

Final Air Emission Inventory Review Guidelines 2023

Developed for the Review of National Air Pollutant Emission Inventory Data 2023 under
Directive 2016/2284 (National Emission reduction Commitment Directive)
Service Contract No. 070201/2019/815979/SER/ENV.C.3

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Umweltbundesamt GmbH
Spittelauer Lände 5
1090 Vienna
Austria

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Abbreviations

CLRTAP	Air Convention (Convention on Long-range Transboundary Air Pollution)
E-PRTR	European Pollutant Release and Transfer Register
EEA	European Environment Agency
EIONET	European Environment Information and Observation Network
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)
EMRT-NECD	EEA Emission Review Tool for the National Emission reduction Commitment Directive
ERC	Emission Reduction Commitment
EU	European Union
GNFR	Gridding nomenclature for reporting
HMs	Heavy Metals (Priority Heavy metals are lead (Pb), cadmium (Cd), mercury (Hg))
IPPU	Industrial Processes and Product Use
LPS	Large Point Source(s)
NECD	National Emission reduction Commitments Directive (Directive (EU) 2016/2284)
NFR	Nomenclature for reporting
NH ₃	Ammonia
NMVOC	Non-methane volatile organic compounds
NO _x	Nitrogen oxides
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
SO ₂	Sulphur dioxide
TERT	Technical expert review team

PART A: General Information on the Review Process

I. INTRODUCTION

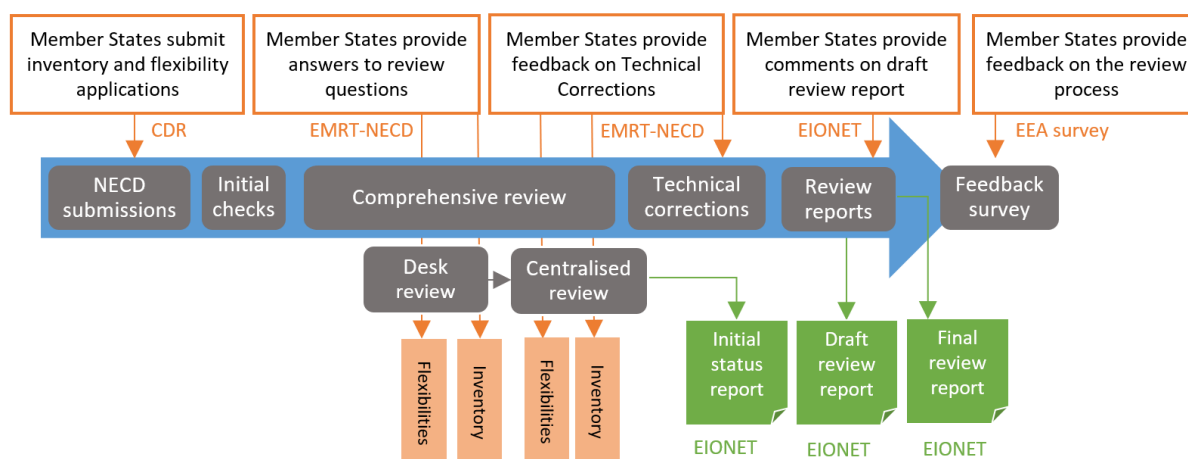
1. These guidelines build on the Air Emission Inventory Review Guidelines prepared each year since 2017. They provide an overview of the methods and procedures for the review of the air pollution emission data submitted by Member States (hereafter referred to as the 'NECD submissions') under the European Union's Directive on the reduction of National Emissions of Certain atmospheric pollutants¹ (NECD) in line with their emission reporting obligations. This includes the review of flexibility applications as detailed in Article 5 of the NECD, which explains that Member States may draw on different flexibilities, under selected circumstances. Hereafter, this review process is referred to as the 'NECD inventory review'.
2. The general objective of the NECD inventory reviews is to improve transparency, consistency, comparability, completeness, and accuracy of submitted data and as such to contribute to establishing accurate, reliable, and verified emission inventories for all Member States. The NECD inventory reviews ensure that the European Commission has adequate and reliable information on the quality of emissions data and associated information reported to the European Union (EU). The NECD inventory reviews assess the consistency of the submission with the requirements of the NECD, the EMEP Reporting Guidelines and the methodologies and data specified in the EMEP/EEA Emission Inventory Guidebook. The review process is intended to be transparent and carried out in close cooperation with the nominated national contact point and national experts from Member States.
3. This guidance is drafted specifically for the 2023 NECD inventory review. Its purpose is to document the review process to ensure that a thorough, consistent, and comprehensive approach is taken during the 2023 NECD inventory review. It is intended both for representatives from Member States and members of the technical expert review team. Part A provides general information that is applicable for all of those involved with the review, and Part B provides more detailed information that is more relevant to the technical expert review team. These guidelines are not European Commission guidelines on the interpretation of the NECD.
4. The 2023 NECD inventory review will be carried out by the team under service Contract No. 070201/2019/815979/SER/ENV.C.3. It will be split into two phases: the initial checks that will be carried out by the review project team and the comprehensive review that will be carried out by the technical expert review team. The approach of the 2023 NECD inventory review is given in detail in Section II. A description of the responsibilities under the 2023 NECD inventory review is given in Section IV.
5. The 2023 NECD inventory review will take place from January 2023 until the end of November 2023. Representatives from Member States will interact with the review team at specific points during the review process. The schedule of the 2023 NECD inventory review is given in more detail in Section III. The scope of the 2023 NECD inventory review includes the assessment of the 2023 NECD inventory submissions, specifically the in-depth review of the main pollutants and PM₁₀, and

¹ Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016, available at <https://eur-lex.europa.eu/eli/dir/2016/2284/oj>

all 2023 flexibility applications. The scope of the 2023 NECD inventory review is provided in more detail in Section V.

II. APPROACH

Figure 1: Overview of review approach including the activities that Member States will carry out



6. **NECD submissions** applicable to the 2023 NECD inventory review include the NECD inventory submissions made in 2023 (which include emissions for the year 2021). Member States annually submit inventories to the European Commission and the EEA. Submissions consist of both quantitative and qualitative information. Quantitative data are reported as explained in part 1 of Annex IV to the NECD. Qualitative data, including methodologies used in calculating emissions, are included in an Informative Inventory Report (IIR) as explained in part 3 of Annex IV to the NECD. Member States submit gridded emission inventories and Large Point Source (LPS) inventories every four years (first submission was in 2017) to the European Commission and the EEA as set out in Table C of Annex I to the NECD. The last submission of gridded data and LPS data was in 2021 and the next submission will be in 2025. A review of these datasets is not part of the 2023 NECD inventory review.
7. **Flexibility applications** submitted in 2023 will be reviewed as part of the 2023 NECD inventory review. This will consist of applications made in accordance with Article 5 of the NECD. Flexibility applications will be reviewed as detailed in Section XI.
8. **Initial checks** will be performed on the NECD submissions by the review project team. Findings from the initial checks will be provided by the project team to the technical expert review team to inform their work under the comprehensive review. Checks will assess flexibility applications and the implementation of recommendations from previous NECD inventory reviews and raise new observations for further investigation by the technical expert review team (TERT).²
9. The **comprehensive review** will be performed on the NECD submissions by the technical expert review team. During the comprehensive review, nominated national contact points, supported by

² Recommendations initially raised in previous review years that cover pollutants to be reviewed as part of the 2023 NECD inventory review (main pollutants and PM₁₀) and recommendations that cover any other pollutant previously reviewed under the NECD inventory review (BC, CO, BaP, PAHs, PCBs, HCB, Cd, Hg, Pb, PCDD/F) and that are of significance to the emission estimates of main pollutants or PM₁₀ will be included in the 2023 NECD review. This means that Member States might receive follow-up questions in relation to HMs, POPs, BC and CO in cases where observations also relate to a pollutant subject to the 2023 NECD inventory review.

national experts, may be asked to clarify issues and provide additional information related to their NECD submissions. The comprehensive review will be carried out through:

- a. **A desk review** which will include an in-depth review of the NECD submissions for SO₂, NO_x, PM_{2.5}, NH₃ and NMVOC and PM₁₀ conducted by the TERT and a flexibilities review conducted by the flexibility review team, which is a subset of the TERT. Both aspects will consider the results of the initial checks provided by the initial checks team. The technical expert review team will subsequently generate and send questions to the Member States.
- b. **A centralised review** during which the technical expert review team will send follow-up questions, review Member State's responses, finalise recommendations, review Revised Estimates and calculate potential Technical Corrections relating to the national emission inventories of SO₂, NO_x, PM_{2.5}, NH₃ and NMVOC and PM₁₀.
- c. **Compliance assessments** during which compliance with the national emission reduction commitments is evaluated.

