Final Review Report

2017 Comprehensive Technical Review of National Emission Inventories

pursuant to the Directive on the Reduction of National Emissions of Certain Atmospheric Pollutants (Directive (EU) 2016/2284)

Austria

30 November 2017

 **Reference: No 07.0201/2016/741511/SER/ENV.C.3**

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Contents

[I Introduction 5](#_Toc499631260)

[II Objectives of the review 5](#_Toc499631261)

[III Review approach, team and scope 6](#_Toc499631262)

[IV Findings and Conclusions from the Technical Expert Review Team (TERT) 8](#_Toc499631263)

[V National Totals (row 141 and 144) as reported and National Totals revised (row 141 and 144) by accounting for Revised Estimates and Technical Corrections 9](#_Toc499631264)

[VI Statement from Austria on the conclusions presented by the TERT 11](#_Toc499631265)

[VII Recommendations from the TERT 12](#_Toc499631266)

[VII (i) Recommendations including revised estimates and technical corrections 12](#_Toc499631267)

[VII (i) Recommendations considering the use of the 2013 EMEP/EEA Guidebook 17](#_Toc499631268)

[VII (ii) Cross-cutting recommendations 20](#_Toc499631269)

[Annex I: Revised Estimates provided by Austria 21](#_Toc499631270)

[Annex II: Review of the 2017 adjustment application of Austria TERT report for the EC 24](#_Toc499631271)

[A2.1 Introduction 24](#_Toc499631272)

[A2.1.1 Review of Submitted Adjustments 26](#_Toc499631273)

[A2.1.2 Assessment of Formal Criteria 26](#_Toc499631274)

[A2.2 Road Transport, 1A3bi-iv (NOX) 27](#_Toc499631275)

[A2.2.1 Assessment of Consistency with Requirements of the NECD (2016/2284) and Methodologies adopted by Parties to the LRTAP Convention, EB Decision 2012/3 as amended by EB Decision 2014/1, EB Decision 2012/3 as amended by EB Decision 2014/1 27](#_Toc499631276)

[A2.2.2 Assessment of the Quantification of the Impact of the Revision 27](#_Toc499631277)

[A2.3 Agriculture, 3Da2b Sewage sludge applied to soils, 3Da2c Other organic fertilisers applied to soils (NH3) 27](#_Toc499631278)

[A2.3.1 Assessment of Consistency with Requirements of the NECD (2016/2284) and Methodologies adopted by Parties to the LRTAP Convention, EB Decision 2012/3 as amended by EB Decision 2014/1, EB Decision 2012/3 as amended by EB Decision 2014/1 27](#_Toc499631279)

[A2.3.2 Assessment of the Quantification of the Impact of the Revision 28](#_Toc499631280)

[A2.4 Conclusions and Recommendations of TERT concerning adjustment applications 29](#_Toc499631281)

[A2.5 Information provided by Austria 29](#_Toc499631282)

[References and Supporting Documents 31](#_Toc499631283)

List of tables

[Table 1: Scope of the comprehensive technical review NECD 2017 (under (EU) 2016/2284) 8](#_Toc499631314)

[Table 2: National totals as reported and national totals including revised estimates (RE) and technical corrections (TC) 10](#_Toc499631315)

[Table 3: Recommendations from TERT, considering revised estimates (RE) and technical corrections (TC) 14](#_Toc499631316)

[Table 4: Recommendations from the TERT, considering the use of the 2013 version of the Guidebook 19](#_Toc499631317)

[Table 5: Summary of Technical Revisions 23](#_Toc499631318)

[Table A2. 6 Summary Information on the Submitted Adjustment Application, Austria 2017 26](#_Toc499631319)

[Table A2. 7 Expert Review Team 28](#_Toc499631320)

[Table A2. 8 Austria’s NOX Adjustment Applications for Road Transport, 2010-2015 29](#_Toc499631321)

[Table A2. 9 Austria’s NH3 Adjustment Applications for Agriculture, 2010-2015 30](#_Toc499631322)

[Table A2. 10 Recommendations from the TERT to the Commission, Austria 2017 31](#_Toc499631323)

[Table A2. 11 Information provided by Austria 31](#_Toc499631324)

Abbreviations

|  |  |
| --- | --- |
| AD | Activity data |
| Adj | Adjustment |
| EC | European Commission |
| EEA | European Environment Agency |
| EF | Emission factor |
| EMRT | Emission Review Tool |
| EU | European Union |
| IE | Included elsewhere |
| kt | Kilotonnes |
| LR | Lead Reviewer |
| MS | Member State |
| NA | Not applicable |
| NE | Not estimated |
| NECD | National Emissions Ceilings Directive |
| NFR | Nomenclature for Reporting |
| NH3 | Ammonia |
| NMVOC | Non-methane volatile organic compounds |
| NO | Not occuring |
| NOX | Nitrogen oxides |
| PM2.5 | Particulate matter equal to or less than 2.5 micrometres in diameter |
| QC | Quality control |
| RE | Revised estimate |
| SO2 | Sulphur dioxide |
| SOX | Sulphur oxides |
| TC  | Technical correction |
| TERT | Technical Expert Review Team |
| VOC | Volatile organic compounds |

# Introduction

1. The review of the air pollution emission data submitted by Member States (MS) under the European Union’s Directive on the Reduction of National Emissions of Certain Atmospheric Pollutants (Directive (EU) 2016/2284) (hereafter the ‘NECD’) is defined in Article 10(3):

*"The Commission, assisted by the European Environment Agency and in consultation with the Member States concerned, shall review the national emission inventory data in the first year of reporting and regularly thereafter. That review shall involve the following:*

*(a) checks to verify the transparency, accuracy, consistency, comparability and completeness of information submitted;*

*(b) checks to identify cases where inventory data is prepared in a manner which is inconsistent with the requirements set out under international law, in particular under the LRTAP Convention;*

*(c) where appropriate, calculation of the resulting technical corrections necessary, in consultation with the Member State concerned.*

*Where the Member State concerned and the Commission are unable to reach an agreement on the necessity or on the content of the technical corrections pursuant to point (c), the Commission shall adopt a decision laying down the technical corrections to be applied by the Member State concerned*.”

1. The 2017 comprehensive technical review of NECD inventories was undertaken in accordance with the EU Air emission inventory review guidelines under Service Contract: No 07.0201/2016/741511/SER/ENV.C.3.
2. The technical review was carried out with a focus on the years 2005, 2010 and 2015. This report presents the findings of the Technical Expert Review Team (TERT) on the NECD inventory submitted by Austria in 2017.
3. In accordance with the requirements of the NECD (Article 5(8)), adjustment applications were reviewed using the Technical 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))[[1]](#footnote-1).

# Objectives of the review

1. The primary objective of the comprehensive technical review of Member States’ NECD inventories of the years 2005, 2010 and 2015 as reported in February 2017 (and updated before 15 March) was to ensure that the Commission has accurate, reliable and verified information on annual NECD emissions to determine compliance with the NECD targets.
2. A secondary objective of the review was to strengthen Member States’ capacity in managing NECD inventories efficiently and in delivering high quality inventory data and Informative Inventory Reports (IIRs) to the European Commission in due time.
3. The review also sought to harmonise approaches used in monitoring inventories reported under the NECD with reviews undertaken by other organisations that have similar interests such as the reviews under the LRTAP Convention and the EU Greenhouse Gas Monitoring Mechanism (MMR)/United Nations Framework Convention on Climate Change (UNFCCC).

