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

STAGE 3 REVIEW REPORT

SLOVENIA

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INTRODUCTION

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'.

1. 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.

2. At its seventh joint session in September 2021 the Steering Body and the Working Group approved the plan to perform (in 2022) an in-depth review of PM_{2.5} emissions from residential heating and road transport, with a special focus on the topic of '*condensable particulate matter*' and a follow-up review of the implementation of recommendations given as part of the review carried out in 2021. The Parties reviewed in 2021 are Kazakhstan, Liechtenstein, Monaco and Montenegro.

3. Particulate matter can exist as solid or liquid matter (the "filterable" portion) or as gases (the "condensable" portion). Condensable particulate matter is vapour phase at stack conditions, but condenses and/or reacts upon cooling and dilution upon discharge into ambient air to form solid or liquid PM. All condensable PM is assumed to be in the PM_{2.5} size fraction². The inclusion of the condensable component of PM_{2.5} emissions can have a big impact on the emission estimate for certain sources³.

4. This ad-hoc review has assessed PM_{2.5} emission estimates with a special focus on the topic of '*condensables*' for the years 2000 to 2020.

5. This report covers the results of the stage 3 centralised review (ad hoc review) 2022 of the UNECE LRTAP Convention of Slovenia coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place between April and June 2022 and was performed as desk review with an in person meeting between 30 of May 2022 and 3 June 2022. The following team of nominated experts from the roster of experts performed the review.

Ad hoc review - condensables

1A3b Road Transport: Gudrun Stranner, Katrina Young, Magdalena Zimakowska-Laskowska, Martina Toceva and Rebecca Rose

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
https://unece.org/fileadmin/DAM/env/documents/2018/Air/EB/ECE_EB.AIR_142_Add.1-1902937E.pdf

² [Condensable Particulate Matter Definition | Law Insider](#)

³ For more technical details please refer to the EMEP/EEA Guidebook (<https://www.eea.europa.eu/publications/emep-eea-guidebook-2019>) or the report 'How should condensables be included in PM emission inventories reported to EMEP/CLRTAP?' https://emep.int/publ/reports/2020/emep_mscw_technical_report_4_2020.pdf

1A4bi Residential: stationary: Aleksandra Nestorovska-Krsteska, André Amaro, Benjamin Cuniasse, Canan Esin Köksal, Damian Zasina, Laureta Dibra, Marion Pinterits, Sam Gorji and Wolfgang Schieder

6. Kristina Saarinen and Jeroen Kuenen were the lead reviewers. The review was coordinated by Sabine Schindlbacher (EMEP Centre on Emission Inventories and Projections - CEIP).

7. The review was performed on the basis of CLRTAP emission data officially reported by Slovenia, due by 15 February 2022 for emission inventories. The Informative Inventory Reports (IIR), reported due 15 March 2022 under the CLRTAP, informed the review.

8. The emission inventory of Slovenia was received on 5 February 2022 and thus by] the deadline of 15 February. The Informative Inventory Report was received on 12 March 2022 and thus by the deadline of 15 March.

RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

1.A.4.b.i Residential: stationary

9. Slovenia uses a mixed Tier 1 / Tier 2 methodology for calculating PM_{2.5} emissions from '1A4bi – Residential: stationary'. A Tier 2 methodology is used for biomass combustion. As NFR 1A4bi is a key category for PM_{2.5} emissions in Slovenia, the ERT recommends Slovenia to use a least a Tier 2 method for calculating emissions from the other fuels, too, in line with Reporting Guidelines' paragraph ²¹⁴.

10. The ERT notes that the activity data is taken from official statistics and is described transparently in the IIR.

11. The activity data for Slovenia includes collected wood, i.e. wood directly harvested from the forest outside formal market activity. According to the country experts the data reported by the Statistical Office of the Republic of Slovenia covers all wood: purchased wood and wood which is not purchased (collected wood). Due to the market properties (many small owners of forests who sell their wood biomass also outside formal market activity) a model approach is needed to get the more actual (realistic) amount of wood fuel.

12. The total fuel consumption for each fuel type is stratified into different appliance types: conventional boilers, advanced/ecolabelled stoves, boilers burning wood, pellet stoves, open fireplaces and conventional stoves (p. 140 of the IIR 2022).

13. Slovenia uses the Tier 2 emission factors from the EMEP/EEA Guidebook 2019 (Tables 3.39-3.44) for the compilation of its emissions from this category (see Table 1).

Table 1: Inclusion of condensables per fuel type

Fuel Type	Includes the condensable component of PM_{2.5} emissions
Biomass	Yes
Coal	Unclear - Guidebook 2019
Liquid	Unclear - Guidebook 2019
Gaseous	Unclear - Guidebook 2019

14. The ERT notes that the time series is consistent.

15. According to the IIR Slovenia will report gridded emissions in the next gridded data submission. The ERT recommends Slovenia to implement this plan and to document in the IIR transparently the proxy data used for gridding.

The ERT commends Slovenia for their improvement plan and recommends implementing them as scheduled.

⁴ Reporting Guidelines paragraph 21: "For sources that are determined to be key categories in accordance with the EMEP/EEA Guidebook methodologies, Parties should make every effort to use a Tier 2 or higher (detailed) methodology, including country-specific information."

1.A.3.b.i-iv Road transport - exhaust emissions

16. Slovenia's transport sector emissions are calculated using country specific emission factors taken from COPERT version 5.5.1. All emission factors in COPERT are based on the Tier 3 methodology in the 2019 EMEP/EEA Guidebook. The IIR provides details of the main features of the model.

17. The activity data is taken from various national statistics: total fuel sales by the Statistical Office of the Republic of Slovenia (SORS), official database of registered motor and trailer vehicles including an expert estimation on the basis of the Statistical Yearbook published by SORS, odometer database administered by the Ministry of Infrastructure of the Republic of Slovenia and average speeds taken from road counters data.

18. The IIR describes the calculation of transport emissions transparently. The ERT commends the good level of detail in the methodology descriptions for the whole transport sector.

19. The emissions include the condensable component of PM_{2.5} emissions. The inclusion of the condensable component of PM_{2.5} is documented transparently on p.101 of the IIR and on p.2 of annex 2.

20. The time series is consistent.

21. Slovenia lists no planned improvements for their submission in 2023 in their 2022 IIR.

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

22. In the Appendix of the 'EMEP/UNECE Review Guidelines 2018'⁵ it is stated that if the ERT considers that when emissions are significantly under- or overestimated, then during the review, the Party is 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 the Revised Estimates, then the ERT may calculate a "Technical Correction" in the absence of an updated emission estimate being provided by the Party itself. The threshold for significance for a technical correction for the in-depth review in 2022 was set at 2% of the national total, i.e. findings identified which result in an over- or under-estimate of emissions of more than 2% of the national total can result in a Technical Correction. The methods for calculating the Technical Corrections are set up in the "Review Guidelines 2018" and use the EMEP/EEA Emission "Inventory Guidebook" as a reference for methods and emission factors.

23. Slovenia did not provide any revised estimates and the ERT did not calculate any revised estimates.

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

LIST OF MATERIAL PROVIDED TO ERT

1. Slovenia's Stage 2 S&A report
2. Slovenia's Stage 1 report 2022
3. Slovenia's IIR 2022
4. NFR tables submitted in 2022 by Slovenia

LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW

5. Responses to preliminary question raised prior to the review
6. Responses to questions raised during the review