10. Findings of the NECD inventory review are categorised into the following classifications, according to the type and significance of the issue:

- a. **Recommendations** are findings where an identified issue has not been resolved during the course of the review and which is not above the threshold of significance³.
- b. **Revised Estimates** are quantitative corrections to emissions data that are compiled by the Member States and submitted to the technical expert review team during the course of the review. They should provide corrections to data that are within the scope of the review. Member State representatives are advised to clearly state in their responses to the TERT when submitted data should be treated as a Revised Estimate, as opposed to a response 'for information'.
- c. **Technical Corrections** are quantitative corrections to emissions data that are compiled by the technical expert review team and submitted to the Member States. They provide corrections to data that are within the scope of the review which are an over- or under-estimate that is above the threshold of significance. They are communicated to the Member States as a **potential** Technical Correction directly after the centralised review and then, if still applicable, as a Technical Correction after receiving final comments from the Member States. For issues that were above the threshold of significance that were not possible to quantify in previous reviews, the TERT will, where possible, implement a method for improving the existing emissions estimates using e.g. data from neighbouring countries, and/or making best estimates of the penetration of abatement measures. Consequently, this would not necessarily deliver a complete "solution" to the issue, but would result in an improvement to the existing emissions inventory, as it would provide an approximate estimate that is considered preferable to the current reporting from the Member State. In these cases, the Member State will receive observation text accompanying the Technical

³ The threshold of significance relates to findings that would result in an over- or underestimate of more than 0.5 % on the national total in one of the reported years under review (see Table 2 below), which is the same approach as in last year's review.

Correction that emphasises the need for further improvement, ahead of the next review.

- d. **Unquantified Potential Technical Corrections** are assigned to issues when it is not possible for the technical expert review team to calculate a Technical Correction during the timeframe of the review or with reasonable effort. They are applicable in cases where the expected impact is likely to exceed the threshold of significance, but it is not possible to quantify the technical correction as part of the review. The situations where this may arise include but are not limited to situations where Tier 1 methods are used to make emission estimates for a key category.

11. The objective of **Technical Corrections** is to establish improvements in completeness, consistency, comparability and accuracy of the reported emissions data from Member States. Technical corrections to the NECD submissions will be issued where the TERT concludes that a correction at NFR sector level, or a cumulative effect across several NFR sectors, would result in more than a 0.5% (i.e. the threshold of significance) impact on the Member States national total in one of the reported years under review (i.e. 2005, 2019-2021, see also Table 2). Potential Technical Corrections will then be communicated to Member States directly after the centralised review. Member States will have an opportunity to respond within four weeks to these Potential Technical Corrections after which the technical expert review team will consider responses and conclude whether a Technical Correction is appropriate. Member States will also have the possibility to send Revised Estimates for cases where a Potential Technical Correction is suggested by the technical expert review team.
12. **Initial status reports** will be issued by the EEA to all Member States after the centralised review⁴, in an Excel format. The reports will include a list of all observation IDs for recommendations and currently agreed Revised Estimates from the 2023 NECD inventory review. Technical Corrections and Unquantified Potential Technical Corrections will not be included in this report as they will still be under review by Member States. The purpose of the initial status report is to ensure that Member States can start to address the findings of the review, using the contents of the EMRT-NECD, without needing to wait for the publication of the final NECD inventory review reports. Member States will not be asked to provide comments on the initial status report.
13. **Draft review reports** will be issued by the EEA to all Member States after finalisation of all 2023 NECD inventory review findings. The reports will include all recommendations, Revised Estimates and Technical Corrections. The reports will include a quantitative assessment of all the Revised Estimates, Technical Corrections and Unquantified Potential Technical Corrections related to the annual national emission inventories including reference to the national emission reduction commitments as defined by Directive (EU) 2016/2284⁵. The reports will include an assessment of flexibility applications, where applicable. Based on revised national totals, calculated considering the effects of Revised Estimates, Technical Corrections and approved flexibilities, an assessment of compliance for the years 2020 and 2021 with the applicable emission reduction commitment will also be presented in the report. Finally, the reports will include a qualitative assessment of the quality of the NECD inventories submissions. Member States will have the opportunity to provide comments on their review report, and provide a statement within the report, before the report is finalised.
14. **Final review reports** will be issued to all Member States by the EEA. The technical expert review team will consider all comments received by Member States when finalising these reports. During

⁴ Reports will be uploaded to the European Environment Information and Observation Network (EIONET).

⁵ Directive (EU) 2016/2284 available at <https://eur-lex.europa.eu/eli/dir/2016/2284/oj>

and after this process, the European Commission may take further action on disputed Technical Corrections.

15. Communication between the technical expert review team and Member States will be through the EEA Emission Review Tool for the NECD (**EMRT-NECD**⁶), which is a web-based communication platform designed to streamline the communication and documentation process. Other communication routes will only be used in exceptional circumstances and if agreed with the respective Member State. Information provided to a specific member of the technical expert review team may be made available to other members of the team. Training on use of the EMRT-NECD will be available to Member States.
16. Following the completion of the 2023 NECD inventory review, Member States will have the opportunity to provide feedback on the review process through a questionnaire distributed along with the final review reports.