# Review approach, team and scope

1. The 2017 comprehensive review of NECD air pollutant inventories of EU Member States focused on the years 2005, 2010 and 2015 and the pollutants SOX, NOX, NMVOC, NH3 and PM2.5. The TERT assessed the completeness (potential underestimations), accuracy (over- or underestimations), recalculations, consistency of time series and comparability across the Member States. Furthermore, the TERT checked if Member States used methodologies and emission factors consistent with the 2016 EMEP/EEA Inventory Guidebook.
2. The 2017 NECD Comprehensive Review consisted of a Comprehensive Desk Review and Centralised Review, which were performed by the TERT under service contract No 07.0201/2016/741511/SER/ENV.C.3 of the Directorate General Environment of the European Commission. The TERTs consisted of the following experts:
* Lead Reviewers: Justin Goodwin, Kevin Hausmann, Ole-Kenneth Nielsen and Kristina Saarinen
* NFR categories 1A1, 1A2, 1A4ai, 1A4bi, 1A4ci (stationary combustion): Rianne Dröge, Laetitia Nicco, Stephan Poupa and Laetitia Serveau;
* NFR categories 1A3bi to 1A3bvii (road transport): Jean Marc André, Giorgos Mellios, Tim Murrells and Yvonne Pang;
* NRF categories 1A2gvii, 1A3a, 1A3c, 1A3d, 1A3e,1A4aii, 1A4bii, 1A4cii, 1A4ciii, 1A5b (non-road transport including international aviation and navigation, non-road mobile machinery): Melanie Hobson and Michael Kotzulla;
* NFR categories 1B (Fugitive) + 2A (Mineral Processes): Alicia Gonzalez and Jeroen Kuenen;
* NFR categories 2B + 2C (other industrial processes): Katja Hjelgaard and Ils Moorkens;
* NFR categories 2D, 2G - 2L (solvent and other product use): Patrik Fauser and Ardi Link;
* NFR categories 3B - 3I (Agriculture): Michael Anderl, Mette Mikkelsen, Beatriz Sánchez and Jim Webb;
* NFR categories 5A - 5E (Waste): Céline Gueguen and Intars Cakars.
1. The Comprehensive Desk Review and Centralised Review was coordinated by the project team (Katarina Mareckova, Sabine Schindlbacher, Chris Dore and Emma Salisbury).
2. The EEA Review Secretariat consisting of Anke Lükewille and Federico Antognazza supported the NECD 2017 Comprehensive Technical Review.
3. The review was performed on the basis of NECD emission data and the Informative Inventory Reports (IIRs) officially reported by Member States by 15 February (IIRs by 15 March 2017) under the NECD. Resubmissions and any other additional information provided by Member States were taken into account until 28 April 2017.
4. The lead reviewers and sector review experts did not review emission inventories of Member States where these individuals have themselves contributed to the compilation of that inventory, or presently are or have been any part of the decision-making process related to the compilation of that inventory. Reviewers who are nationals of the Member State whose inventory is concerned, did not take part in the review of that inventory.
5. All review experts signed confidentiality agreements in which they agreed to keep information received by Member States confidential.

Table 1: Scope of the comprehensive technical review NECD 2017 (under (EU) 2016/2284[[2]](#footnote-2))

|  |  |  |
| --- | --- | --- |
| **Element** | **Scope** | **Further information** |
| Member States | EU geographical coverage of the Member States | This Directive shall apply to emissions of the pollutants referred to in Annex I from all sources occurring in the territory of the Member States, their exclusive economic zones and pollution control zones.This Directive does not cover emissions in the Canary Islands, the French overseas departments, Madeira, and the Azores. |
| Years | 2005, 2010 and 2015  | In addition, time series consistency was reviewed across the whole time series.  |
| Pollutants | NOX, NMVOC, SOX, NH3, PM2.5 | According to NECD Article 1(1) |
| Categories  | All NFR categories, including selected memo items  | All NFR categories as listed in Annex 1 of reporting guidelinesIncluding the following memo items:1A3ai(ii) International aviation cruise (civil)1A3aii(ii) Domestic aviation cruise (civil)1A3di(i) International maritime navigation 1A3 Transport (fuel used) – where a MS uses fuel used for compliance purposes. |
| National totals | National total and National total for compliance  | Rows 141 and 144 in Annex I to reporting Guidelines  |

# Findings and Conclusions from the Technical Expert Review Team (TERT)

1. The TERT checked the national inventory data submitted under the NECD for the years 2005, 2010, and 2015 submitted in 2017 by Austria pursuant to (Directive (EU) 2016/2284).
2. Austria did not provide to the Commission a resubmission after 15 April 2017.
3. The TERT carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the information submitted.
4. Transparency: The TERT found the submitted inventory to be sufficiently detailed and documented and noted that Tier 2 methods are generally used for key categories.
5. The TERT noted that the submitted inventory is generally compiled in line with the 2016 EMEP/EEA Guidebook and Directive (EU) 2016/2284.
6. The TERT noted that the reported national total for compliance (row 144) differs from the national total (row 141) and is not reported in line with the NECD. The TERT checked the national total for compliance and considers that it was not calculated consistently with the NECD, because NOx and NMVOC emissions from NFR 3D categories are subtracted from the National Total emissions. Article 4 Point 3(d) of the NECD states that emissions of NOx and NMVOC from activities falling under NFR 3B and 3D are not accounted for the purpose of complying with the National emission reduction commitments. The National emission reduction commitments are only applicable starting in 2020 and therefore a subtraction is not correct.
7. The TERT noted that Austria reported transport emissions based on fuel sold and has additionally reported transport emissions based on fuel used. This is in line with the reporting guidelines.
8. Notation keys: The TERT noted the use of the notation keys is not consistent with the Reporting Guidelines. For example, "NO" (Not Occurring) or "NA" (Not Applicable) is used instead of "NE" (Not Estimated) in cases where emissions are expected to occur.
9. The TERT identified cases where inventory data were prepared in a manner which is inconsistent with UNECE Reporting Guidelines documentation. In particular, the TERT identified underestimate(s) or overestimate(s) exceeding the threshold of significance as established in EU Emission Inventory Review Guidelines.
10. The TERT did not deem necessary any technical corrections.
11. The TERT identified recommendations in order to improve the national inventory data of Austria (see section VII).
12. The TERT considers that it received a response from Austria that was sufficient in order to undertake the comprehensive technical review appropriately.
13. Austria submitted 3 adjustment applications in 2017 that underwent review under this contract (see Annex II: Review of the 2017 adjustment application). The TERT concluded that the applications do meet all of the requirements laid out in Decision 2012/12 of the Executive Body of the CLRTAP, and therefore recommends that the European Commission ACCEPT these adjustment applications.

# National Totals (row 141 and 144) as reported and National Totals revised (row 141 and 144) by accounting for Revised Estimates and Technical Corrections

1. The table below shows differences between submitted inventories in Annex 1 table, rows 141 and 144 and revised national totals after accounting revised estimates and technical corrections. The table shows the direct changes in response to the NECD Review 2017. Recommendations related to the use of the 2013 EMEP/EEA Guidebook (for the submission in the year 2018) and adjustments previously approved under the LRTAP Convention are not considered in this table.

Table : National totals as reported and national totals including revised estimates (RE) and technical corrections (TC)[[3]](#footnote-3)

