the review, France expressed their willingness to explore possibilities for using auxiliary data or indicators to disaggregate these emissions. The ERT encourages France to examine such possibilities.

Category issue 2: 1A4a ii – All pollutants

57. Emissions from 1A4a ii are reported as included in 1A4b ii. There are no statistical data available to estimate emissions separately for the two sources. To increase transparency and completeness, the ERT encourages France to continue their search for possible data sources allowing for the disaggregation of emissions from these two sources.

Category issue 3: 1A2f ii, 1A3c and 1A4b ii – NH_3

58. France reports emissions of NH_3 as NA from off-road machinery in 1A2f ii and 1A4b ii and railways (1A3c). The 2009 Guidebook provides emission factors for these sources. The ERT encourages France to calculate ammonia emissions from off road machinery and railways for the next submission.

Category issue 4: 1A2f ii and 1A3c – Heavy metals

59. Heavy metal emissions from 1A2f ii and 1A3c (except from Cu) are reported as NA. The 2009 Guidebook provides emission factors for heavy metals from these sources. During the review, France informed the ERT that this was due to decision years back and that they will reconsider this issue. The ERT welcomes France's willingness to complete their HM emission estimates, and recommends that France includes these estimates in its next submission.

INDUSTRIAL PROCESSES

Review Scope

Pollutants Reviewed		NOx, NMVOC, SOx, NH_3, $PM_{2.5}$, PM_{10}, TSP, CO, Cd, Hg, Pb, POPs		
Years		1990 – 2011		
NFRCode	**CRF_NFRName**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
2.A.1	cement production	x		x
2.A.2	lime production	x		x
2.A.3	limestone and dolomite use	x		x
2.A.4	soda ash production and use	x		x
2.A.5	asphalt roofing	x		x
2.A.6	road paving with asphalt	x		x
2.A.7.a	Quarrying and mining of minerals other than coal	x		x
2.A.7.b	Construction and demolition	x		x
2.A.7.c	Storage, handling and transport of mineral products	x		x
2.A.7.d	Other Mineral products (Please specify the sources included/excluded in the notes column to the right)	x		x
2.B.1	ammonia production	x		x
2.B.2	nitric acid production	x		x
2.B.3	adipic acid production	x		x
2.B.4	carbide production	x		
2.B.5.a	Other chemical industry (Please specify the sources included/excluded in the notes column to the right)	x		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		x
2.C.2	ferroalloys production	x		x
2.C.3	aluminium production	x		x
2.C.5.a	Copper Production	x		x
2.C.5.b	Lead Production	x		x
2.C.5.c	Nickel Production	x		x
2.C.5.d	Zinc Production	x		x
2.C.5.e	Other metal production (Please specify the sources included/excluded in the notes column to the right)	x		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		x
2.D.1	pulp and paper	x		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 an dscientific equipment)	x		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

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

60. Due to language issues, it was not possible to take into account the full documentation provided by France. For that reason, the review of the Industrial Processes sector has been limited to a translation of the industrial sector chapter of the UNECE_france_mars 2013 report, the results of the Stage 2 review, and the reporting tables provided.

Transparency:

61. The industrial processes inventory in the UNECE_france_mars 2013 report is generally transparent and well organised.

62. The ERT notes that in the NFR table, the notation key “NO” has been used for 2B4 Carbide production in the activity cell and “NA” in all the pollutant cells. The ERT recommends that France uses the notation key “NA” where the source exists but relevant emissions are considered not to occur and “NO” where sources do not occur.

63. Furthermore the ERT notes that France uses the appropriate notation keys in the NFR-tables for all the other source categories of the Industrial processes sector and comments France for this. The ERT notes that the explanations for the use of the notation keys NE and IE are provided in the NFR tables.

64. The ERT also notes that explanations of dips/jumps or other changes in the emission time series of the sub-sectors of the Industrial Processes sector are missing. Additional details are given in the section on sector specific recommendations below.

Completeness:

65. The ERT considers the industrial processes sector to be complete for the main sources and comprehensive with good levels of detail in the methodology descriptions.

66. To avoid under-estimations, the ERT encourages France to include plans to address the missing emissions (NE) in its IIR, either by obtaining data allowing an emission estimate to be made, or by reporting the emissions as not applicable.

Consistency including recalculation and time series:

67. The ERT notes that France has performed recalculations for CO emissions from steel production, Cd and Hg emissions from ferro-alloys, and TSP, PM10 and PM2.5 from several source categories.

68. Both the time series of the activity data and EFs used to calculate emissions are consistent.

Comparability:

69. France has reported its emissions inventory in accordance with the reporting requirements and submitted it in the requested NFR format. Furthermore, the ERT notes that there are no differences between CLRTAP and NEC emissions reported.

Accuracy and uncertainties:

70. The ERT notes that France determines uncertainties, according to the Tier 1 method for all source categories.

Improvement:

71. The ERT notes that France plans to include more plant-specific information (emissions) in the Industrial Processes sector inventory. The ERT commends France for this.