⁶ Available at <https://emrt-necd.eionet.europa.eu/>

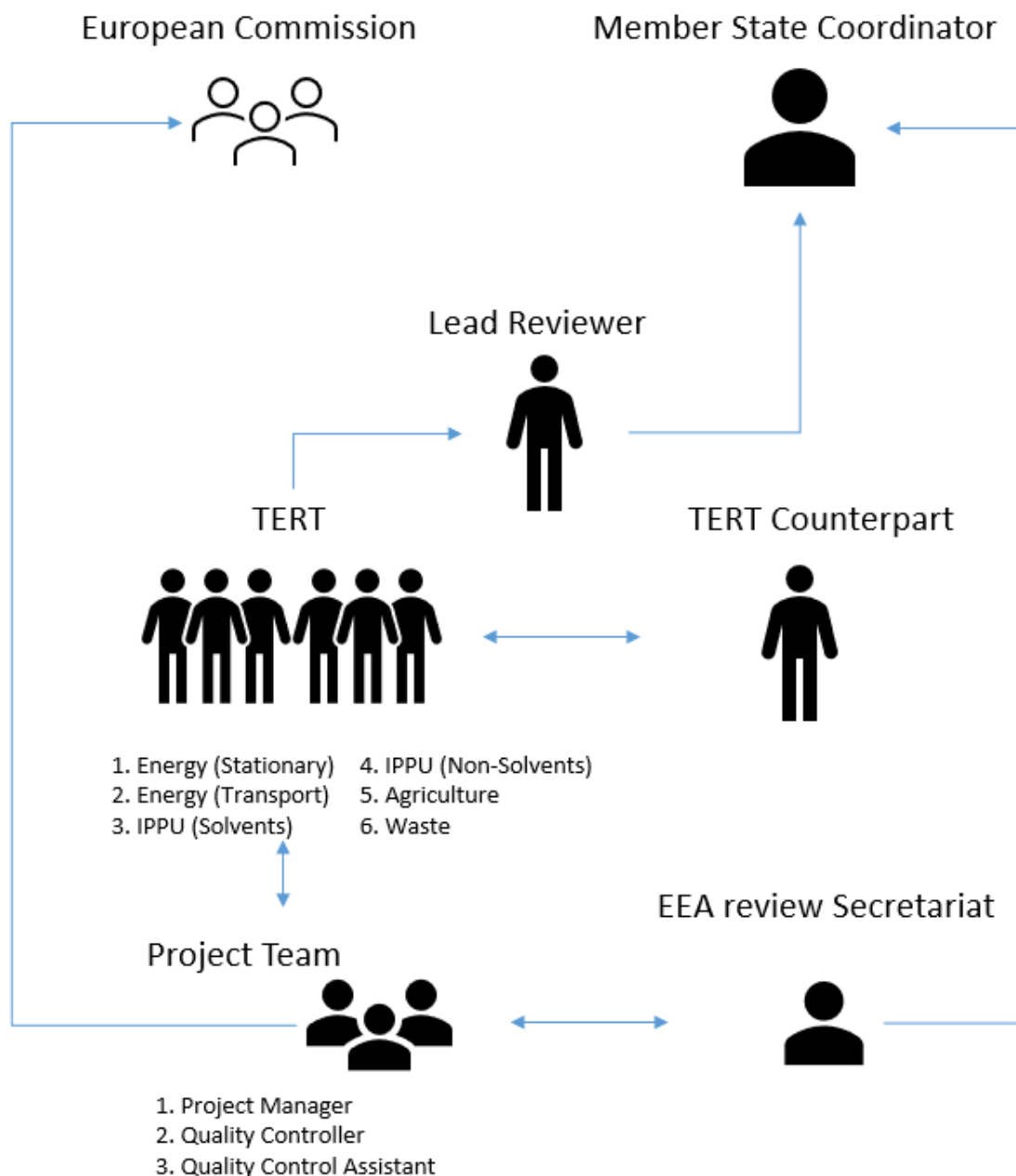
III. SCHEDULE

Table 1: Detailed schedule of the 2023 NECD inventory review highlighting activities involving Member States in blue

Activity	Date
Deadline for the inventory submission; deadline for MS to inform Commission of their intention to apply for a flexibility	15 February
Deadline for resubmissions of the inventory; deadline for the submission of the Informative Inventory Report and Flexibility Applications	15 March
Initial checks begin	27 March
Nomination of MS contact points for the review via the EEA	4 April
Initial checks end	21 April
Training webinar for EMRT-NECD MS users performed by EEA	25 April
TERT training webinar and kick-off meeting for the review	2 May
Questions can be sent via EMRT-NECD from the TERT to MS	From 2 May
Desk based review – main pollutants and flexibility applications; sector experts perform review	2 May - 26 May
Desk based review – main pollutants and flexibility applications; lead reviewers finalise work	29 May - 2 June
Deadline for questions sent via EMRT-NECD	2 June
Deadline for answers by MS to questions sent via EMRT-NECD	16 June
Centralised review -main pollutants and flexibility applications, (including requirement for Member State involvement through further Q&A)	19 - 23 June
Potential Technical Corrections sent via EMRT-NECD by EEA	30 June
Initial status reports sent to Member States by EEA	30 June
Feedback from MS on potential Technical Corrections (latest 4 weeks after receipt)	28 July
Draft review reports sent to Member States by EEA	25 September
Deadline for MS to send comments on draft review reports to EEA	17 October
Final review reports sent to Member States by EEA	8 November
Final horizontal project report sent to the European Commission	7 December

IV. RESPONSIBILITIES

Figure 2: Overview of responsibilities and interactions during the NECD Inventory Review



17. The **European Commission** is responsible for the management of the 2023 NECD inventory review. The European Environment Agency will support the European Commission with the review process. The 2023 NECD inventory review will be carried out by the team under service Contract No. 070201/2019/815979/SER/ENV.C.3. The review will be carried out in close cooperation with nominated national contact points and national experts from Member States.

18. **Member States** will nominate one national contact point and one substitute for all communication related to the 2023 NECD inventory review. Member States will also nominate national experts for inventory sectors. The national contact point will co-ordinate the national experts. The national experts will respond to questions received from the technical expert review team. They will make available any additional information required for the review process.

19. The **European Commission** will approve the schedule for the reviews and the selection of the technical expert review teams. With the assistance of the EEA, the European Commission will oversee the review process to ensure the quality of deliverables and take responsibility of the review reports ensuring that all findings are published in the public domain. The European Commission will take further appropriate action on Technical Corrections that are still disputed (adopting a decision on Technical Corrections as appropriate).
20. The **European Environment Agency** will support the review process with the provision of technical tools for communication between the review team and the Member States. The European Environment Agency will ensure that data for the review is provided to the review project team. The European Environment Agency will act as the contact point for national contact points.
21. The **team under service Contract No. 070201/2019/815979/SER/ENV.C.3** consists of the review project team and the technical expert review team. The review project team co-ordinates the technical expert review team providing administrative support and, as appropriate, technical and methodological assistance including the provision of these guidelines. NECD inventory submissions from each Member State will be assigned to a technical expert review team that will be responsible for conducting a thorough and comprehensive technical assessment of the NECD inventory submissions in accordance with the procedures and time frames detailed in these guidelines.
22. The **technical expert review team** will comprise of three review teams each assigned to different countries. A technical reviewer with substantial inventory review experience and management skills will serve as the team's lead reviewer. They will ensure the consistency, quality and objectivity of the technical assessments. All other technical reviewers will be sector experts for one of the following areas: Energy (stationary or mobile), Industrial Processes and Product Use (IPPU) (Solvents), IPPU (non-solvents), Agriculture or Waste. Sector experts belonging to different teams assessing the same sector will act as **TERT counterparts** checking each other's results to ensure that the four-eyes quality principle is fulfilled. Any potential conflicts of interest will be avoided by ensuring that members of the technical expert review team do not review a national inventory of their own country, or one where they contributed to emissions estimates.
23. The **quality control team**, who is part of the review project team, will be responsible for ensuring that the quality assurance and quality control objectives of the review are met, which are detailed in Section VI. The quality control team will undertake QA/QC activities at all stages of the review.

V. SCOPE

24. The scope of the 2023 NECD inventory review includes the assessment of 2023 submissions as specified by Table A and B of Annex I to the NECD and all 2023 flexibility applications.
25. The assessment of the 2023 NECD inventory submissions focusses on an in-depth review of the main pollutants and PM₁₀ and all flexibility applications submitted in 2023. The assessment will also review the implementation of the recommendations from the 2022 NECD inventory review for these pollutants⁷, the recalculations between the 2022 NECD inventory submissions and the 2023 NECD inventory submissions, and the time series consistency in consecutive years of the

⁷ Recommendations initially raised in previous review years that cover pollutants to be reviewed as part of the 2023 NECD inventory review (main pollutants and PM₁₀) and any other pollutant previously reviewed under the NECD review (BC, CO, BaP, PAHs, PCBs, HCB, Cd, Hg, Pb, PCDD/F) and that are of significance to the emission estimates of main pollutants or PM₁₀ will be included in the 2023 NECD review.

2023 NECD inventory submissions. The initial checks team will also flag new issues arising from the initial checks for review by sector experts.