|  |  |  |
| --- | --- | --- |
| **Description** | **Reference** | **Pollutant estimates (kt)** |
|  |  | **2005** | **2010** | **2015** |
| **NOX** |  |  |  |  |
| National total | Annex I, row 141 | 238.057 | 181.081 | 149.123 |
| National total for compliance | Annex I, row 144 | 168.976 | 139.729 | 120.834 |
| **Adjustment provided by Austria and recommended by the TERT to be accepted by the EC** |
| 1A3b Road Transport |  |  | -26.354 | -27.554 |
| **Difference between original estimate and revised estimate provided by Austria and accepted by the TERT** |
| National total for compliance | Annex I, row 144 | 9.967 | 9.695 | 10.903 |
| National total (row 141) including revised estimates and technical corrections | *Calculated using data above* | 238.057 | 181.081 | 149.123 |
| Total (row 144) estimate including revised estimates, technical corrections and adjustments recommended by TERT to be accepted by EC | *Calculated using data above* |  178.943 |  123.069 |  104.183 |
| **SOX** |  |  |  |  |
| National total | Annex I, row 141 | 25.946 | 16.701 | 14.902 |
| National total for compliance | Annex I, row 144 | 25.891 | 16.665 | 14.870 |
| **Difference between original estimate and revised estimate provided by Austria and accepted by the TERT** |
| 1A2 Stationary combustion in manufacturing industries and construction | AT-1A2-2017-0001 | 0.220 | 0.220 | 0.185 |
| National total (row 141) including revised estimates and technical corrections | *Calculated using data above* | 26.165 | 16.921 | 15.087 |
| Total (row 144) estimate including revised estimates, technical corrections and adjustments recommended by TERT to be accepted by EC | *Calculated using data above* | 26.110 | 16.885 | 15.055 |
| **NMVOC** |  |  |  |  |
| National total | Annex I, row 141 | 136.624 | 118.732 | 112.890 |
| National total for compliance | Annex I, row 144 | 131.325 | 116.134 | 111.330 |
| **Difference between original estimate and revised estimate provided by Austria and accepted by the TERT** |
| National total for compliance | AT-NatTot-2017-0001 | 1.109 | 1.058 | 1.031 |
| National total (row 141) including revised estimates and technical corrections | *Calculated using data above* | 136.624 | 118.732 | 112.890 |
| Total (row 144) estimate including revised estimates, technical corrections and adjustments recommended by TERT to be accepted by EC | *Calculated using data above* |  132.434 |  117.192 |  112.361 |
| **NH3** |  |  |  |  |
| National total | Annex I, row 141 | 65.296 | 66.797 | 66.867 |
| National total for compliance | Annex I, row 144 | 64.704 | 66.533 | 66.802 |
| **Adjustment provided by Austria and recommended by the TERT to be accepted by the EC** |
| 3Da2b Sewage sludge applied to soils |  |  | -0.225 | -0.238 |
| 3Da2c Other organic fertilisers applied to soils |  |  | -0.673 | -0.663 |
| National total (row 141) including revised estimates and technical corrections | *Calculated using data above* | 65.296 | 66.797 | 66.867 |
| Total (row 144) estimate including revised estimates, technical corrections and adjustments recommended by TERT to be accepted by EC | *Calculated using data above* | 64.704 | 65.635 | 65.902 |
| **PM2.5** |  |  |  |  |
| National total | Annex I, row 141 | 22.106 | 19.022 | 16.622 |
| National total for compliance | Annex I, row 144 | - | - | - |
| **Difference between original estimate and revised estimate provided by Austria and accepted by the TERT** |
| 3Da1 Inorganic N-fertilizers (includes also urea application) | AT-3Da1-2017-0002 | -0.889 | -0.855 | -0.835 |
| 5E Other waste  | AT-5E-2017-0001 | 0.183 | 0.272 | 0.251 |
| National total (row 141) including revised estimates and technical corrections | *Calculated using data above* | 21.400 | 18.439 | 16.037 |
| Total (row 144) estimate including revised estimates, technical corrections and adjustments recommended by TERT to be accepted by EC | *Calculated using data above* | - | - | - |

# Statement from Austria on the conclusions presented by the TERT

1. Austria agrees with the calculated estimates in Table 2.

# Recommendations from the TERT

## Recommendations including revised estimates and technical corrections

Table 3: Recommendations from TERT, considering revised estimates (RE) and technical corrections (TC)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Observation | Key Category | NFR, Pollutant(s), Year(s) | Recommendation | RE or TC |
| AT-1A1-2017-0002 | No | 1A1 Energy Production, SO2, NOX, NH3, NMVOC, PM2.5, 2000-2015 | For 1A1 Energy Production, SO2, NOX, NH3, NMVOC, PM2.5 from 2000-2015 the TERT noted that in the IIR, it is not clear where fuel consumption for auto-producers of electricity and CHP (combined heat and power plants) are taken into account in the inventory. In response to a question raised during the review, Austria explained that industrial auto-producers are allocated to the industrial categories (1A2a Iron and Steel to 1A2g Other) together with final energy use. Austria also explained that the energy statistics office provides detailed fuel consumption used for auto-production by industrial sector. The TERT accepted the explanation provided by Austria. The TERT noted that the issue does not relate to an over or underestimate and recommends that Austria includes this explanation in its next IIR submission to improve transparency. | no |
| AT-1A1-2017-0003 | Yes | 1A1 Energy Production, SO2, NOX, PM2.5, 2005-2015 | For NFR 1A1 Energy Production (including waste incineration with heat recovery) and 1A2 Stationary Combustion in Manufacturing Industries and Construction for SO2, NOX, PM2.5, 2005-2015, the TERT noted that Austria is estimating NOX, SO2 and TSP emissions using annual emissions reported by operators on the basis of stack measurements. When continuously measurements are used to estimate annual emissions, there is a risk that operators have misinterpreted the IED and have used validated average values (after having subtracted the value of the confidence interval) although this subtraction must not be applied in the context of reporting annual emissions. In response to a question raised during the review, Austria admits that misinterpretation of the IED and use of validated average values (after subtracting the value of the confidence interval) could have happened. However, Austria indicates that it would probably introduce another bias if it would be assumed that such approach incoherent with regulations has been used generally. In order to avoid any such approach in the future, Austria plans a quality review of the data provided from operators. In the opinion of the TERT, bottom-up data based on the "validated average values" defined in the IED cannot be used by the inventory team without adjustment in the framework of a national inventory. The TERT notes that this issue relates to an underestimate, which could correspond to 20% of SO2, 20% of NOX, 30% of dust of the sector (depending on the fraction of the operators subtracting confidence interval). The TERT agrees with Austria’s initiative to perform a review and recommends Austria to organise this survey among operators to identify which ones are reporting emissions on the basis of the validated average values. If necessary Austria should try to derive a methodology to adjust the national emissions over the time series in order to compensate for the fact that national emissions are estimated on the basis of data reported by operators using validated average values. | no |
| AT-1A2-2017-0001 | Yes | 1A2 Stationary Combustion in Manufacturing Industries and Construction, SO2, 2000-2015 | The TERT noted that SO2 emissions from natural gas are not estimated for 2000 - 2015 for several NFR categories [see observations NFR 1A1a Public Electricity and Heat Production (AT-1A1a-2017-0001), NFR 1A2 Manufacturing Industries and Construction (AT-1A2-2017-0001), NFR 1A4 Small Combustion and Non-road Mobile Machinery (AT-1A4bi-2017-0001), NFR 1A1c Manufacture of Solid Fuel and Other Energy Industries (AT-1A1c-2017-0001)]. In response to a question raised during the review, Austria explained that SO2 from natural gas is considered negligible in the Austrian inventory because the sulphur content is very low. However, Austria provided a revised estimate for years 2005/2010/2015 based on national natural gas consumption in Austria and SO2 EF from the 2016 EMEP/EEA Guidebook. The TERT agreed with the revised estimate provided by Austria. The TERT notes that the revised estimate is under the threshold of significance for all years. The TERT recommends that Austria includes the revised estimate in its next submission.  | RE |