Sub-Sector Specific Recommendations

Category issue 1: 2B5a- Hg

72. The ERT notes that due to the production of Chlorine, 2B5a is a key source for Hg. During the entire time series 1990-2011, a downward trend in Hg emissions can be observed. After consulting, France replied that emissions and emission factor per production capacity are provided by the “Syndicat des halogènes et dérivés” (federation of halogenated compounds). The emission factor per production capacity is decreasing during the time series 1990-2011.

Category issue 2: 2C1 - Cd

73. The ERT notes that after 2002, the emissions of Cd in 2C1 decreased significantly. During the review week, France replied that Cd emissions in 2C1 are mostly due to electric furnaces for steel production. There are 25 plants in France and their Cd emissions come from their annual submission to French authorities for the national emission register. The decrease after 2002 is mostly explained by gradual improvements in emission reduction systems for these plants over the years. The ERT thanks France for this answer and encourages the Party to include this explanation in its next submission.

Category issue 3: 2B5a - Activity data

74. The ERT finds that in the "Other activity (specified) cell" of 2B5a in the 2011 NFR-sheet a value of 14.139 (unit: Production [kt]) is included. After consulting, France replied that this figure is the global production of the different activities included in sector 2B5a and provided a detailed break-down on their percentage contribution. The ERT thanks France for this answer and encourages the Party to include this information in its next submission.

SOLVENTS

Review Scope

Pollutants Reviewed		NMVOC, NOx, $PM_{2.5}$, PM_{10}, TSP, CO, HMs, PCDD/PCDF, PAHs		
Years		1990 – 2011		
NFRCode	**CRF_NFRName**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
3.A.1	Decorative coating application	x		x
3.A.2	Industrial coating application	x		x
3.A.3	Other coating application (Please specify the sources included/excluded in the notes column to the right)		x	x
3.B.1	Degreasing	x		x
3.B.2	Dry cleaning	x		x
3.C	Chemical products,	x		x
3.D.1	Printing	x		x
3.D.2	Domestic solvent use including fungicides	x		x
3.D.3	Other product use	x		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

Transparency:

75. France's IIR is generally transparent, well-presented and organised for the solvent use sector. Still, the ERT encourages France to include more detailed activity data, emission factors, descriptions of the methodology and data sources applied, where possible, to facilitate transparency.

Completeness:

76. The ERT considers the solvent sector to be complete and notes that every major key category activity where NMVOC emissions are occurring is covered in France's inventory.

Consistency including recalculation and time series:

77. The ERT notes that the emission inventory is generally consistent from year to year. During the review, the ERT pointed out to France a few inconsistencies which were related to sudden jumps and drops in emissions and activity data. The explanations provided to the ERT questions should be incorporated in the next IIR.

78. The recalculations that are carried out by France in the time series are adequately explained in the IIR.

Comparability:

79. The ERT notes that the used methods are consistent with those proposed in the EMEP/CORINAIR Guidebook 2009 and are comparable with other Parties.

Accuracy and uncertainties:

80. France describes QA/QC procedures in the IIR only on the general level. Nevertheless, the ERT considers these procedures appropriate and consistent with the good practice.

Improvement:

81. Following the review, France explained that they will continue to reduce uncertainties and include new industrial data. Most specifically, for production and use of paint and ink, France is conducting a survey at manufacturers of paint and ink in order to update the solvent contents of these products and improve the next emissions inventory. As explained in the IIR, France is also improving the methodology for estimating PCB emissions and is trying to fill the caps in the statistics for production in the solvent sector.

Sub-Sector Specific Recommendations.

Category issue 1: 3.A.3. Other coating application – NMVOC

82. The ERT recommends to check the notation keys used for emissions and activity data in this sector. According to the EMEP/CORINAIR Guidebook 2009, if the emissions are occurring in this sector, the ERT recommends to use the notation key NE; if it is included elsewhere, to use the notation key IE; and if there is no activity occurring in this sector, to use the notation key NO.

AGRICULTURE

Review Scope:

Pollutants Reviewed		NOx, NMVOC, SOX, NH3, PM2.5, PM10, CO		
Years		1990 – 2011		
NFRCode	**CRF_NFRName**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
4 B 1 a	Cattle dairy	x		
4 B 1 b	Cattle non-dairy	x		
4 B 2	Buffalo	x		
4 B 3	Sheep	x		
4 B 4	Goats	x		
4 B 6	Horses	x		
4 B 7	Mules and asses	x		
4 B 8	Swine	x		
4 B 9 a	Laying hens	x		
4 B 9 b	Broilers	x		
4 B 9 c	Turkeys	x		x
4 B 9 d	Other poultry	x		
4 B 13	Other	x		x
4 D 1 a	Synthetic N-fertilizers	x		
4 D 2 a	Farm-level agricultural operations including storage, handling and transport of agricultural products	x		
4 D 2 a	Off-farm storage, handling and transport of bulk agricultural products	x		
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)	x		
4 F	Field burning of agricultural wastes	x		x
4 G	Agriculture other(c)	x		
11 A	(11 08 Volcanoes)		x	
11 B	Forest fires		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

Transparency:

83. In the sectoral chapter of the French IIR only limited information is given. Most of the activity data and methodologies are provided in the methodological document named “OMINEA - National Inventories of Air Emissions in France” which is part of the IIR as its annex 2. OMINEA includes a very detailed documentation of methodologies, parameters and activity data used. The ERT encourages France to include activity data and other key-input parameter directly in the chapter agriculture of IIR or to give more precise references to the relevant pages in OMINEA report to facilitate the review.

