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**Report for the Stage 3 *ad-hoc* review of emission  
inventories submitted under the UNECE LRTAP  
Convention:**

**2023**

**France**

**FINAL REPORT**

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# INTRODUCTION

1. The mandate and overall objectives for the emission inventory review process under the LRTAP Convention is given by the UNECE document 'Updated methods and procedures for the technical reviews of air pollutant emission inventories reported under the Convention'(1) – hereafter referred to as the 'Review Guidelines 2018'.

2. Paragraph 7 (c) of the 'Review Guidelines 2018' defines that Stage 3 Reviews may be annual centralized reviews or ad hoc reviews. Paragraph 18 of the 'Review Guidelines 2018' further specifies that such ad hoc reviews could, for instance, focus on specific source sectors, specific pollutants such as heavy metals or persistent organic pollutants, gridded and projections data, or on other areas as requested by the Implementation Committee and that where appropriate, ad hoc reviews could be conducted in line with the present Methods and Procedures for the In-depth (Stage 3) review.

3. At its eighth joint session in September 2022, the Steering Body and the Working Group on Effects approved the plan that the in-depth review in 2023 focuses on emissions from agriculture with a special emphasis on ammonia, NMVOC and NO<sub>x</sub> emissions including gridded data. While the focus was set on NH<sub>3</sub>, NMVOC and NO<sub>x</sub> emissions, also all other pollutants covered by LRTAP Convention and its protocols (i.e. SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, NH<sub>3</sub>, plus PM<sub>10</sub> PM<sub>2.5</sub>, BC, priority HMs and POP<sub>s</sub>) have been checked for the time series years 1990 – 2021 to the extent possible. For these other pollutants especially completeness of reporting was assessed.

4. This report covers the results of the Stage 3 Review (ad hoc review) 2023 of France's air emission inventory submitted under the UNECE LRTAP Convention. The review was coordinated by the EMEP Centre on Emission Inventories and Projections (CEIP) acting as Review Secretariat. The review took place between April and June 2023 and was performed as a desk review between 31 March to 5 May 2023 and an in-person meeting between 22 of May 2023 and 26 May 2023 (centralized review). The following team of nominated experts from the Roster of Experts performed the review.

## **Agriculture experts:**

Ms. Armine ARTENYAN (Republic of Armenia)

Ms. Ajla BASOVIC (Montenegro)

Ms. Aleksandra NESTOROVSKA-KRSTESKA (North Macedonia)

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<sup>1</sup> Decision 2018/1 adopted by EB: *Updated methods and procedures for the technical review of air pollutant emission inventories reported under the Convention*. ECE/EB.AIR/142/Add.1  
[http://www.unece.org/fileadmin/DAM/env/documents/2002/eb/air/EB%20Decisions/Decision\\_2018\\_1.pdf](http://www.unece.org/fileadmin/DAM/env/documents/2002/eb/air/EB%20Decisions/Decision_2018_1.pdf)

Mr. Lasha AKHALAIA (Georgia)

Mr. Hakam AL-HANBALI (Sweden)

Ms. Susana LOPEZ-APARICIO (EU/ETC(EEA))

Ms. Simone MAYER (Austria)

Ms. Andjelka RADOSAVLJEVIC (Serbia)

Ms. Kristina Tonhauzer (Slovakia)

Mr. Tim VAN DER ZEE (Netherlands)

**Experts for gridded emission data:**

Ms. Christine BRENDLE (Austria)

Mr. Christopher EVANGELIDES (United Kingdom)

Mr. Christian MIELKE (Germany)

5. Mr. Ben RICHMOND (United Kingdom), Ms. Rikke ALBREKTSSEN (Denmark), Mr. Etienne MATHIAS (France), Ms. Kristina SAARINEN (Finland) were the lead reviewers. The review was coordinated by Ms. Sabine Schindlbacher and Mr. Bernhard Ullrich (EMEP Centre on Emission Inventories and Projections - CEIP).

6. The review was performed on basis of CLRTAP emission data officially reported by France, due by 15 February 2023. The Informative Inventory Report (IIR), reported due by 15 March 2023 under the CLRTAP, informed the review.

7. The EMEP/EEA Guidebook 2019<sup>2</sup> was used as a base for the review.

8. The emission inventory of France was received on 7 February 2023 and thus by the deadline of 15 February. The Informative Inventory Report was received on 15 March 2023 and thus by the deadline of 15 March.

