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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

BELARUS

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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 Belarus 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 Belarus 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 Belarus was received on 15 February 2022 and thus by the deadline of 15 February. The Informative Inventory Report was received on 15 March and thus by the deadline of 15 March.

RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

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

9. Belarus did not respond the questions prepared by the ERT on their 1A4bi – ‘Residential: stationary’ sector emissions inventory, therefore ERT’s assessment of the inventory below is based on information available in the IIR 2022 submission by Belarus.

10. Belarus uses the Tier 1 methodology provided in the EMEP/EEA Guidebook 2019 to calculate PM_{2.5} emissions from category 1A4bi, which is a key category for Belarus. The ERT recommends Belarus to move to the Tier 2 methodology presented in the EMEP/EEA Guidebook for this key category, in line with Reporting Guidelines’ paragraph 21⁴.

11. The ERT notes that the activity data is described transparently enough in the Informative Inventory Report. The activity data is taken from official statistics (‘Report on fuel remains, supply, and consumption in Belarus for 2020’ of National Statistic Committee). On basis of information provided in the IIR, the ERT could not clarify whether the activity data used in the inventory includes or not collected wood, i.e. wood directly harvested from the forest outside formal market activity.

12. The ERT recommends Belarus to collect data on national circumstances such as different types of biomass and combustion appliances used in the country, and to incorporate the information in the residential combustion inventory to further develop the Tier 2 methodology to reflect country-specific conditions.

13. The emission factors partially include the condensable component of PM_{2.5} emissions (Table 1). The ERT recommends the Party to further investigate for each PM emission factor whether or not condensables are included.

Table 1: Inclusion of condensables per fuel type

Fuel Type	Includes the condensable component of PM_{2.5} emissions
Coal, peat	unclear
biomass	yes
Liquid	unclear
Gaseous	unclear

14. The ERT notes that Belarus only reported emissions for the most recent year (2020), and recommends Belarus to provide a full time series at least from the year 2000 for particles, in line with Reporting Guidelines paragraph 37, in the next submission.

15. The ERT notes that the IIR does not provide information on the emission trend and recommends Belarus to include this information to the next IIR submission.

16. Belarus does not list planned improvements for future submissions in the IIR 2022. The ERT recommends Belarus to provide information on planned improvements in the IIR.

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

17. Belarus did not respond to the questions prepared by the ERT on their 1A3bi-iv - 'Road transport' sector emissions inventory, therefore ERT's assessment of the inventory below is based on information available in the IIR 2022 submission by Belarus.

18. The ERT notes that the documentation of the transport sector inventory is not transparent in the 2022 submission of the IIR. The activity data is taken from official statistics, however, no link or the reference to these are provided in the IIR. The ERT recommends Belarus to include in the IIR the relevant links and references to all data sources.

19. The ERT notes that the method used to calculate transport sector emissions is not documented transparently in the IIR. The ERT recommends Belarus to include more detailed information on the methodologies, including information on the age distribution of the vehicle fleet and a description of the model used to calculate emissions and the input data, in the next IIR submission. The ERT also encourages the use of the latest available version of the model in use (e.g. COPERT).

20. During the review the ERT were not able to check if PM_{2.5} emissions from road transport exhaust include or not the condensable component of PM_{2.5} emissions. The ERT recommends that Belarus include a statement in the road transport chapter of the IIR confirming whether the condensable component of PM_{2.5} is included in emissions estimates or not.

21. During the review the ERT were not by able to check if the time series is consistent and therefore recommends Belarus to submit the time series calculated with consistent methods, in the next submission.

22. Belarus lists no planned improvements in their IIR 2022 for particle emissions inventory from sectors 1A3bi-iv. The ERT recommends Belarus to include information on planned improvements for the transport sector emissions in the next IIR submission, in line with the Recommended structure of the Informative Inventory Report detailed in Annex II of the 2014 Guidelines for Estimating and Reporting Emission Data ⁵.

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

23. In the Appendix of the 'EMEP/UNECE Review Guidelines 2018'⁶ 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

⁵ [Annex VI: IIR \(ceip.at\)](#)

⁶ https://www.ceip.at/fileadmin/inhalte/ceip/3_review/advance_version_ece_eb.air_142_add.1.pdf

Guidelines 2018” and use the EMEP/EEA Emission “Inventory Guidebook” as a reference for methods and emission factors.

24. Belarus did not provide any revised estimates and the ERT did not calculate any technical corrections.

LIST OF MATERIAL PROVIDED TO ERT

1. Belarus Stage 2 S&A report
2. Belarus Stage 1 report 2022
3. Belarus IIR 2022
4. NFR table submitted in 2022 by Belarus

LIST OF ADDITIONAL MATERIAL PROVIDED BY THE COUNTRY DURING THE REVIEW

None.