| AT-1B2d-2017-0001 | No | 1B2d Other Fugitive Emissions from Energy Production, SO2, NOX, NH3, NMVOC, PM2.5, 2005-2015 | For category 1B2d Other Fugitive Emissions from Energy Production and pollutant NH3 for all years the TERT noted that emissions are reported as ‘NO’ (Not Occurring) while electricity production using geothermal energy is occurring in Austria according to the Eurostat energy balances. In response to a question raised during the review, Austria explained that emissions from this source are investigated and found to be negligible. The TERT agrees that emissions are unlikely to be above the threshold of significance. However, The TERT recommends Austria to quantify and report emissions from this source in future submissions. In case this is not possible, the TERT recommends Austria to change the notation key to ‘NE’ (Not Estimated) and explain the reason in the IIR. | no |
| AT-2B10a-2017-0002 | No | 2B10a Chemical industry: Other, SO2, NOX, NMVOC, 2000-2015 | For NMVOC emissions from category 2B10a Chemical industry: Other, the TERT noted that in response to a question raised during the review Austria explained that NMVOC emissions in 2B10a all originate from the production of organic bulk chemicals. Austria also explained that the facility technologies used in the production processes have changed over time and that the country specific emission factor and NMVOC emissions are therefore assumed to be significantly overestimated for recent years. The TERT noted that the NMVOC emission from 2B10a is 1.0-1.2% of national total NMVOC emission for 2005-2015, and hence, even a significant lowering of emissions would be below the threshold of significance for a technical correction. The TERT recommends that Austria review and revise its country specific NMVOC emission factor for production of organic bulk chemicals for the next submission. | no |
| AT-2C3-2017-0001 | No | 2C3 Aluminium Production, PM2.5, 2000-2015 | For category 2C3 Aluminium Production all years the TERT noted that Austria has not estimated an emission of PM2.5. In response to a question raised during the review Austria provided a rough estimated emission for 2015 to prove that this underestimate is below the threshold of significance. Austria also explained that PM2.5 emissions will be included in the next submission. The TERT agrees that the issue is below the threshold of significance for a technical correction. The TERT recommends that Austria update the calculations for non-ferrous metals for the next inventory submission to include PM2.5 emissions from secondary aluminium production. | no |
| AT-2C5-2017-0005 | No | 2C5 Lead Production, SO2, PM2.5, 2000-2015 | For category 2C5 Lead Production all years the TERT noted that in response to a question raised during the review Austria explained that secondary lead is produced using “current technology level” (i.e. short rotary furnace with additional abatement technologies) and that Austria plans to update the calculations in this sector to include it for the next inventory. The TERT noted that the issue is below the threshold of significance for a technical correction. The TERT recommends that emissions from secondary lead production are included in the next submission. | no |
| AT-3B-2017-0003 | Yes | 3B Manure Management, NMVOC, 2000-2015 | The TERT noted that NMVOC is not estimated for 3B Manure Management, but that Tier 1 and Tier 2 methodologies are available in the 2016 EMEP/EEA Guidebook Table 3.4 (Tier 1) and Table 3.11 plus 3.12 (Tier 2) as well as the 2013 EMEP/EEA Guidebook. In response to a question raised during the review, Austria confirmed plans to report NMVOC emissions for sector 3B Manure Management in its next submission. The TERT recommends that Austria estimate the NMVOC emission from 3B based on Tier 1 approach, and Tier 2 approach for livestock categories which is considered a key source.  | no |
| AT-3Da1-2017-0002 | Yes | 3Da1 Inorganic N-fertilizers (includes also urea application), PM2.5, 2000-2015 | TERT noticed that the emissions of PM2.5 from field operations (Austria allocated the emissions in NFR 3Da2a) are significantly higher than the Tier 1 default (2016 EMEP/EEA Guidebook 3D Table 3.1) for 2005, 2010 and 2015. The TERT calculated the emissions based on a Tier 1 approach and the changes in PM2.5 emissions correspond to a change of 4.8% of the total PM2.5 emission, which is above the threshold of significance set for technical corrections. In response to a question raised during the review Austria provided a revised estimate for emissions of PM2.5, PM10 and TSP for the years 1990-2015. The TERT agreed with the revised estimate provided by Austria. The TERT recommends that Austria include the revised estimate in its next submission. | RE |
| AT-5B2-2017-0001 | No | 5B2 Biological Treatment of Waste - Anaerobic Digestion at Biogas Facilities, NH3, 2005;2010;2015 | For category 5B2 Biological Treatment of Waste - Anaerobic Digestion at Biogas Facilities, the TERT noted that, in response to a question raised during the review, Austria provided a rough estimate of the order of magnitude of NH3 emissions. Austria also indicated that, given the small contribution of the sector to national NH3 emissions, it will include a Tier 1 estimate in its next submission. The TERT noted that the issue is below the threshold of significance for a technical correction. The TERT encourages Austria to include NH3 emissions from 5B2 in its next submission as committed. | no |
| AT-5D-2017-0001 | No | 5D Wastewater Handling, NMVOC, 2005;2010;2015 | For 5D1 Wastewater Handling NMVOC for 2005, 2010, 2015, in response to a question raised during the review, Austria indicated that it includes all wastewater in its AD for wastewater treatment plant (including wastewater treated in individual septic systems). The TERT notes that, while there could be some NMVOC emitted from individual septic systems (in very small quantities when considering anaerobic treatment such as septic tanks), that the EF is much smaller than that for centralised treatment plant and therefore the AD for these should be excluded from the estimate. The TERT considers that the default EF, derived from a study of a sewage treatment plant, has to be applied only to centralised wastewater treatment plants. The TERT noted that the Austrian over estimation is below the threshold of significance. The TERT recommends that Austria checks the literature used to derive the EF and applies the default EF only to wastewater handled in centralised wastewater treatment plants.  | no |
| AT-5E-2017-0001 | No | 5E Other Waste, PM2.5, 2005;2010;2015 | For 5E the TERT noted that the notation key "NO" is reported in the NFR tables. The TERT considered that it is unlikely that Austria does not have emissions from accidental car and house fires. In response to a question raised during the review Austria provided a revised estimate for the years 2005, 2010 and 2015 which was accepted by the TERT. The TERT noted that the issue is below the threshold of significance for a technical correction but recommends that Austria includes an estimation of PM2.5 from 5E in its next submission. Austria notes that that it is unlikely that all particles fulfil the definition of PM2.5 and suggests that the shares of PM10 and PM2.5 in TSP in these uncontrolled combustion processes should be investigated within the next update of the EMEP/EEA Guidebook. | RE |
| AT-NatTot-2017-0001 | No | National total for compliance, NOx, NMVOC, 2005, 2010, 2015 | The TERT noted that for the NOx and NMVOC national total for compliance emissions from the NFR sectors 3B and 3D were subtracted, which is not consistent with the NECD. Article 4 Point 3(d) of the NECD states that emissions of NOx and NMVOC from activities falling under NFR 3B and 3D are not accounted for the purpose of complying with the National emission reduction commitments. The National emission reduction commitments are only applicable starting in 2020 and therefore a subtraction is not correct.  | RE |