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<sup>2</sup> EMEP/EEA: EMEP/EEA Emission Inventory Guidebook 2019, EEA Report No. 13/2019 European Environment Agency, Copenhagen. Available at: <https://www.eea.europa.eu/publications/emep-eea-guidebook-2019> EU 2019

## **PART A: GENERAL RECOMMENDATIONS FOR THE CHAPTER AGRICULTURE**

9. The ERT recognises the level of effort undertaken by France in providing an inventory including a significant level of detail.

The IIR describes the methods used for the sector agriculture transparently enough. The ERT considers the agriculture part of the inventory submission to be of good quality in terms of completeness and of good quality in terms of accuracy, comparability and consistency.

To improve the overall quality of the agriculture air emission inventory the ERT recommends France to

- ensure that the agriculture emission inventory is complete and the time series consistent by estimating and reporting HCB emissions prior to 2008.
- provide documentation on the preparation of gridded data and LPS data in the IIR of the next submission
- ensure that gridded data is complete in the next submission

## **PART B: SPECIFIC RECOMMENDATIONS FOR THE SECTOR AGRICULTURE**

10. Table 1 provides the findings from the 2023 CLRTAP Stage 3 Review including those not implemented from previous CLTRAP Stage 3 Reviews. While the focus was set on NH<sub>3</sub>, NMVOC and NO<sub>x</sub> emissions, also all other pollutants covered by the LRTAP Convention and its protocols (i.e. SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, NH<sub>3</sub>, plus PM<sub>10</sub> PM<sub>2.5</sub>, BC, priority HMs and POP<sub>s</sub>) have been checked for the years 1990 – 2021 to the extent possible, especially regarding the completeness of reporting. The implementation of the recommendations will be followed up in a future CLRTAP inventory review.

**Table 1: Findings from the CLRTAP Stage 3 Review 2023 for the Sector Agriculture<sup>3</sup>**

ID	Pollutants	NFR category	Key Category	Tier 1 used for KC	Type	TAC <sub>1</sub> C <sub>2</sub> C <sub>3</sub>
Party-2023-3Df-1	HCB	3Df	Yes	Yes	R	AC <sub>3</sub>

**Observation**

The ERT noticed that according to the IIR the sales figures of HCB containing pesticides have declined by 52% between 2002 and 2018 while emissions are only calculated from 2008 onwards. The Party explained that it was a typo and that sales figures have declined between 2018 and 2020. No sales figures are available prior to 2008.

**Recommendation**

**The ERT recommends the Party to explore whether the surrogate data method or another method from the time series consistency chapter can be used to estimate HCB emissions between 1990 and 2007, or at least between 2005 and 2007, and, to also correct the information related to the years in the IIR.**

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<sup>3</sup> Note: There are four possible types of findings: R: Recommendation, TC: Technical Correction, PTC: Potential Technical Correction; RE : Revised Estimate

The findings have been assigned to one or more of the following criteria: TACCC T (Transparency), A (Accuracy), C<sub>1</sub> (Completeness), C<sub>2</sub> (Comparability), C<sub>3</sub> (Consistency) for definitions of these criteria see EMEP/EEA Guidebook 2019

ID	Pollutants	NFR category	Key Category	Tier 1 used for KC	Type	TAC <sub>1</sub> C <sub>2</sub> C <sub>3</sub>
Party-2023-3B-2	NH <sub>3</sub>	3B	Yes	Yes	R	AC <sub>3</sub>

**Observation**

The ERT noticed that the percentage of slurry manure from poultry has not changed very much between 1990 and 2021. In Europe a shift has taken place away from cage housing. The Party responded that slurry manure is mainly from ducks and over 50% of the laying hens in France are still housed in cages. The ERT noticed that the CNPO reports that only 33% of laying hens are housed in cages.

**Recommendation**

**The ERT recommends that the Party assess whether the housing types of poultry are up to date for the inventory calculations.**

## **PART C: SPECIFIC RECOMMENDATIONS FOR THE GRIDDED EMISSION DATA FOR THE SECTOR AGRICULTURE**

For the 2023 Review of the gridded emission data the focus was set on ammonia, NMVOC, NO<sub>x</sub> and PM<sub>2.5</sub> emissions.

11. The methods used by France to spatially resolve sectoral emissions are not described transparently enough in the IIR.
12. The description does not include data sources that have been used for spatial distribution.
13. Gridded emissions reported for e.g. GNFR K\_AgriLivestock and L\_AgriOther are partly consistent with the corresponding NFR categories reported in Annex I.
14. Table 2 provides the findings from the ERT related to the gridded data.
15. The implementation of the recommendations will be followed up in a future CLRTAP inventory review.