26. The table below provides details of the scope of the 2023 NECD inventory review.

Table 2: Details regarding the scope of the 2023 NECD inventory review

Parameter	Details
Member States	EU geographical coverage of the Member States as of 1 January 2023. The extent to which this is possible will depend on the information submitted and that will be resubmitted by 15 March at the latest. Includes the geographical territory of Member States, their exclusive economic zones and pollution control zones. Excludes the Canary Islands, the French overseas departments, Madeira, and the Azores, as per the NEC Directive Article 2.
Submission	The most recent submission or resubmission up until 15 March.
Pollutants	Main pollutants NO _x , NMVOC, SO ₂ , NH ₃ , PM _{2.5} , and other pollutants: PM ₁₀
Years	2005, 2019-2021
Sources	All NFR categories that contribute to the national total, and the national total itself, will be considered. The following memo items will also be included: 1A3ai(ii) International aviation cruise (civil) 1A3aii(ii) Domestic aviation cruise (civil) 1A3di(i) International maritime navigation 1A3 Transport (fuel used) – where it is used for compliance purposes
EMEP/EEA Guidebook	All methodologies will be reviewed against the 2019 version of the EMEP/EEA Emissions Inventory Guidebook, and Revised Estimates and Technical Corrections will be expected to be based on the methodologies of the 2019 EMEP/EEA Guidebook.
Activity data	Reported activity data relevant to the pollutant emissions may be assessed in addition to the emission estimates.
Applicability of quantitative corrections	Revised Estimates will be reviewed by the technical expert review team. Technical Corrections will be applicable for issues that relate to an over- or under-estimate of more than 0.5% of the national total.
Flexibilities	Flexibility applications submitted in 2023 will be assessed.

VI. QUALITY OBJECTIVES AND PROCEDURES

27. It is the responsibility of the project team to ensure that the following quality objectives are met and that the following quality procedures are undertaken during the project. The overall responsibility lies with the Quality Control Team who will provide relevant guidance, training, and tools to support these objectives and procedures.

28. The following **quality objectives** will be used for the review:

- a. Ensure that the review is performed in line with the mandate given in the NECD
- b. Ensure that the review is carried out consistently across Member States

- c. Ensure that questions to national contact points and recommendations in the review report are quality checked, formulated in a clear and understandable way, and consistent with the EMEP/EEA Guidebook
- d. Ensure that the review reports are prepared in line with the review report template
- e. Ensure that work progresses according to the project timeline and deadlines
- f. Limit the burden on Member States to the extent possible.

29. The following **quality procedures** will be in place in order to meet the quality objectives:

- a. The technical expert review team will receive training on the procedures, tools, guidelines, templates and systems available to them to support the review process
- b. The technical expert review team will complete sector-specific checklists
- c. The technical expert review team will use the EMRT-NECD communications platform
- d. Sector experts will be assigned counterparts who will check issues, as required
- e. Lead reviewers and the quality control team will check issues, as required
- f. All questions and recommendations will be checked by lead reviewers
- g. All Revised Estimates and Technical Corrections will be checked by lead reviewers and the quality control team
- h. Assessments of compliance will be independently implemented by the quality control team and the project co-ordination team and cross-checked
- i. Processes for generating review reports will be tested for robustness using dummy data
- j. Draft and final review reports will be quality checked by lead reviewers and the quality control team.

PART B: Information specifically for the technical expert review team

VII. DETAILED APPROACH

30. The purpose of the 2023 NECD inventory review is to examine in detail, and in a transparent manner, the NECD inventory submissions for consistency with the reporting requirements of the NECD, providing recommendations for improvement and where appropriate calculation of Technical Corrections. This will:

- a. Ensure that the European Commission has reliable and verified information on annual NECD inventories and emission trends of anthropogenic emissions by sources
- b. Advise users on the data gaps and revisions needed in national emission inventory data
- c. Inform the work of the European Commission by providing an objective, consistent, transparent, and comprehensive technical assessment of the quantitative and qualitative inventory information submitted by Member States
- d. Assist Member States to improve the quality of their emission inventory submissions.

31. The 2023 NECD inventory review will focus on the following aspects:

- a. **In-depth review of main pollutants and PM₁₀.**
- b. **Follow-up on the 2022 NECD inventory review:** All sector experts will follow-up on the findings from the 2022 NECD inventory review, for main pollutants and PM₁₀, reiterating recommendations that were not implemented in the 2023 NECD national inventory submission⁸.
- c. **Recalculations in the 2023 NECD national inventory submission:** Recalculations will be assessed to determine changes since the previous submission to flag potential new issues introduced since the 2022 NECD inventory review.
- d. **Time series consistency in the 2023 NECD national inventory submission:** The consistency of the time series will be assessed, specifically to identify issues within submitted data that were not subject to review under the 2022 NECD inventory review.
- e. **Flexibility applications for the 2023 NECD national inventory submission.**
- f. **Compliance assessments:** The compliance with the national emission reduction commitments is calculated.

⁸ Recommendations initially raised in previous review years that cover pollutants to be reviewed as part of the 2023 NECD inventory review (main pollutants and PM₁₀) and any other pollutant previously reviewed under the NECD review (BC, CO, BaP, PAHs, PCBs, HCB, Cd, Hg, Pb, PCDD/F) and that are of significance to the emission estimates of main pollutants or PM₁₀ will be included in the 2023 NECD review.

32. The technical expert review team will have the following resources available to them:
- a. The **EMRT-NECD** is available at <https://emrt-necd.eionet.europa.eu/> and will be used for all communication between the technical expert review team and the Member States. Guidance on the use of the EMRT-NECD will be provided separately, and training will also be provided via webinars as required.
 - b. The **2023 NECD inventory review SharePoint site** provides a web-based platform available at <https://eea1.sharepoint.com/teams/NECDReview/SitePages/Home.aspx>, which is hosted by the EEA and accessible to the review project team, technical expert review team and the European Commission. It is not available to Member States. It provides the technical expert review team with resources and information to support their review work. The SharePoint site links to a **Microsoft Teams site** which will be used for the scheduling of meetings and plenary sessions for sector experts.
 - c. **Decision trees** are available as an Annex to these guidelines and on the SharePoint site. The use of these decision trees will ensure consistent approaches are followed by the technical expert review team when assessing NECD submissions. There are decision trees for different elements of the review.
 - d. **Reference text** is available on the SharePoint site to guide the sector experts in writing their observations, questions and conclusions. They encompass many different situations and are referenced in the decision trees. They should be used by all members of the technical expert review team to support the use of consistent, transparent and professional language throughout the review.
 - e. **Supporting review tools** are available on the SharePoint site for the technical expert review team during the comprehensive review. Detailed information on their scope and use will be given during the technical expert review team training webinars.
 - f. **Technical expert review team checklists** will be available on the SharePoint site developed to support the consistency, transparency and timeliness of the comprehensive review. The sector experts' checklist will be updated by the sector experts to indicate which specific review elements have been undertaken. It is intended to act as a 'sign off' list, and therefore the lead reviewer and quality control team will check the completion of this checklist at the end of the centralised review week.
33. The compilation of the **review reports** is the responsibility of the quality control team, but input will be required from the lead reviewers. The review reports contain an objective assessment of the adherence of the inventory information to the requirements of the NECD and the Reporting Guidelines and should not contain any political judgement.
34. The review report will be based on a template that is made available to the technical expert review team separately via the SharePoint site. The review report will be comprehensive in content, and will include the following:
- a. Introduction, objectives of the review, approach, and the project team
 - b. Recommendations from the technical expert review extracted from the EMRT-NECD
 - c. National emission totals including Revised Estimates and Technical Corrections

- d. The compliance status of the Member State, considering revised national totals and approved flexibilities
- e. Statement from the Member State (if provided) on the technical expert review team conclusions
- f. Where applicable, annexes elaborating on Technical Corrections and Revised Estimates providing the detailed information available in the calculation spreadsheet attached to the EMRT-NECD observation
- g. Where applicable, annexes providing the outcome of a flexibility applications review.