## Recommendations considering the use of the 2013 EMEP/EEA Guidebook

1. In accordance with the review Guidelines, to facilitate transparency, recommendations that relate to MS using methodologies presented in the 2013 version of the EMEP/EEA Emissions Inventory Guidebook have been grouped together and presented separately to other recommendations.
2. For the emission estimates presented in Table 4 below, the TERT recommends that the methodologies used by the MS are updated from those presented in the 2013 version of the EMEP/EEA Guidebook to those used in the 2016 version of the EMEP/EEA Guidebook, or equivalent, and that this update is incorporated into the emissions inventory ahead of the next submission.

***Table 4: Recommendations from the TERT, considering the use of the 2013 version of the Guidebook***

|  |  |  |  |
| --- | --- | --- | --- |
| Observation | Key Category | NFR, Pollutant(s), Year(s) | Recommendation |
| AT-1A3biv-2017-0001 | No | 1A3biv Road Transport: Mopeds & Motorcycles, PM2.5, 2005, 2010, 2015 | For category 1A3biv Road Transport: Mopeds & Motorcycles and pollutant PM2.5 for years 2005, 2010 and 2015 the TERT noted that emissions are indicated as ‘IE’. In response to a question raised during the review, Austria explained that these emissions should be reported as ‘NE’. This is because there are no CS measurements for PM2.5 exhaust emissions of 2-wheelers in Austria and the EMEP/EEA Guidebook 2016 suggests no calculation method for estimating those emissions according to Tier 3 (EMEP/EEA Update Dec. 2016 p.57). Austria stated they will consider implementing the suggested Tier 2 default PM2.5 emission factors for mopeds and motorcycles in the emission model NEMO for the next submission. The TERT notes that the underestimate of PM2.5 emissions is below the threshold of significance. The TERT agreed with the explanation provided by Austria and recommends that an effort should be made to provide an emission estimate for the next submission using the emission factors included in Table 3-74 (p. 84) of the 2016 EMEP/EEA Guidebook. |
| AT-1A3bv-2017-0001 | No | 1A3bv Road transport: Gasoline evaporation, NMVOC, 2000-2015 | For category 1A3bv Road Transport: Gasoline Evaporation and pollutant NMVOC for years 2000-2015 the TERT noted that emissions are low for the number of petrol cars in the Austrian vehicle fleet. In response to a question raised during the review, Austria explained that in the Austrian transport emission model "NEMO" only emissions from diurnal losses are included in category 1A3bv. Evaporative emissions from hot soak and running losses are included in HC and NMVOC emissions. In 2015 60% of the total evaporative emissions are emissions from diurnal losses. The TERT partly agreed with the explanation provided by Austria. The TERT understands that only part of the total evaporative emissions (i.e. diurnal losses) are reported in category 1A3bv and the rest (hot soak and running losses) are reported in categories 1A3bi Road Transport: Passenger Cars, 1A3bii Road Transport: Light Duty Vehicles and 1A3biv Road Transport: Mopeds & Motorcycles. The TERT also notes that the method for calculating evaporative emissions in the NEMO model is based on the latest HBEFA v3.2, which is not consistent with the 2016 EMEP/EEA Guidebook. Using the 2016 EMEP/EEA Guidebook method with vehicle activity data for Austria in COPERT 5 leads to estimates of evaporative NMVOC emissions on the order of 2.5 kt, which is a factor of 10 times higher than Austria’s current estimates. The increase in 1A3bv emissions for 2015 when using the 2016 EMEP/EEA Guidebook method is slightly below the threshold of significance for technical correction. The TERT recommends that Austria adopts the method for 1A3bv in the 2016 EMEP/EEA Guidebook in the next submission. |
| AT-1A3bvi-2017-0001 | No | 1A3bvi Road transport: Automobile tyre and brake wear, PM2.5, 2000-2015 | For category 1A3bvi Road Transport: Automobile Tyre and Brake Wear, PM2.5 for the years 2000-2015, the TERT noted that even though in the 2016 EMEP/EEA Guidebook a method for calculating PM2.5 emissions is provided, Austria has not estimated emissions and used the notation key ‘NA’. During the CLRTAP review Austria indicated that these emissions are included in category 1A3bvii Road Transport: Automobile Road Abrasion. The TERT asked Austria to confirm that this is also the case for the inventory submitted under the NECD. In response to a question raised during the review, Austria confirmed that PM2.5 emissions from automobile tyre and brake wear are indeed included in category 1A3bvii as is also the case for the submission of CLRTAP. The TERT agreed with the explanation provided by Austria and recommends that Austria makes an effort to report emissions in categories 1A3bvi and 1A3bvii separately in its next submission. |
| AT-3B-2017-0004 | No |  3B Manure Management, PM2.5, 2000-2015 | For category NFR 3B Manure Management regarding the emission of TSP, PM10 and PM2.5 for years 2005-2015, the TERT noted that the emission factor used is significant lower compared to the default in the 2016 EMEP/EEA Guidebook (Table 3.5). In response to a question raised during the review, Austria explained that the EF in the 2016 EMEP/EEA Guidebook is considered to significantly overestimate the PM emission. Austria referred to a national study (Winiwarter et al. 2009), where high emission estimates could not be validated by measurements. One reason is that the underlying measurement data used for the generation of default EFs (e.g. Takai et al., 1998) is based on indoor air measurements (with focus on 'inhalable dust' and 'respirable dust') neglecting the losses during transfer to the outdoor air. Austria consider that the EF based on a national study is more accurate for Austria and more realistic estimates compared to the EF in the 2016 EMEP/EEA Guidebook. The TERT accepted the explanation provided during the review and recommends that Austria include more information explaining the significantly lower EF used in the Austrian inventory compared to the default in the 2016 EMEP/EEA Guidebook, and to refer to the report sent during the review (Winiwarter et al, 2007; Aktualisierung und methodische Verbesserung der österreichischen Luftschadstoffinventur für Schwebstaub). |
| AT-3Da1-2017-0001 | Yes | 3Da1 Inorganic N-Fertilisers (includes also urea application), PM2.5, 2000-2015 | For 3Da1 Inorganic N-fertilisers (includes also urea application), PM2.5, 2000-2015, the emission of PM2.5, PM10 and TSP from field operations are allocated to NFR 3Da1 Inorganic N-fertilisers. The 2016 EMEP/EEA Guidebook Table 2.1 (p.6 3D Crop Production and Agricultural Soils) clarified, in a more transparent way compared to the 2013 EMEP/EEA Guidebook Table 3-1, that particle emissions related to field operations (soil cultivation, harvesting, cleaning and drying) should be allocated under the NFR 3Dc Farm-level Agricultural Operations. Regarding the comparability of the emissions across the countries, TERT recommends to reallocate the PM2.5 emission from 3Da1 to NFR 3Dc. During the review, Austria responded to provide a reallocation of PM2.5, PM10 and TSP emissions from field operations from NFR 3Da1 to NFR 3Dc in next submission. |
| AT-3De-2017-0001 | No | 3De Cultivated Crops, NMVOC, 2000-2015 | For 3De Cultivated Crops, NMVOC, 2000-2015, the TERT noted that the NMVOC emission is based on the EFs for wheat and grass (2016 EMEP/EEA Guidebook Table 3.3). Default values for rye and rape are also available in the 2016 EMEP/EEA Guidebook. The TERT noted that although the NMVOC emission accounts for less than 1% of the total NMVOC emission in Austria, a first estimate with use of the appropriate EFs for rye and rape using data from Food and Agriculture Organisation (FAO) statistics, would increase the NMVOC emission by 50%. In response to a question raised during the review, Austria explained that the EF from wheat is chosen because it is the dominant crop type, and furthermore mentioned that the short list of crops (wheat, rye, rape) provided in the 2016 EMEP/EEA Guidebook seems to be random, and does not reflect the high diversity of crops cultivated in Austria. The TERT assumes that information for allocation of different crop type is available for Austria and recommends that Austria estimates emissions for all of the relevant crop types for which EFs are available (including rye and rape) in 2016 EMEP/EEA Guidebook (Table 3.3) in its next submission. For the remaining cropland area the TERT recommend that Austria use an average of the highest and lowest EF (wheat and rape) or if other EF is available for Austria based on e.g. literature study or measurement.  |

## Cross-cutting recommendations

1. The TERT identified recommendations in order to improve the national inventory data of Austria (see section VII).
2. The TERT considers that it received a response from Austria that was sufficient in order to undertake the comprehensive technical review appropriately.
3. The TERT identifies the following cross-cutting issues for improvement in the inventory and recommends that Austria:

(a) Complete its emission inventory by estimating currently missing emissions;

(b) Use the notation key “NE” where emissions are expected to occur but are not estimated;

(c) Uses the 2016 EMEP/EEA Guidebook for all categories;

(d) Improves the transparency of the inventory by improving the IIR.