**Table 2: Findings from the CLRTAP stage 3 review 2023 for gridded emissions from the sector agriculture<sup>4</sup>**

ID	Pollutants	GNFR category	TAC <sub>1</sub> C <sub>2</sub> C <sub>3</sub>
FR-2023-GRID-GL-1	NH <sub>3</sub> , NMVOC	GNFR-L	
<p><b>Observation</b>                      The ERT noted that the IIR Chapters on gridded and LPS data were missing from the 2023 submission. To the question on the issue France responded that a separate document (Rapport_EMEP_FRA_2021.PDF) was provided alongside the reporting of Annex V and Annex Vi files, and that this report describes the methods and assumptions and that there has been no change in the report since the last submission. France also confirmed to make a reference to this annex document in the next IIR annual report.</p> <p><b>Recommendation</b>                      The expert review team recommends France to add the missing documentation in the next IIR Report and to include the linked chapters of other publications.</p>			

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<sup>4</sup> The findings have been assigned to one or more of the following criteria: TACCC T (Transparency), A (Accuracy), C<sub>1</sub> (Completeness), C<sub>2</sub> (Comparability), C<sub>3</sub> (Consistency) for definitions of these criteria see EMEP/EEA Guidebook 2019

ID	Pollutants	GNFR category	TAC <sub>1</sub> C <sub>2</sub> C <sub>3</sub>
FR-2023-GRID-GL-2	PM <sub>2.5</sub>	GNFR-L	AC <sub>3</sub>
<p><b>Observation</b> The ERT noted with reference to the gridded emission inventory there is a gap between gridded data (grid cell sum) and the national total (Annex I) in the IIR. ( K_agrilivestock). To the question on the issue France responded that there had been an error in the compilation of the outputs reporting files.</p> <p><b>Recommendation</b> <b>The ERT recommends France to correct the error next submission of gridded data.</b></p>			
ID	Pollutants	GNFR category	TAC <sub>1</sub> C <sub>2</sub> C <sub>3</sub>
FR-2023-GRID-GL-3	NO <sub>x</sub>	GNFR-L	AC <sub>3</sub>
<p><b>Observation</b> The ERT noted that gridded data on NO<sub>x</sub> from K_agrilivestock is missing. To the question on the issue France responded that there had been an error in the compilation of the outputs reporting files.</p> <p><b>Recommendation</b> <b>The ERT recommends France to correct the error next submission of gridded data</b></p>			

**REVISED ESTIMATES AND TECHNICAL  
CORRECTIONS CONSIDERED AND/OR  
CALCULATED BY ERT**

16. The ERT did not calculate any Technical Corrections and France did not provide any Revised Estimates.

## **LIST OF MATERIALS PROVIDED TO ERT**

1. France Annex I reporting template
2. France Stage 2 S&A report
3. France Stage 1 report 2023
4. France IIR 2020 and 2023
5. Repdab-Report
6. Extended checks

## **LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW**

1. Responses to the question raised by ERT during the review
2. Material received from the Party during the Review
  - No additional material was provided by the Party

## ABBREVIATIONS

This list includes abbreviations commonly used in the Review Reports

AD	Activity data
BaP	Benzo[a]pyrene
BC	Black Carbon
C	Confidential
Cd	Cadmium
CEIP	Centre on Emission Inventories and Projections
CLRTAP	Convention on Long-range Transboundary Air Pollution – ‘the Air Convention’
CO	Carbon Monoxide
E-PRTR	European Pollutant Release and Transfer Register
EEA	European Environment Agency
EF	Emission factor
EMEP	The co-operative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (unofficially ‘European Monitoring and Evaluation Programme’ = EMEP)
ERC	Emission Reduction Commitment
ERT	Expert Review Team
GHG	Greenhouse gas
GIS	Geo Information System
GNFR	NFR Aggregation for Gridding and LPS
HCB	Hexachlorobenzene
Hg	Mercury
HM	Heavy metals
IEF	Implied emission factor
kt	Kilotonnes
LPS	Large Point Sources
NA	Not applicable
NE	Not Estimated
NECD	National Emission reduction Commitments Directive
NFR	Nomenclature for reporting
NH <sub>3</sub>	Ammonia
NMVOG	Non-methane volatile organic compounds
NO	Not Occuring
NO <sub>x</sub>	Nitrogen oxides
NR	Not relevant/Not Reported
PAHs	Polycyclic aromatic hydrocarbons
Pb	Lead
PCB	Polychlorinated biphenyls
PCDD/F	Polychlorinated dibenzo-p-dioxins and dibenzofurans
PM <sub>10</sub>	Fine particulate matter: particles with an aerodynamic diameter equal to or less than 10 micrometres (µm)