35. The **threshold of significance** for Revised Estimates and Technical Corrections is 0.5 % in 2023.

36. **Technical corrections** will, in relevant situations (see Table 2), be applied by the technical expert review team. Technical corrections will be calculated in consultation with the respective Member State by using the default methodologies and emission factors provided in the 2019 EMEP/EEA Guidebook with activity data from the NECD submission, IIR or other appropriate sources. The technical expert review team will use a Tier 2 approach for the calculation of Technical Corrections for key categories where this is possible. In the 2023 review, the technical expert review team may choose to quantify Potential Technical Corrections using methodologies such as drawing on international datasets, using data from neighbouring countries, and/or making best estimates of the penetration of abatement measures, as a way of avoiding Unquantified Potential Technical Corrections. The quality control team will present these methodologies to the TERT for discussion at the beginning of the desk review. These methods would not necessarily deliver a complete “solution” to the issue, but would result in an improvement to the existing emissions inventory, as they would provide an approximate estimate that is considered preferable to the current reporting from the Member State. In these cases, the Member State will receive observation text accompanying the Technical Correction that emphasises the need for further improvement, ahead of the next review. A summary of the process is provided below:

- a. At the beginning of the desk review, the quality control team proposes methodologies that improve upon issues that would otherwise remain Unquantified Potential Technical Corrections, to the technical expert review team.
- b. During the review, the technical expert review team raises an observation in the EMRT-NECD and highlights in their question to the national contact point that this could relate to an over- or under-estimate of emissions above the threshold of significance and therefore may be a case for a potential Technical Correction.
- c. The national contact point responds with clarifications and/or answers. This may either be a justification for their existing estimate or to propose a Revised Estimate that addresses the issue raised by the technical expert review team. The Revised Estimate may span several sources, several pollutants, and be relevant for the entire time series.
- d. The technical expert review team responds to the national contact point to indicate whether they agree with the Member States’ response or whether they propose a Technical Correction. The technical expert review team must then attach a calculated Technical Correction to the follow-up question. Methodologies that provide an improvement, but not a complete solution, will be used, where possible, following on

from discussions at the start of the desk review. Technical Corrections are sent at the end of the centralised review.

- e. Member States may respond to say they agree with the Technical Correction, provide a Revised Estimate, or may respond to say they disagree and provide a justification for their position.
- f. The technical expert review team considers these responses and then compiles the draft review reports which state whether they agree with the Member States' response or whether they have applied a Technical Correction. Where the technical expert review team disagrees with the Member States' response or where a Revised Estimate sent by a Member State is not accepted by the technical expert review team the Member State is contacted directly via e-mail. This is additionally indicated within the EMRT using the 'unresolved' conclusion status.
- g. Member States have an opportunity to respond to the technical expert review team's conclusions in the draft review report, which is considered by the review team. The views of the Member States are reflected in the final review report.
- h. The technical expert review team makes a final decision whether to uphold the Technical Correction and includes it in the final version of the review report.
- i. The European Commission will consider the Technical Corrections proposed by the contractor. Where it is considered grounds for the Technical Correction to exist, and where disagreement from a Member State on the proposed Technical Correction remains, the European Commission will in accordance with article 10(3) of the NECD adopt a decision laying down the Technical Correction.

VIII. DETAILED RESPONSIBILITIES

37. The table below indicates the roles within the technical expert review team. The listed reviewers will be allocated into three TERTs (TERT1-3), each composed of a lead reviewer and one expert per sector. Each sector expert will be a counterpart for another sector expert: TERT 1 will be the counterparts for TERT 2, TERT 2 will be the counterparts for TERT 3 and TERT 3 will be the counterparts for TERT 1. Each of the three teams will review nine Member States.

Table 3: Technical expert review team (TERT)⁹

Role / Sector	Name
Lead Reviewer	Anne Misra, Ole-Kenneth Nielsen, Kristina Saarinen
Energy – Stationary	Melanie Hobson, Stephan Poupa, Katrina Young
Energy – Mobile	Jean Marc André, Yvonne Pang, Giannis Papadimitriou
IPPU – Solvents	Nadine Allemand, Ardi Link, Mirela Poljanac
IPPU – Non-solvents	Erik Honig, Ioannis Sempos, Robert Stewart
Agriculture	Rikke Albrektsen, Richard German, Bernard Hyde
Waste	Céline Gueguen, Katja Pazdernik, Dirk Wever

38. Details of the responsibilities within the project team are provided below.

39. The **project co-ordinator, Sabine Schindlbacher**, and **project co-ordinator assistant, Katrin Seuss**, will support the management of the review process by carrying out the following responsibilities:

- a. During the preparatory phase, they will participate in preparatory meetings with Member States, draft the review report template, compose the technical expert review team for approval by the European Commission, contribute to these guidelines, tools and checklists for the technical expert review team, organise training webinars and ensure the initial checks are undertaken.
- b. During the comprehensive review, they will monitor progress of review activities, communicate with the European Commission, EEA, quality control team, lead reviewers and sector experts to ensure that they all have the same understanding and act consistently and lead the organisation of webinars with Member States as required.
- c. Supported by the quality control team and the lead reviewers, they will also:
 - (a) Ensure that the review is carried out consistently
 - (b) Implement independent compliance assessments and cross-check the results with those produced by the quality control team
 - (c) Ensure that the review is performed according to NECD requirements¹⁰
 - (d) Ensure that the outcomes are consistent with the EMEP/EEA Guidebook
 - (e) Assist and monitor the preparation of the review reports

⁹ Note that the allocation of reviewers into TERT1-3 and the allocation of nine Member States per TERT will be finalized by the end of March 2023 and made available in the EMRT-NECD.

¹⁰ This includes, according to Article 5(8), 10(2) and 10(3) of the NECD, taking into account the relevant guidance documents for reviewing emission inventories and flexibilities developed under the Air Convention (CLRTAP).

- (f) Ensure that the requirements of the tender specifications are met
- (g) Provide an evaluation questionnaire to the Member States
- (h) Prepare a horizontal report summarising the main outcome of the review.

40. The **quality control team, Chris Dore, Kirsten May and Holly Zhang**, will support the management of the review process and ensure quality objectives are met by carrying out the following responsibilities:

- a. During the preparatory phase of the review, they will develop these guidelines and the technical expert review team checklists, support the development of the review report template, check the workplan, tools and resources developed for the review, contribute to the training webinars and ensure the initial checks are undertaken.
- b. During the comprehensive review, they will support the review activities to ensure consistency across all Member States by checking the identification of all potential Technical Corrections, checking the calculations of all Technical Corrections and ensuring the decision trees and reference text are used appropriately. They will also track progress throughout the comprehensive review and provide ad-hoc advice to all members of the technical expert review team.
- c. Supported by the project co-ordinator, the project co-ordinator assistant and the lead reviewers, the quality control team will also:
 - (a) Ensure that the review is carried out consistently
 - (b) Implement independent compliance assessments and cross-check the results with those produced by the project coordination team
 - (c) Ensure that the review is performed according to NECD requirements¹⁰
 - (d) Ensure that the outcomes are consistent with the EMEP/EEA Guidebook
 - (e) Compile and check the initial status reports
 - (f) Compile and check the draft and final review reports
 - (g) Ensure a consistent approach of the flexibility review, and support the expert reviewers undertaking the review of flexibility applications

41. The **lead reviewers** presented in the figure above will support the quality control team in ensuring that the quality objectives of the review are met by carrying out the following responsibilities:

- a. During the preparatory phase, lead reviewers will check and comment on tools and guidelines, as requested.
- b. During the review, lead reviewers will:
 - (a) Monitor the progress of the work of the sector experts
 - (b) Quality check all questions including those on flexibilities

- (c) Quality check all conclusions and recommendations including those on flexibilities
- (d) Evaluate if potential Technical Corrections are justified, while also considering the impact this may have on flexibility applications
- (e) Quality check all Technical Corrections
- (f) Actively participate in webinars with Member States, as required
- (g) Quality check the initial status reports, draft and final review reports
- (h) Co-ordinate the inclusion of Member State comments into the final review reports

42. The **sector experts** presented in the figure above will carry out the comprehensive review of the NECD submissions. They will carry out the following responsibilities:

- a. During the preparatory phase, sector experts will check and comment on review tools and guidelines, as requested.
- b. During the review, sector experts will:
 - (a) Follow and complete the sector expert checklist
 - (b) Assess implementation of Technical Corrections, Revised Estimates and potential Technical Corrections from the 2022 NECD inventory review
 - (c) Review Revised Estimates submitted by Member States
 - (d) Evaluate whether the significance threshold for Technical Corrections is exceeded and if so, calculate the (potential) Technical Correction
 - (e) Act as a counterpart to support consistent treatment across the technical expert review team by being involved in all questions especially cases related to Technical Corrections
 - (f) Contribute to the preparation of the initial outcomes report and the draft and final review reports, as requested.