Completeness:

84. The inventory of France is very complete. All main pollutants, particulate matter and TSP emissions are reported for all relevant sources. The ERT encourages France to further improve completeness by estimating emissions of heavy metal and POPs from field burning.

Consistency including recalculation and time series:

85. The ERT considers France's agriculture emissions inventory consistent.

Comparability:

86. For the estimation of emissions from key sources France used Tier 2 or detailed methods in line with the reporting requirements. Emission reported under NEC are the same than reported under CLRTAP.

Accuracy and uncertainties:

87. The ERT considers France's agriculture emissions inventory to be of adequate accuracy.

Improvement:

88. The ERT notes that France has carried out the improvements recommended by the previous ERT in 2009, for instance the use of notation keys instead of the reporting of zero.

Sub-Sector Specific Recommendations

Category issue 1: 4.B Manure Management and 4.D.1 Direct Soil Emissions – NH_3

89. The ERT notes that - as mentioned in the general section – a detailed description of methodologies, parameters and activity data used is included in the OMINEA report. France reports "NA" for NOx emissions from manure management and synthetic fertilizer application although emission factors are available. In an answer to a question of the ERT France explained that NOx emissions from agriculture are reported under the category 7.B. This reporting is consistent with the French commitment under the 2010 National Emission Ceilings (Göteborg and NEC Directive) which excludes these emissions from the national total. The ERT recommends that France applies the notation key “IE” and gives a clear notice in the “additional information sheet” of the NFR tables.

Category issue 2: 4.B.9 Poultry, 4.B.13 Other – NH_3, $PM_{2.5}$, PM_{10}, TSP

90. France reports emissions from Turkeys as NA. In an answer to a question of the ERT, France explained that Turkeys are included in the other poultry category (4.B.9.d), thus Turkeys should be reported as “IE”. In addition, France reports emissions from Other as NA. In an answer to a question of the ERT, France explained that this source is considered to be negligible, while rabbits may cause noteworthy emissions. As this source is not estimated, the ERT encourages France to report a “NE”.

WASTE

Review Scope:

Pollutants Reviewed		All		
Years		1990 – 2011		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
6.A	solid waste disposal on land	x		
6.B	waste-water handling	x		
6 C a	Clinical waste incineration (d)	x		x
6 C b	Industrial waste incineration (d)	x		x
6 C c	Municipal waste incineration (d)	x		
6 C d	Cremation	x		x
6 C e	Small scale waste burning	x		
6.D	other waste (e)	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

91. The ERT commends France for the very extensive and transparent report. The ERT notes that the French language complicates the review process.

Transparency:

92. The ERT commends France for the transparency of the French Informative Inventory Report together with the OMINEA report which includes methodological descriptions, references, emission factors, activity data and time series.

Completeness:

93. The ERT considers the reported data to be complete with the exception of PAHs and heavy metals for some categories, details on this are described under sector specific recommendations below.

Consistency, including recalculation and time series:

94. The ERT considers the reported data to be consistent for the whole time series covered.

Comparability:

95. The ERT considers the reported data to be comparable to other Parties.

Accuracy and uncertainties:

96. The ERT considers the IIR to be accurate and comment France on the good uncertainty analysis.

Improvement:

97. The ERT commends France for the detailed description on recalculations in the IIR.

Sub-Sector Specific Recommendations

Category issue 1: 6Ca Clinical Waste Incineration and 6Cb Industrial Waste Incineration – PAHs

98. The ERT notes that no emissions have been estimated for PAHs for Clinical and Industrial Waste Incineration even though there are default emission factors in the 2009 EMEP/EEA Guidebook. During the review France replied that these pollutants will be included in the next submission. The ERT recommends that France implements this to improve the completeness of the reported data.

Category issue 2: 6Cd Cremation – heavy metals

99. The ERT notes that no emissions have been estimated for Pb, Cd, As, Cr, Cu, Ni and benzo(a)pyrene for Cremation even though there are default emission factors in the 2009 EMEP/EEA Guidebook. During the review France replied that these pollutants will be included in the next submission. The ERT recommends that France adds these new estimates in order to improve the completeness of the reported data.

LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW

100. Answers to the questions posed by the ERT before and during the review.

101. English translations of selected IIR chapters.