PM <sub>2.5</sub>	Fine particulate matter: particles with an aerodynamic diameter equal to or less than 2.5 micrometres (µm)
POPs	Persistent organic pollutants
PTC	Potential technical correction
RE	Revised estimate
SO <sub>2</sub>	Sulphur dioxide
SO <sub>x</sub>	Sulphur oxides
TC	Technical correction
TSP	Total suspended particulates

## LIST OF REFERENCES AND SUPPORTING DOCUMENTS

1. Annex I emission reporting template. Available at <https://www.ceip.at/reporting-instructions>
2. ECE/EB.AIR/111/Add.1: Decision 2012/3: Adjustments under the Gothenburg Protocol to emission reduction commitments or to inventories for the purposes of comparing total national emissions with them  
[https://unece.org/DAM/env/documents/2013/air/ECE\\_EB.AIR\\_111\\_Add.1\\_ENG\\_DE\\_CISION\\_3.pdf](https://unece.org/DAM/env/documents/2013/air/ECE_EB.AIR_111_Add.1_ENG_DE_CISION_3.pdf)
3. ECE/EB.AIR/113/Add.1: Decision 2012/12: Guidance for adjustments under the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to emission reduction commitments or to inventories for the purposes of comparing total national emissions with them  
[https://unece.org/DAM/env/documents/2012/EB/Decision\\_2012\\_12.pdf](https://unece.org/DAM/env/documents/2012/EB/Decision_2012_12.pdf)
4. ECE/EB.AIR/125: 2014 Reporting Guidelines for Estimating and Reporting Emission Data under CLRTAP  
[https://unece.org/fileadmin/DAM/env/documents/2013/air/eb/ece.eb.air.125\\_E\\_ODS.pdf](https://unece.org/fileadmin/DAM/env/documents/2013/air/eb/ece.eb.air.125_E_ODS.pdf)
5. ECE/EB.AIR/127/Add.1: Decision 2014/1: Improving the guidance for adjustments under the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to emission reduction commitments or to inventories for the purposes of comparing total national emissions with them  
[https://unece.org/DAM/env/documents/2014/AIR/EB/Decision\\_2014\\_1.pdf](https://unece.org/DAM/env/documents/2014/AIR/EB/Decision_2014_1.pdf)
6. ECE/EB.AIR/130: Technical Guidance for Parties Making Adjustment Applications and for the Expert Review of Adjustment Applications, 14 April 2015  
[https://unece.org/DAM/env/documents/2014/AIR/EB/ECE\\_EB\\_AIR\\_130\\_ENG.pdf](https://unece.org/DAM/env/documents/2014/AIR/EB/ECE_EB_AIR_130_ENG.pdf)
7. [ECE/EB.AIR/142/Add.1: Decision 2018/1: Updated methods and procedures for the technical reviews of air pollutant emission inventories reported under the Convention](https://www.ceip.at/fileadmin/inhalte/ceip/00_pdf_other/2019/decision_2018_1_advance_version_ece_eb.air_142_add.1.pdf)  
[https://www.ceip.at/fileadmin/inhalte/ceip/00\\_pdf\\_other/2019/decision\\_2018\\_1\\_advance\\_version\\_ece\\_eb.air\\_142\\_add.1.pdf](https://www.ceip.at/fileadmin/inhalte/ceip/00_pdf_other/2019/decision_2018_1_advance_version_ece_eb.air_142_add.1.pdf)
8. EMEP/EEA: EMEP/EEA air pollutant emission inventory guidebook 2016, EEA Report No. 21/2016 European Environment Agency, Copenhagen. Available at: <http://www.eea.europa.eu/publications/emep-eea-guidebook-2016>
9. EMEP/EEA: EMEP/EEA air pollutant emission inventory guidebook 2019, EEA Report No. 13/2019 European Environment Agency, Copenhagen. Available at: <https://www.eea.europa.eu/publications/emep-eea-guidebook-2019>
10. TFEIP (2022): "Inventory adjustments in the context of emission reduction commitments (ERC)" available at: [https://www.ceip.at/fileadmin/inhalte/ceip/00\\_pdf\\_other/2022/technical\\_guidance\\_for\\_erc\\_adjustments\\_issue1.1.pdf](https://www.ceip.at/fileadmin/inhalte/ceip/00_pdf_other/2022/technical_guidance_for_erc_adjustments_issue1.1.pdf)