43. The **flexibility review** will be led by Chris Dore. Sector experts from the TERT will conduct the flexibility review in accordance with the sector and Member State allocation.

- a. During the review, the team will
 - a) Assess **flexibility** applications for their designated sector and Member States
 - b) Formulate recommendations on whether **flexibility** applications should be accepted or rejected
 - c) Contribute to the preparation of the initial outcomes report and the draft and final review reports, as requested.

IX. DETAILED SCHEDULE

44. The schedule for the review can be found in Table 1. This section provides further details of specific parts of the schedule.
45. The EEA and the project co-ordination team will organise a **training webinar** before the start of the desk review for all lead reviewers and sector experts to go through the approach, schedule, responsibilities, scope, quality objectives, tools, guidelines and initial checks. Additional training sessions will be arranged for sector experts participating in the NECD inventory review for the first time, which will either be web-based or face-to-face in cases where experienced reviewers from the same institution are available.
46. The **desk review for inventory data submissions and flexibility applications** allows the technical expert review team to send questions to the national contact points. These initial questions should be sent by the lead reviewers by 2 June. Responses from Member States are expected by 16 June.
47. **Webinars** during the desk review for the technical expert review team will be organised to discuss progress and problems faced during the desk review. The lead reviewers and quality control team will take leading roles in both deciding whether these are necessary and organising the discussion topics. A wrap-up webinar for lead reviewers will be organised.
48. The **centralised review** is planned to take place in Brussels provided that the COVID-19 pandemic will allow for a physical meeting. Sector experts and lead reviewers will attend from Monday to Friday. Logistical details will be distributed well ahead of the centralised review dates. Wrap-up meetings will be organised during the centralised review to track potential Technical Corrections and discuss difficult issues.
49. **During the centralised review**, the following activities will be performed:
 - a. By Tuesday, all follow up questions to be sent to Member States
 - b. By midday Thursday, all responses from Member States to be received
 - c. By Friday morning, all Technical Corrections templates to be filled by sector experts and passed for review by Lead Reviewers
 - d. By the end of the review,
 - i. Sector experts to finalise all observations in EMRT-NECD (cross checked by counterpart) and draft all potential Technical Corrections
 - ii. Lead reviewers to quality check and approve all draft Technical Corrections and as many recommendations as possible.
50. **Following the centralised review**, the following activities will be performed:
 - a. Quality control team to quality check and approve all potential Revised Estimates and Technical Corrections.
 - b. Quality control team to perform thorough checks of the recommendations to ensure consistency across the review teams.

- c. The recommendations on checked flexibility applications (ACCEPTED/REJECTED) will be documented.
- d. Flexibility annexes for review reports drafted.

51. On 30 June, the EEA will send an official email with the potential Technical Corrections to the Member States. The details of the potential Technical Correction including the calculation spreadsheet will be available through the EMRT-NECD and will not be sent in the official email.

52. Member States will have four weeks to provide comments through the EMRT-NECD on these potential Technical Corrections after which the technical expert review team will compile the **review reports**. The compilation will follow the schedule detailed in the table below. In the case where Revised Estimates supplied by the Member State are not accepted by the TERT, these will be indicated using 'not resolved' in the EMRT, and an email notification supplied to the concerned Member State.

53. Member States will have three weeks to provide comments on the draft review reports. Lead reviewers will incorporate any comments into the **final review reports**, which will be checked by the quality control team.

Table 4: Detailed schedule of the compilation of review reports

Activity	Deadline
Finalisation of 2023 NECD inventory review	June to November
Quality control team sends initial status reports to European Commission	29 June
All recommendations and REs finalised in the EMRT-NECD	30 June
Quality control team sends initial status reports to EEA	30 June
Initial status reports sent and potential Technical Corrections communicated to Member States by EEA	30 June
Flexibility Annexes sent by flexibility review team to project co-ordination team and quality control team	30 June
Lead reviewers filled in lead reviewer's input file and general assessment template	30 June
Quality control team sends draft review reports to lead reviewers and project co-ordination team	25 August
Quality control team sends draft review reports to European Commission	8 September
Quality control team sends draft review reports to EEA	25 September
Draft review reports sent to Member States by EEA	26 September
Member States provide comments on the draft review reports	17 October
Quality control team sends final review reports to EEA	8 November
Final review reports sent to Member States by EEA	9 November

X. INITIAL CHECKS AND SECTOR EXPERT CHECKLISTS

54. Initial checks will be performed on the NECD submissions and co-ordinated by the project co-ordination team and the quality control team. The scope of these initial checks is provided below. Any issues raised by the initial checks will be passed to the sector experts via the EMRT-NECD for the start of the desk review. Issues will be filtered and prioritised appropriately to ensure that the technical expert review team can focus on the most important issues. The sector experts will review each of these issues and conclude them according to the decision tree. The sector experts will also be expected to carry out checks in line with the sector expert checklist which is provided below.
55. For the review of national inventories and the follow-up of the 2022 NECD inventory review, the following initial checks will be performed **for main pollutants and PM₁₀**:
- a. Identification of significant time series inconsistencies with a special focus on the years 2005, 2019, 2020 and 2021 in the 2023 NECD emissions inventory submissions. Differences greater than a factor of 2 will be flagged.
 - b. Identification of significant recalculations (recalculation is >10% and concerns a key category) between the 2022 and 2023 NECD emissions inventory submissions. For main pollutants the inventory years 2005, 2019 and 2020 will be checked.
 - c. Initial assessment of whether recommendations concerning main pollutants from the 2022 NECD inventory review have been implemented, excluding Revised Estimates and Technical Corrections.
 - d. Flag instances where “zero” or empty cells are reported. In this check also memo items are included.
 - e. Flag instances where NA/NE/NR/C is reported while Tier 1 methods exist in the Guidebook. In this check also memo items are included.
 - f. Flag instances where ‘NA’ reporting is not consistent with expected reporting
 - g. Flag instances where national total or national total for compliance is incorrectly calculated
 - h. Flag instances where PM₁₀ estimates are smaller than PM_{2.5} estimates
 - i. Flag instances where PM₁₀ estimates are unexpectedly equal to PM_{2.5} estimates
 - j. Flag instances where PM₁₀ is expected due to reporting of PM_{2.5}
 - k. Flag instances where the reporting of pollutant emissions is expected due to reporting of other pollutant emissions
 - l. Flag instances where implied emission factors and pollutant ratios are outliers compared to other Member States
 - m. Flag instances where PM_{2.5} has been recalculated and PM₁₀ has not been recalculated and *vice versa*.