# Annex I: Revised Estimates provided by Austria

***Table 5: Summary of Technical Revisions***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** |   |   |   |   |   |   |   |   |   |
| EMRT ID: | **AT-NatTot-2017-0001** |   |   |
| EMRT URL: |  |   |   |
| Member State: | Austria |   |   |
| Sector: | National Totals |   |   |
| Pollutant | NOx, NMVOC |   |   |
|   |   |   |   |   |   |   |   |   |
| Completed by (SE):  | Justin Goodwin |   |   |
| Reviewed by (LR):  | Justin Goodwin |   |   |
| Reviewed by (Counterpart):  | Chris Dore |   |   |
|   |   |   |   |   |   |   |   |   |
| The underlying problem: | Austria have reported national totals for compliance (row 144) that exclude 3B and 3D for NOx and NMVOC. |   |
|   |
|   |
| The rationale for the corrected estimate: | 3B and 3D for NOx and NMVOC are to be included in national totals for compliance in accordance with the NECD to show reporting against the NECD emission ceilings (and not emission reduction commitments). |   |
|   |
|   |
| Summarise the methodology used: | The national totals for compliance have been calculated including NOx and NMVOC emissions from 3B and 3D. |   |
|   |
|   |
|   |
|   |   |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |  |  |
| **2** | **Details of the corrected estimate** |  |  |  |  |  |   |
|   |   |   |   |   |   |   |   |   |
|   |   | **Original estimate (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-NatTot-2017-0001-OE | 2005 | 168.976 |  | 131.325 |  |  |  |   |
| AT- NatTot -2017-0001-OE | 2010 | 139.729 |  | 116.134 |  |  |  |   |
| AT- NatTot -2017-0001-OE | 2015 | 120.834 |  | 111.330 |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
| **Was a Revised Estimate received from the MS?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Revised Estimate received from MS (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT- NatTot -2017-0001-RE | 2005 | 178.943 |  | 132.434 |  |  |  |   |
| AT- NatTot -2017-0001-RE | 2010 | 149.423 |  | 117.192 |  |  |  |   |
| AT- NatTot -2017-0001-RE | 2015 | 131.737 |  | 112.361 |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Revised Estimate accepted by the TERT?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Technical Correction calculated by TERT (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT- NatTot -2017-0001-TC | 2005 |  |  |  |  |  |  |   |
| AT- NatTot -2017-0001-TC | 2010 |  |  |  |  |  |  |   |
| AT- NatTot -2017-0001-TC | 2015 |  |  |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Technical Correction accepted by the MS?** |  |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** |   |   |   |   |   |   |   |   |   |
| EMRT ID: | **AT-1A2-2017-0001** |   |   |
| EMRT URL: | <https://emrt-necd.eionet.europa.eu/2017/AT-1A2-2017-0001> |   |   |
| Member State: | Austria |   |   |
| Sector: | 1A Energy |   |   |
| Pollutant | SO2 |   |   |
|   |   |   |   |   |   |   |   |   |
| Completed by (SE):  | Laetitia Nicco |   |   |
| Reviewed by (LR):  | Justin Goodwin |   |   |
| Reviewed by (Counterpart):  | Laetitia Serveau |   |   |
|   |   |   |   |   |   |   |   |   |
| The underlying problem: | SO2 emissions for natural gas are not estimated in the inventory because Austria considered it as negligible. |   |
|   |
|   |
| The rationale for the corrected estimate: | Underestimation of SO2 emissions. |   |
|   |
|   |
| Summarise the methodology used: | National natural gas consumptions for 2005/2010/2015 provided by Austria and highest SO2 EF provided by the 2016 EMEP/EEA Guidebook (among 1A1, 1A2 and 1A4 chapters). |   |
|   |
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|   |
|   |   |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |  |  |
| **2** | **Details of the corrected estimate** |  |  |  |  |  |   |
|   |   |   |   |   |   |   |   |   |
|   |   | **Original estimate (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-1A2-2017-0001-OE | 2005 |   | 0.000 |   |   |   | not estimated |   |
| AT-1A2-2017-0001-OE | 2010 |   | 0.000 |   |   |   | not estimated |   |
| AT-1A2-2017-0001-OE | 2015 |   | 0.000 |   |   |   | not estimated |   |
|  |  |  |  |  |  |  |  |   |
| **Was a Revised Estimate received from the MS?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Revised Estimate received from MS (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-1A2-2017-0001-RE | 2005 |   | 0.220 |   |   |   |   |   |
| AT-1A2-2017-0001-RE | 2010 |   | 0.220 |   |   |   |   |   |
| AT-1A2-2017-0001-RE | 2015 |   | 0.185 |   |   |   |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Revised Estimate accepted by the TERT?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Technical Correction calculated by TERT (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-1A2-2017-0001-TC | 2005 |   |   |   |   |   |   |   |
| AT-1A2-2017-0001-TC | 2010 |   |   |   |   |   |   |   |
| AT-1A2-2017-0001-TC | 2015 |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Technical Correction accepted by the MS?** |  |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** |   |   |   |   |   |   |   |   |   |
| EMRT ID: | **AT-3Da1-2017-0002** |   |   |
| EMRT URL: | [https://emrt-necd.eionet.europa.eu/2017/AT-3Da1-2017-0002](https://emrt-necd.eionet.europa.eu/2017/AT-3Da1-2017-0002#tab-qa) |   |   |
| Member State: | Austria |   |   |
| Sector: | 3Da1 Inorganic N-fertilizers (includes also urea application) |   |   |
| Pollutant | PM2.5 |   |   |
|   |   |   |   |   |   |   |   |   |
| Completed by (SE):  | Mette Mikkelsen |   |   |
| Reviewed by (LR):  | Justin Goodwin |   |   |
| Reviewed by (Counterpart):  | Beatriz Sanchez |   |   |
|   |   |   |   |   |   |   |   |   |
| The underlying problem: | TERT noticed that the emission of PM2.5 from field operations (AT allocated the emission in NFR 3Da2a) is significant higher that Tier 1 default (2016 EMEP/EEA Guidebook 3D Table 3.1) for 2005, 2010 and 2015. TERT calculate the emission based on a Tier 1 approach and the changes in PM2.5 emission corresponds to change by 4.8% of the total PM2.5 emission, which is above the threshold. In response to a question raised during the review Austria provided a revised estimate for emission of PM2.5, PM10 and TSP for years 1990-2015. The TERT agreed with the revised estimate provided by Austria and attached to the annex of the review report. The TERT recommends that Austria include the revised estimate in its next submission |   |
|   |
|   |
| The rationale for the corrected estimate: | Overestimation of PM2.5 emission from field operations (emission allocated in NFR 3Da2a). |   |
|   |
|   |
| Summarise the methodology used: | The emission factor used in the revised estimate is based on 2016 EMEP/EEA Guidebook 3D Table 3.1. |   |
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|   |   |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |  |  |
| **2** | **Details of the corrected estimate** |  |  |  |  |  |   |
|   |   |   |   |   |   |   |   |   |
|   |   | **Original estimate (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-3Da1-2017-0002-OE | 2005 |   |   |   |   | 1.028 |   |   |
| AT-3Da1-2017-0002-OE | 2010 |   |   |   |   | 0.988 |   |   |
| AT-3Da1-2017-0002-OE | 2015 |   |   |   |   | 0.966 |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was a Revised Estimate received from the MS?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Revised Estimate received from MS (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-3Da1-2017-0002-RE | 2005 |   |   |   |   | 0.139 |   |   |
| AT-3Da1-2017-0002-RE | 2010 |   |   |   |   | 0.133 |   |   |
| AT-3Da1-2017-0002-RE | 2015 |   |   |   |   | 0.130 |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Revised Estimate accepted by the TERT?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Technical Correction calculated by TERT (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-3Da1-2017-0002-TC | 2005 |   |   |   |   |   |   |   |
| AT-3Da1-2017-0002-TC | 2010 |   |   |   |   |   |   |   |
| AT-3Da1-2017-0002-TC | 2015 |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Technical Correction accepted by the MS?** |  |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** |   |   |   |   |   |   |   |   |   |
| EMRT ID: | **AT-5E-2017-0001**  |   |   |
| EMRT URL: | <https://emrt-necd.eionet.europa.eu/2017/AT-5E-2017-0001> |   |   |
| Member State: | Austria |   |   |
| Sector: | 5E Other waste - car and building fires |   |   |
| Pollutant | PM2.5 |   |   |
|   |   |   |   |   |   |   |   |   |
| Completed by (SE):  | Celine Guenguen |   |   |
| Reviewed by (LR):  | Justin Goodwin |   |   |
| Reviewed by (Counterpart):  | Intars Cakars |   |   |
|   |   |   |   |   |   |   |   |   |
| The underlying problem: |  The notation key "NO" is reported in the NFR tables but the TERT considers it is unlikely as it includes accidental car and house fires |   |
|   |
|   |
| The rationale for the corrected estimate: | There is an underestimation because of a non-estimation |   |
|   |
|   |
| Summarise the methodology used: | Use of the tier 2 methodology proposed in the 2016 EMEP/EEA Guidebook:- AD: number of fire based on national data- Additional parameter : split between type of building based on national data- EF : Tier 1 default EF (table 3-2 for cars and tables 3-4 and 3-6 for buildings from chapter 5E Other waste) |   |
|   |
|   |
|   |
|   |   |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |  |  |
| **2** | **Details of the corrected estimate** |  |  |  |  |  |   |
|   |   |   |   |   |   |   |   |   |
|   |   | **Original estimate (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-5E-2017-0001 -OE | 2005 |   |   |   |   | 0.000 | emissions from car and building fires not reported |   |
| AT-5E-2017-0001 -OE | 2010 |   |   |   |   | 0.000 | emissions from car and building fires not reported |   |
| AT-5E-2017-0001 -OE | 2015 |   |   |   |   | 0.000 | emissions from car and building fires not reported |   |
|  |  |  |  |  |  |  |  |   |
| **Was a Revised Estimate received from the MS?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Revised Estimate received from MS (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-5E-2017-0001 -RE | 2005 |   |   |   |   | 0.183 |   |   |
| AT-5E-2017-0001 -RE | 2010 |   |   |   |   | 0.272 |   |   |
| AT-5E-2017-0001 -RE | 2015 |   |   |   |   | 0.251 |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Revised Estimate accepted by the TERT?** | **yes** |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |
|   |   | **Technical Correction calculated by TERT (kt)** | Notes |   |
|   | Year | NOX | SO2 | NMVOC | NH3 | PM2.5 |   |
| AT-5E-2017-0001 -TC | 2005 |   |   |   |   |   |   |   |
| AT-5E-2017-0001 -TC | 2010 |   |   |   |   |   |   |   |
| AT-5E-2017-0001 -TC | 2015 |   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |   |
| **Was the Technical Correction accepted by the MS?** |  |  |  |  |  |   |
|  |  |  |  |  |  |  |  |   |

