UNITED NATIONS

Distr.
GENERAL

CEIP/S3.RR/2023/
Georgia
07/11/2023

ENGLISH ONLY

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

2023

Georgia

FINAL REPORT

CONTENT

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_x emissions including gridded data. While the focus was set on NH_3, NMVOC and NO_x emissions, also all other pollutants covered by LRTAP Convention and its protocols (i.e. SO_2, NOx, NMVOC, NH_3, plus PM_{10} $PM_{2.5}$, BC, priority HMs and POP_S) 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 Georgia'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)

[1] 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

Mr. Lasha AKHALAIA (Georgia)

Mr. Hakam AL-HANBALI (Sweden)

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

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 ALBREKTSEN (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 Georgia, due by 15 February 2023. The Informative Inventory Reports (IIR), reported due by 15 March 2023 under the CLRTAP, informed the review.

7. The EMEP/EEA Guidebook 2019[2] was used as a base for the review.

8. The emission inventory of Georgia was received on 14 February 2023 and thus by the deadline of 15 February. The Informative Inventory Report was received on 29 March 2023 and thus after the deadline of 15 March. Georgia provided resubmission of the emission inventory on 29 March 2023. The resubmission has been considered for the review.

[2] 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 Georgia in providing an inventory including a significant level of detail.

The IIR does not describe the methods used for the sector agriculture transparently enough. The ERT considers that there is room for further improvement in the agriculture part of the inventory in terms of completeness and in terms of accuracy, comparability and consistency.

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

- complete the IIR by documenting methods and activity data used
- provide justifications on recalculations and document methods used
- ensure that the time series are calculated in consistent methods and cover all years since 1990
- explain fluctuations in the time series in the IIR
- ensure that activity data is included in the IIR and in the NFR tables
- include the Revised Estimate for NFR 3Da2a in the next submission
- include the missing chapter on methodologies and assumptions used for gridded data and LPS data in the IIR of the next submission.
- increase the capacities of the air pollution inventory team in order to manage transparent, complete, comparable, consistent and accurate inventory

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_3, NMVOC and NO_x emissions, also all other pollutants covered by the LRTAP Convention and its protocols (i.e. SO_2, NOx, NMVOC, NH_3, plus PM_{10} $PM_{2.5}$, BC, priority HMs and POP_S) 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[3]

ID	Pollutants	NFR category	Key Category	Tier 1 used for KC	Type	$TAC_1C_2C_3$
GE-2023-1	All	3B and 3D	Yes	Yes	R	AC3
Observation The ERT noticed that Georgia has implemented a recalculation for 2014 and 2015 but not for the previous years. The Party explained that due to a lack of financial and human resources at GEOSTAT no other years were recalculated. **Recommendation** **The ERT recommends the Party to assess the chapter on timeseries consistency in the Guidebook and to also try to implement the Reporting Guidelines to ensure a consistent timeseries. The recalculations should be justified in the IIR and the methods used in the recalculations should be documented in the next IIR.**						
ID	Pollutants	NFR category	Key Category	Tier 1 used for KC	Type	TAC1C2C3
GE-2023-2	All	3B and 3D	Yes	Yes	R	AC3
Observation The ERT noticed that the Party limits the graphs in the IIR to the end of the timeseries and provides a limited explanation for observed trends. The IIR does not contain activity data.						

[3] 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_1 (Completeness), C_2 (Comparability), C_3 (Consistency) for definitions of these criteria see EMEP/EEA Guidebook 2019

Recommendation
The ERT recommends the Party to further expand the IIR, by including activity data and graphs with the emissions for the entire timeseries. As well as providing an explanation for observed trends, and individual years with a large change.

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

11. For the 2023 Review of the gridded emission data the focus was set on ammonia, NMVOC, NOx and PM2.5 emissions.

12. The methods used by Georgia to spatially resolve sectoral emissions are not described in the IIR.

13. The description does not include data sources that have been used for spatial distribution.

14. Gridded emissions reported for [e.g. GNFR K_AgriLivestock and L_AgriOther] are partly consistent with the corresponding NFR categories reported in Annex I.