56. For the review of national inventories and the follow up of the 2022 NECD inventory review, the following checks are likely to form part of the **checklist**:

- a. Assess the issues raised by the initial checks
- b. Assess the implementation of recommendations, Revised Estimates, and Technical Corrections from the 2022 NECD inventory review
- c. Assess Revised Estimates provided by Member States during the review
- d. Calculate Technical Corrections, where necessary
- e. Check major recalculations
- f. Check major time series inconsistencies for the year 2021
- g. Review new flexibility applications where relevant
- h. Examine the application of the EMEP Reporting Guidelines and the use of the EMEP/EEA Guidebook 2019 and identify non-compliance with these requirements
- i. Examine whether the good practice guidance of the EMEP/EEA Guidebook 2019 has been applied and documented in the Informative Inventory Report, in particular in relation to transparency, noting the identification of key categories, selection and use of methodologies and assumptions, development and selection of emission factors, collection and selection of activity data, reporting of recalculations and consistent time-series and quality assurance and quality control procedures, and identify any inconsistencies
- j. Check that for key categories a Tier 2 or higher methodology is used
- k. Compare emission estimates, activity data, implied emission factors and any recalculations with data from previous submissions, to identify any irregularities or inconsistencies
- l. Identify any missing sources and examine any explanatory information relating to their exclusion from the inventory. It may be necessary to draw on other national datasets to achieve this analysis, such as information submitted to the MMR/UNFCCC
- m. Identify the reasons for any differences between a Member State's and the project team's key category determination
- n. Assess the consistency of information in the reporting tables with that in the Informative Inventory Report
- o. Assess the extent to which issues raised in the initial checks, as well as issues and questions raised in previous comprehensive reviews conducted under the CLRTAP have been addressed and resolved
- p. Examine in particular emission estimates for categories for which adjustment applications have been submitted

- q. Identify areas for further improvement of the inventories and note possible ways for improving the estimation and the reporting of inventory information.

XI. Review of flexibility applications

57. All new flexibility applications will be reviewed.
58. Article 8(4) of the NECD requires that all Member States who opt for a flexibility mechanism include supporting information for the application in the Informative Inventory Report to be submitted by 15 March, including a demonstration that the use of the flexibility fulfils the relevant conditions set out in Article 5(1) and part 4 of Annex IV, or in Article 5(2), (3) or (4), where applicable. If a Member State submits a flexibility application under the CLRTAP, all relevant supporting information should also be submitted under the NECD.
59. Article 5(8) of the NECD explains that ‘The Commission, when exercising its powers under paragraphs 6 and 7 [reviewing the use of flexibilities], shall take into account the relevant guidance documents developed under the LRTAP Convention.’ So far only guidance for the review of adjustment applications has been developed under the LRTAP Convention (see paragraph 66).
60. The review of flexibility applications under the NECD will in principle follow the process for reviewing adjustment applications under the CLRTAP (as presented in relevant EB decisions, and supporting technical guidance documents (see paragraph 66), however without prejudice to the additional arrangements specified in part 4 of Annex IV to the NECD.¹¹ The process allows inter alia the submission of additional information during the review, necessary for a proper and full assessment of the flexibility application. Technical Corrections, Revised Estimates, and acceptance of a flexibility application may change the national emission totals making a specific flexibility application no longer necessary or making a specific flexibility application incompatible/invalid when applied to the same category for which a Technical Correction or Revised Estimate was approved. Any recommendation on the review of concerned flexibility applications should be subject to the outcome of the work on Technical Corrections and Revised Estimates. The review of a flexibility application can recommend acceptance or rejection (with the possibility of a resubmission next year if still appropriate/required).
61. If a Member State applies for more than one flexibility and not all of these flexibilities are required to bring that Member State into compliance, the Member State will be informed that in accordance with the intent of the flexibility application procedure, recommendation for approval will be limited to flexibilities necessary to bring about compliance, and the Member State be invited to withdraw one or more of its flexibility applications.
62. The conclusions of the review of flexibility applications submitted in 2023 will be presented in an annex to the final review report in line with the timelines as set out in Section III and further detailed in Section IX.

¹¹ See the following overview and guidance documentation:
[ECE/EB.AIR/111/Add.1](#), [ECE/EB.AIR/113/Add.1](#), [ECE/AB.AIR/127/Add.1](#) and [ECE/EB.AIR/130](#).

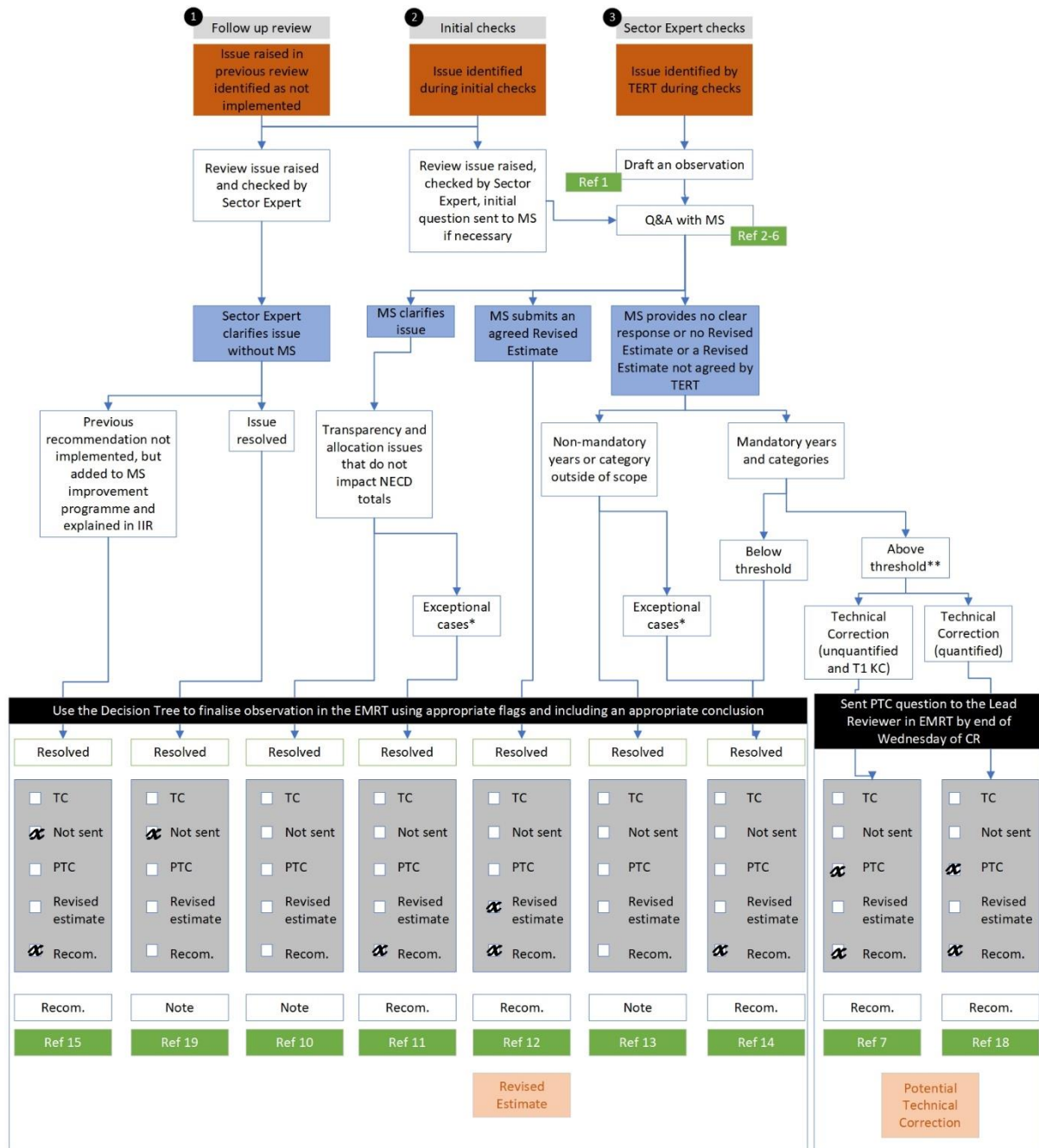
Inventory adjustments

63. Previously approved adjustments relating to compliance with emission ceilings are not valid for demonstrating compliance with Emission Reduction Commitments (ERCs), and will therefore be rejected without being reviewed.
64. The minimum supporting information required for an adjustment is highlighted in part 4.1 of Annex IV of the NEC Directive (which is based on paragraph 2 of the Annex to CLRTAP Executive Body Decision 2012/12). In the chapeau of Annex IV, it is further specified that adjusted emission inventories should be prepared using the EMEP reporting guidelines (which in its turn contain references to the relevant EB decisions 2012/3 and 2012/12, as amended by 2014/1), while also adding that reliance upon these EMEP reporting guidelines is without prejudice to the additional arrangements specified in part 4 of Annex IV.
65. The CLRTAP have published technical guidance on inventory adjustments in an emissions reduction commitment framework and a new adjustment application Excel template (“Annex IIa”) that is specifically for applying for an inventory adjustment in an ERC framework.¹²

¹² These are available at: <https://www.ceip.at/technical-guidance-adjustments-erc>.