# Annex II: Review of the 2017 adjustment application of Austria TERT report for the EC

**Table A2. 6 Summary Information on the Submitted Adjustment Application, Austria 2017**

|  |  |
| --- | --- |
| Reasons for adjustment application (Directive 2016/2284, Article 5.1 and Annex IV, Part 4; see also: EB Decision 2012/3, para 6 as amended by EB Decision 2014/1, Annex, para 3) | Agriculture 3Da2b, 3Da2c: New sourcesTransport 1A3b: significantly different methodologies |
| Pollutant/sector for which adjustment is applied for | NOX, NH3 |
| Year(s) for which inventory adjustment is applied  | 2010 - 2015 |
| Date of notification of adjustment to the EEA via the EIONET Central Data Repository (CDR) | 15 February 2015  |
| Date of submission of supporting documentation | 1. March 2017
 |

A2.1 Introduction

1. Article 5.8 of the NECD text (Directive (EU) 2016/2284) 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.” Article 8.4 and Part 4 of Annex IV of the NECD text further specify that Member States that opt for the adjustment flexibility must include supporting information in the Informative Inventory Report, including a demonstration that the use of the adjustment procedure fulfils the relevant conditions set out in Article 5.1 and Part 4 of Annex IV. The minimum supporting information required is highlighted in Part 4.1 of Annex IV (which is based on Part 1, paragraph 2 of the Annex to LRTAP 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 contains references to the relevant EB decisions 2012/3 and 2012/12, as amended in 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.Consequently, the review of Adjustment applications under the NECD will in principle follow the process for reviewing Adjustment applications made under the CLRTAP (as presented in relevant EB decisions), however (formally) without prejudice to the additional arrangements specified in Part 4 of Annex IV of the new NECD.[[4]](#footnote-4) It allows inter alia the submission of additional information during the review, necessary for a proper and full assessment of the adjustment application.
2. Member States may apply to adjust their inventory data or emission reduction commitments if they are in non-compliance with their emission ceilings established in NEC Directive 2001/81/EC (in accordance with article 21(2) of new NECD). If a Member State applies for more than one adjustment and not all these adjustments are required to bring that Member State into compliance, that Member State should be informed that in accordance with the intent of the adjustment procedure, recommendation for approval will be limited to adjustments necessary to bring compliance and be invited to withdraw one or more of its adjustments. In making an adjustment application, Member States must demonstrate that extraordinary circumstances have given rise to revisions to their emissions estimates. These extraordinary circumstances fall into three broad categories:
3. Emission source categories are identified that were not accounted for at the time when the emission reduction commitments were set; or
4. For a particular source, the emission factors used to estimate emissions for the year in which emissions reduction commitments are to be attained are significantly different to those used when the emission reduction commitments were set; or
5. The methodologies used for determining emissions from specific source categories have undergone significant changes between the time when emission reduction commitments were set and the year they are to be attained.

Technical corrections and revised estimates may change the national emission totals making a specific adjustment no longer necessary or make a specific adjustment incompatible/invalid when applied to the same category for which a technical correction or revised estimate was approved. Adjustment applications that are affected by technical corrections or revised estimates should also be reviewed in these cases, but any recommendation on the review of concerned adjustment applications should be subject to the outcome of the work on technical corrections and revised estimates. The review of an adjustment application can therefore recommend acceptance, rejection (with possibly a resubmission next year if still appropriate/required) or be kept pending/open (with principle acceptance of the methodology applied) awaiting the submission of recalculated adjustments in next year’s reporting.

1. Any Member State submitting an application for an adjustment to its inventory is required to notify the European Commission by 15 February at the latest. As explained above the supporting information must be included in the Informative Inventory Report (by 15 March of the same year) including a demonstration that the use of the adjustment procedure fulfils the relevant conditions set out in Article 5.1 and Part 4 of Annex IV. The minimum supporting information required is specified in Part 4.1 of Annex IV.
2. As mandated by the European Union’s National Emissions Ceilings Directive (Directive (EU) 2016/2284) applications for adjustments that are submitted by Austria are subject to an expert review.
3. The reviewers undertake a detailed technical review of the adjustment application in cooperation with EEA and make a recommendation to the European Commission on the acceptance, rejection or continuation of the application. The European Commission then takes its decision on any adjustment application based on the outcome of the technical assessment completed by the reviewers considering also the effect of technical corrections and revised estimates.

A2.1.1 Review of Submitted Adjustments

**Table A2. 7 Expert Review Team**

|  |  |  |  |
| --- | --- | --- | --- |
| **Role** | **Sectors** | **Name** | **Country** |
| Adjustment lead reviewer | All | Chris Dore  | Project team |
| Primary expert reviewer | Agriculture | Mette H. Mikkelsen | Denmark |
| Secondary expert reviewer | Agriculture | Justin Goodwin | United Kingdom |
| Primary expert reviewer | Transport | Giorgos Mellios | Greece |
| Secondary expert reviewer | Transport  | Yvonne Pang | United Kingdom |
| Basic checks (Step 1 and 2)  | N/A | Katarina Mareckova,Melanie Tista | Project team  |

A2.1.2 Assessment of Formal Criteria

1. Austria notified the European Commission through the EIONET Central Data Repository (CDR) partnership network of the EEA of its intention to apply for a new adjustment on 15 February 2017. All supporting information requested by Directive 2016/2284, Article 5.1, Article 8.4 and Annex IV, Part 4 was provided as separate report by the legal deadline of the 15 March of the same year. No additional documentation was provided during the review in response to requests from the TERT. Section A2.5 lists the documentation provided by Austria.
2. Austria submitted an application for emissions adjustments to 2010-2015 for the pollutants and sectors indicated below:
	1. NOX – Road Transport, 1A3bi-iv
	2. NH3 – Agriculture, 3Da2b, 3Da2c
3. Austria provided information on exceedance of emission ceilings (Directive 2001/81/EC) for NOX and NH3 from 2010 to 2015.
4. Austria provided information on the impact of the adjustment to its emission inventory, and the extent to which it would reduce the current exceedance and possibly bring the Party in compliance with emission reduction commitments.
5. Austria included information on when it will meet its emission ceilings for NOX and NH3 without the adjustment in the supporting documentation.
6. The adjustment application requires the provision of specific supporting information to demonstrate compliance with specific criteria (Directive 2016/2284, Annex IV, Part 4.1(d), and EB Decision 2012/3, para 6a-c as amended by EB Decision 2014/1, Annex, para 3). Austria provided supporting documentation and the reviewers have reviewed this information (see Section A2.5) with regard to these criteria. The reviewers considered the supporting information provided by Austria to be complete.

A2.2 Road Transport, 1A3bi-iv (NOX)

A2.2.1 Assessment of Consistency with Requirements of the NECD (2016/2284) and Methodologies adopted by Parties to the LRTAP Convention, EB Decision 2012/3 as amended by EB Decision 2014/1, EB Decision 2012/3 as amended by EB Decision 2014/1

1. Austria made an application based on criteria: “*significantly different methodologies*”.
2. The reviewers studied the documentation that was provided to support the application (listed in Section A2.5).
3. The supporting information provided by Austria clearly presented the adjustment totals, and the method of calculation was transparent.

A2.2.2 Assessment of the Quantification of the Impact of the Revision

1. The adjustment application process requires that Austria submits a quantification of the impact of the adjustment for which an application has been submitted. Table A2. 8 provides an overview of the NOX adjustment applications of Austria in the Transport sector.

**Table A2. 8 Austria’s NOX Adjustment Applications for Road Transport, 2010-2015**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Reference number** | **Pollutant** | **NFR14** | **unit** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** |
| 1 | NOX | 1A3bi-iv | kt | -26.35 | -27.60 | -28.28 | -28.74 | -29.07 | -27.55 |
|  | **NOX** | **Total** | **kt**  | **-26.35** | **-27.60** | **-28.28** | **-28.74** | **-29.07** | **-27.55** |

1. The reviewers concluded that the quantification of the recalculations, as calculated by Austria, included no calculation errors, and is in line with the most up-to-date available EMEP/EEA Inventory guidebook and scientific literature.
2. In its application for an adjustment Austria indicated that its national totals of NOX emissions would be below their ceilings in accordance with the NECD from 2012 onwards, if the proposed adjustments are accepted.
3. The TERT concluded that increased emissions are caused by the use of a significantly different methodology (and emission factors) currently used by Austria in the current inventory. The reviewers are therefore of the opinion that this is **a valid case for an adjustment**.