15. Table 2 provides the findings from the ERT related to the gridded data.

16. 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[4] [an example of a possible recommendation]

ID	Pollutants	GNFR category	$TAC_1C_2C_3$
Party-2023-GRID-GL-1	all	GNFR-L	
Observation The ERT noted that there is a lack of transparency regarding the methodologies and assumptions used to generate the gridded data. The IIR does not contain a chapter outlining the methods used to generate the gridded estimates as outlined in Annex II of the reporting guidelines. **Recommendation** **The ERT recommends Georgia to include the missing chapter on methodologies and assumptions used for gridded data and LPS data in the IIR of the next submission.**			

[4] The findings have been assigned to one or more of the following criteria: TACCC T (Transparency), A (Accuracy), C_1 (Completeness), C_2 (Comparability), C_3 (Consistency) for definitions of these criteria see EMEP/EEA Guidebook 2019

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

17. In the Appendix of the 'EMEP/UNECE Review Guidelines 2018[5]' it is stated that if the ERT considers that emissions are significantly under- or overestimated, the Party is during the review invited to submit 'Revised Estimates' that address the issue raised. Should the Party decline to do this, or should it not be possible to agree on the quantification of a Revised Estimate i.e. the ERT does not accept a Revised Estimate provided by the Party, the ERT may calculate a 'Technical Correction'. The threshold for significance for a Technical Correction for the in-depth review in 2023 was set at 2% of the national total, i.e. a finding that has been identified to result in an over- or under-estimate of emissions of more than 2% of the national total. The methods for calculating Technical Corrections are set up in the 'EMEP/UNECE Review Guidelines 2018' and use the EMEP/EEA Emission 'Inventory Guidebook' as a reference for methods and emission factors.

18. The ERT calculated one Technical Correction which Georgia agreed to, thus it is dealt with as a Revised Estimate. In their response Georgia also provided updated activity data for NFR 3B3, which is included in the Revised Estimate for NFR 3Da2a (Table 3 and Table 5).

19. The ERT recommends Georgia to consider the Revised Estimate in their next inventory submission.

20. Details of the Revised Estimate is presented in Table 3 are included in ANNEX I TECHNICAL CORRECTIONS AND REVISED ESTIMATES.

Table 3 Summary of potential Technical Corrections and Revised Estimates identified by ERT for Georgia

NFR category	Pollutants	Years	RE/TC quantified (yes/no)	Potential contribution to national total (%)
NFR 3Da2a	NOx	2005	yes	+26
NFR 3Da2a	NOx	2020	yes	-19
NFR 3Da2a	NOx	2021	yes	-18

[5] https://www.ceip.at/fileadmin/inhalte/ceip/3_review/advance_version_ece_eb.air_142_add.1.pdf

LIST OF MATERIALS PROVIDED TO ERT

1. GE_NFR2023_v1.2
2. IIR_Georgia_2023

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
   - Georgia Activity data for 3B and 3D
   - Georgia Calculation of NH3 emissions from 3B-3Da2a-3Da3_Georgia
3. Georgia_TC_2023_NFR3_revised by Georgia (received 2 July 2023)

ANNEX I TECHNICAL CORRECTIONS AND REVISED ESTIMATES

21. The ERT calculated one Technical Correction that was accepted by Georgia and to which Georgia provided updated activity data (NFR 3B3), thus it is dealt with as a Revised Estimate. Detailed related information is provided separately in the Excel file:

- Georgia_RE-2023-NFR3.xlsx

Table 4: Technical Corrections calculated by the ERT accepted by Georgia as a Revised Estimate (including revised AD for NFR 3Da2a received from Georgia)

Revised Estimate for NOx emissions in NFR 3B – Manure management			
Year	Original estimate (kt)	Technical Correction calculated by the ERT and accepted by Georgia as a Revised Estimate (kt)	Difference between original estimate and the Revised Estimate (kt)
2005	NE	4.903	4.903
2020	12.530	3.656	-8.875
2021	12.402	3.643	-8.759

Table 5: Effect of the Technical Corrections and Revised Estimates on the National Total and National Total for compliance

Year	National Total (kt)[6]	National Total for Compliance (kt)[7]	Sum of Revised Estimates (kt)	National Total including Revised Estimates (kt)	National Total for Compliance including Revised Estimates (kt)
2005	18.723	18.723	4.903	23.626	23.626
2020	46.824	46.824	-8.875	37.949	37.949
2021	47.796	47.796	-8.759	39.037	39.037

[6] Line 141 in Annex I to the reporting guidelines (NFR table)

[7] Line 152 in Annex I to the reporting guidelines (NFR table)

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_3	Ammonia
NMVOC	Non-methane volatile organic compounds
NO	Not Occurring
NO_x	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_{10}	Fine particulate matter: particles with an aerodynamic diameter equal to or less than 10 micrometres (μm)

$PM_{2.5}$	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_2	Sulphur dioxide
SO_x	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_DECISION_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

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

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

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

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

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