ANNEX 1: DECISION TREES

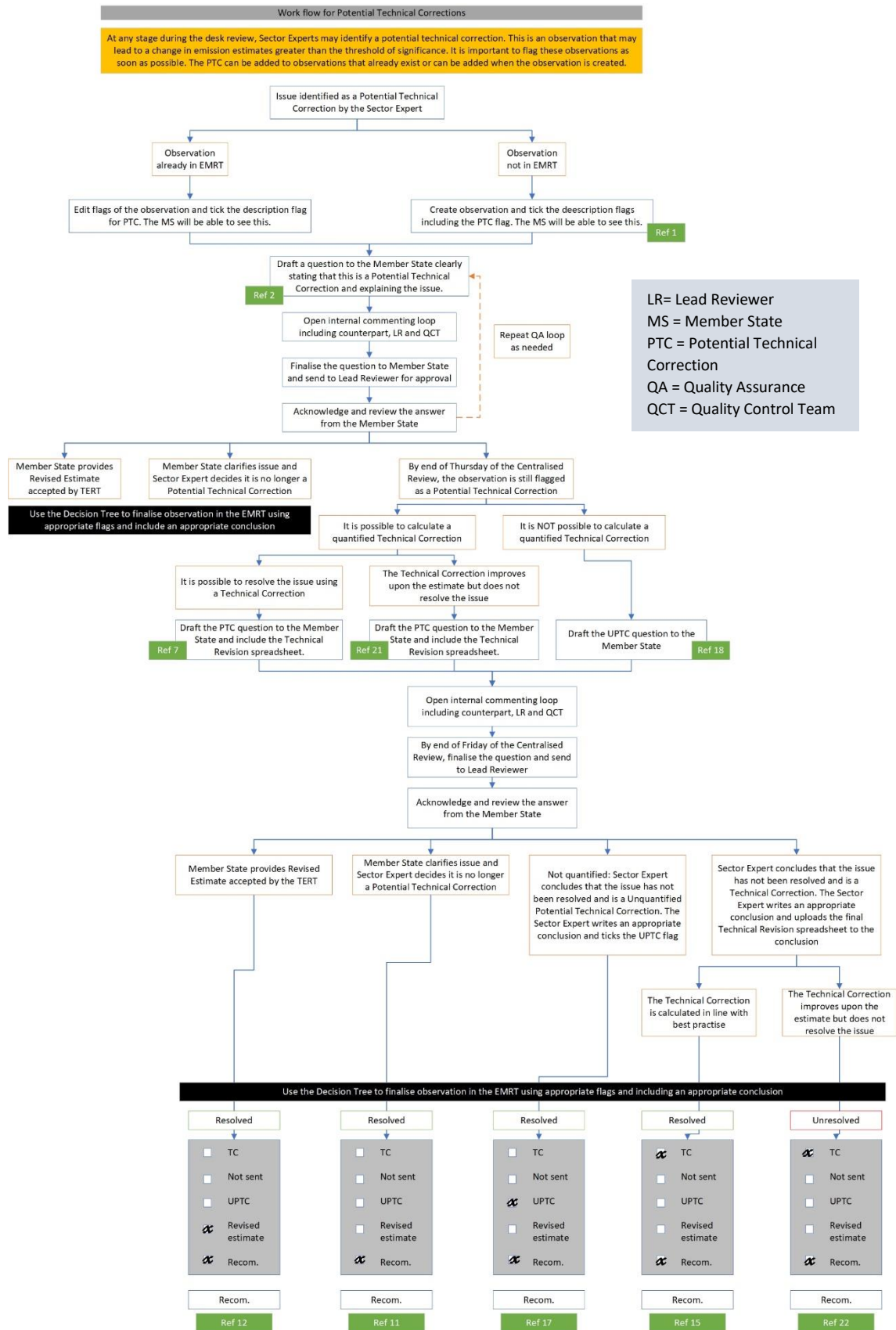
Figure 3: Decision tree for the review of national emission inventories (green boxes relate to reference text that will be available on the SharePoint site)



*Where the identified issue significantly impacts on the ability to undertake a detailed review

**For unquantified cases, this may be based on expert judgement

Figure 4: Decision tree for addressing Potential Technical Corrections during the 2023 NECD inventory review, relevant to the period after the centralised review



ANNEX 2: COUNTRY CODES AND UNITS

Table 5: Country-codes used in the tools and materials

EMRT-NECD		EEA locator	
Country	Country code (ISO)	Country name	Party code
Austria	AT	Austria	AT
Belgium	BE	Belgium	BE
Bulgaria	BG	Bulgaria	BG
Croatia	HR	Croatia	HR
Cyprus	CY	Cyprus	CY
Czech Republic	CZ	Czech Republic	CZ
Denmark	DK	Denmark	DK
Estonia	EE	Estonia	EE
Finland	FI	Finland	FI
France	FR	France with Mayotte	FM
Germany	DE	Germany	DE
Greece	GR	Greece	GR
Hungary	HU	Hungary	HU
Ireland	IE	Ireland	IE
Italy	IT	Italy	IT
Latvia	LV	Latvia	LV
Lithuania	LT	Lithuania	LT
Luxembourg	LU	Luxembourg	LU
Malta	MT	Malta	MT
Netherlands	NL	Netherlands	NL
Poland	PL	Poland	PL
Portugal	PT	Portugal	PT
Romania	RO	Romania	RO
Slovakia	SK	Slovakia	SK
Slovenia	SI	Slovenia	SI
Spain	ES	Spain	ES
Sweden	SE	Sweden	SE

References

EMEP/EEA, 2016 EMEP/EEA air pollutant emission inventory guidebook – 2016 EEA technical report No. 21/2016 European Environment Agency, Copenhagen.

<http://www.eea.europa.eu/publications/emep-eea-guidebook-2016>

EMEP/EEA: EMEP/EEA air pollutant emission inventory guidebook 2019, EEA Report No. 13/2019 European Environment Agency, Copenhagen.

<https://www.eea.europa.eu/publications/emep-eea-guidebook-2019>

NEC Directive 2001, DIRECTIVE 2001/81/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2001 on national emission ceilings for certain atmospheric pollutants.

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02001L0081-20130701&from=EN>

NEC Directive 2016, DIRECTIVE (EU) 2016/2284 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC.

TFEIP 2022, Technical Guidance for Emissions Inventory Adjustments under the Amended Gothenburg Protocol Inventory adjustments in the context of Emission Reduction Commitments

https://www.ceip.at/fileadmin/inhalte/ceip/00_pdf_other/2022/technical_guidance_for_erc_adjustments_issue1.1.pdf

UNECE 2015, Guidance for Parties Making Adjustment Applications and for the Expert Review of Adjustment Applications (ECE/EB.Air/130).

http://www.ceip.at/fileadmin/inhalte/emep/Adjustments/ECE_EB_AIR_130_AV_for_the_web.pdf

UNECE 2013. Guidelines for Reporting Emissions and Projections Data under the Convention on Long-range Transboundary Air Pollution.

https://www.unece.org/fileadmin/DAM/env/documents/2013/air/eb/ece.eb.air.125_E_ODS.pdf

UNECE 2016. Updated 'Methods and procedures' document laying down the process for the EMEP emission inventory review.

http://www.unece.org/fileadmin/DAM/env/documents/2016/AIR/EMEP/Informal_Document/3_Methods_Procedures_update_proposal_May2016_ISSUE1_TFEIP.pdf