A2.3 Agriculture, 3Da2b Sewage sludge applied to soils, 3Da2c Other organic fertilisers applied to soils (NH3)

A2.3.1 Assessment of Consistency with Requirements of the NECD (2016/2284) and Methodologies adopted by Parties to the LRTAP Convention, EB Decision 2012/3 as amended by EB Decision 2014/1, EB Decision 2012/3 as amended by EB Decision 2014/1

1. Austria made an application based on criteria: “*a new source”.*
2. The reviewers noted that no methodologies for the estimation of NH3 emissions from *Sewage sludge applied to soils, and Other organic fertilisers applied to soils* (including compost) were included in the EMEP/CORINAR Inventory Guidebook 1999 and conclude that the provided supporting evidence does comply with the criteria presented in Decision 2012/3, and that the circumstances on which the adjustment is based could not have been reasonably foreseen by the Party when the emission ceilings were established for 2010.
3. The reviewers studied the documentation that was provided to support the application (listed in Section A2.5).
4. The supporting information provided by Austria clearly presented the adjustment totals, and the method of calculation was transparent. As the adjustment application is for a new source, the quantification is equal to the emission of the source.

A2.3.2 Assessment of the Quantification of the Impact of the Revision

1. The adjustment application process requires that Austria submits a quantification of the impact of the adjustment for which an application has been submitted. Table A2. 9 provides an overview of the NH3 adjustment applications of Austria in the Agriculture sector; 3Da2b Sewage sludge applied to soils and 3Da2c Other organic fertilisers applied to soils.

**Table A2. 9 Austria’s NH3 Adjustment Applications for Agriculture, 2010-2015**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Reference number** | **Pollutant** | **NFR14** | **unit** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** |
| 2 | NH3 | 3Da2b | kt | -0.22 | -0.22 | -0.21 | -0.19 | -0.20 | -0.24 |
| 3 | NH3 | 3Da2c | kt | -0.67 | -0.65 | -0.67 | -0.66 | -0.66 | -0.66 |
|  | **NH3** | **Total** | **kt**  | **-0.90** | **-0.87** | **-0.88** | **-0.86** | **-0.86** | **-0.90** |

1. The reviewers concluded that the quantification of the recalculations, as calculated by Austria, included no calculation errors, and is in line with the most up-to-date available EMEP/EEA Inventory guidebook and scientific literature.
2. In the 2017 submission, Austria reported NH3 emissions from manure management category 3B and NMVOC emission from Sewage sludge applied to soils, and Other organic fertilisers applied to soils (including compost). Austria explained that these emission estimates are based on the EMEP/EEA Guidebook (2016) which provides new EFs and methodologies for these sources. At the time of setting the reduction commitments no valid methodology was provided by the 1999 Guidebook.
3. In its application for an adjustment Austria indicated that its national totals of NH3 emissions would be below their ceilings in accordance with the NECD from 2010 onwards, if the proposed adjustments are accepted.
4. The TERT concluded that increased emissions are based on “new” emission sources reported by Austria, and that no methodologies for these sources were included in the EMEP/CORINAR Inventory Guidebook 1999. The reviewers are therefore of the opinion that this is **a valid case for an adjustment**.

A2.4 Conclusions and Recommendations of TERT concerning adjustment applications

1. The reviewers have undertaken a full and thorough assessment of the application for an adjustment of the NOX and NH3 emissions inventory that was submitted by Austria for Road Transport 1A3b and for Agriculture 3Da2b and 3Da2c.
2. The review of the submitted application followed the guidance provided in the Annex to Decision 2012/12 of the Executive Body of the CLRTAP as amended by Technical Guidance ECE/EB.AIR/130 according to NEC Directive 2016/2284, Article 5.6 and 5.8. The findings of the reviewers are described in detail in Sections A2.2 and A2.3 above of this report.
3. Table A2. 10 below provides a summary of the adjustment applications received from Austria, and the subsequent recommendations made by the reviewers to the European Commission.

**Table A2. 10 Recommendations from the TERT to the Commission, Austria 2017**

| **MS** |  **Sector** | **NFRs** | **Pollutant** | **Years** | **Reviewers Recommendation** |
| --- | --- | --- | --- | --- | --- |
| **Austria** | Transport | 1A3bi-iv | NOX | 2010- 2015 | **Accept** |
| **Austria** | Agriculture | 3Da2b  | NH3 | 2010- 2015 | **Accept** |
| **Austria** | Agriculture |  3Da2c | NH3 | 2010- 2015 | **Accept** |

A2.5 Information provided by Austria

1. Table A2. 11 below lists the information provided by Austria in its adjustment application. The information provided by Austria was stored on the EMRT-NECD review platform. Together with the Adjustment Report and the Excel Tables, Austria also provided a technical report containing a detailed description of the transport emissions model and the impact resulting from the use of different emissions factors.

**Table A2. 11 Information provided by Austria**

|  |  |
| --- | --- |
| **Filename** | **Short description of content** |
| Erledigung\_BMLFUW-UW.1.3.3\_0012-I\_4\_2017\_15.02.2017\_.pdf | Letter from the Austrian Federal Ministry of agriculture, forestry, environment and water management on the reporting on national emission inventory according to Directive (EU) 2016/2284, including the announcement of an adjustment application according to Art. 5.1 for NOX and NH3 covering the years 2010-2015. |
| AT\_Annex\_II\_to\_Adjustment\_Application\_2017.xlsx | The detailed calculations for the quantification of the 2017 adjustments. |
| AT\_Inventory\_Adjustment\_Report\_15032017.pdf | Adjustment Report from Austria. |
| Final\_report\_transport\_emissions\_HBEFA1-2\_vs\_3-2\_Endversion\_2017.pdf  | Assessment of transport emissions in Austria for the year 2015 based on emission factors from HBEFA1.2 and HBEFA3.2. (Report No. Inst 02/17 Rex Em 13/2016-679 from 14.02.2017). |

1. The reviewers did not find it necessary to ask Austria for further information.

# References and Supporting Documents

EEA, 2017. Tista M., Gager M., Ullrich B., NEC Directive status report 2015. European Environment Agency, Copenhagen. Available at:
<http://www.eea.europa.eu/themes/air/national-emission-ceilings/nec-directive-reporting-status-2015>

EU 2017, EU Air Emission inventory review Guidelines

EU 2017, Guidance for TERTs

Decision 2012/3 (ECE/EB.AIR/111/Add.1): Adjustments under the Gothenburg Protocol to emission reduction commitments or to inventories for the purposes of comparing total national emissions with them

Decision 2012/12 (ECE/EB.AIR/113/Add.1): 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

Decision 2014/1 (ECE/EB.Air/127/Add.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

EMEP/EEA, 2016 EMEP/EEA air pollutant emission inventory guidebook – 2016 EEA technical report No. 21/2016 European Environment Agency, Copenhagen. Available at: <http://www.eea.europa.eu//publications/emep-eea-guidebook-2016>

EMEP/EEA Air Pollutant Emission Inventory Guidebook 2013<http://www.eea.europa.eu/publications/emep-eea-guidebook-2013>

EMEP/CORINAIR Air Pollutant Emission Inventory Guidebook 1999, 2nd edition <http://www.eea.europa.eu//publications/EMEPCORINAIR>

2014 Reporting Guidelines **(**ECE/EB.AIR/125) for Estimating and Reporting Emission Data under CLRTAP <http://www.ceip.at/ms/ceip_home1/ceip_home/reporting_instructions/>

ECE/EB.AIR/130: Technical Guidance for Parties Making Adjustment Applications and for the Expert Review of Adjustment Applications, 14 April 2015 <http://www.ceip.at/fileadmin/inhalte/emep/Adjustments/ECE_EB_AIR_130_AV_for_the_web.pdf>

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. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2016.344.01.0001.01.ENG>

1. <http://www.ceip.at/fileadmin/inhalte/emep/Adjustments/ECE_EB_AIR_130_AV_for_the_web.pdf> [↑](#footnote-ref-1)
2. 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 [↑](#footnote-ref-2)
3. The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations, all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account. [↑](#footnote-ref-3)
4. 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). [↑](#footnote-ref-4)