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Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

Working Group on Effects

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Progress in emissions inventories and other emissions-related issues: adjustments under the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone

Review of adjustment applications

Report by the Centre on Emission Inventories and Projections

Summary

The present report was prepared by the Centre on Emission Inventories and Projections in line with its mandate under the 2018-2019 workplan for the implementation of the Convention on Long-range Transboundary Air Pollution (ECE/EB.AIR/140/Add.1) and with the activities set out in the informal document submitted to the Executive Body for the Convention at its thirty-seventh session entitled "Draft revised mandates for scientific task forces and centres under the Convention". The review is based on documents submitted by Parties and findings of the expert review team.

The report provides a summary of the 2018 review of applications for adjustments to emission inventories submitted by Hungary and the United Kingdom of Great Britain and Northern Ireland in accordance with Executive Body decisions 2012/3, 2012/4 and 2012/12, as amended by decision 2014/1 (ECE/EB.AIR/111/Add.1, ECE/EB.AIR/113/Add.1, ECE/AB.AIR/127/Add.1 and ECE/EB.AIR/130). It also provides information on applications for adjustments submitted by Spain with "open" status after the 2017 review and on the adjustments approved for Belgium, Denmark, Finland, France, Germany, Luxembourg and Spain prior to 2018.

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I. Introduction

1. At its thirtieth session (Geneva, 30 April–4 May 2012), aware of the uncertainties inherent in estimating and projecting emission levels and of the need for continuous scientific and methodological improvements and determined that the emergence of new methodologies should not place a Party at a disadvantage in terms of its emission reduction commitments, the Executive Body for the Convention on Long-range Transboundary Air Pollution adopted decisions 2012/3 and 2012/4 in order to allow Parties to make adjustments to emission reduction commitments, or to inventories for the purposes of comparing total national emissions with them, pursuant to the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol).

2. At its thirty-first session (Geneva, 11–13 December 2012), the Executive Body adopted decision 2012/12 on guidance for such adjustments. The guidance, contained in annex to that decision, sets out the general principles that Parties should follow in submitting applications for adjustments.

3. However, following the first review of adjustment applications by countries in 2014, it became evident that more detailed technical guidance was needed. At its thirty-third session (Geneva, 8–12 December 2014), the Executive Body therefore adopted decision 2014/1 on improving the guidance for adjustments. The technical guidance for Parties making adjustment applications and for the expert review of adjustment applications (Technical Guidance) (ECE/EB.AIR/130) was prepared by the Task Force on Emission Inventories and Projections and published on 14 April 2015.

4. Pursuant to the Executive Body's decisions, as clarified by the Technical Guidance, Parties may apply to adjust their inventory data or emission reduction commitments under extraordinary circumstances, which fall into three broad categories:

(a) Emission sources are identified that were not accounted for at the time when the emission reduction commitments were set (for a more detailed definition see decision 2014/1, annex, para. 3 (a) (i)-(iii));

(b) Emission factors used to determine emissions levels for particular source categories for the year in which emissions reduction commitments are to be attained are significantly different than the emission factors applied to these categories when emission reduction commitments were set;

(c) 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.

5. A Party applying for an adjustment to its inventory is required to notify the Convention secretariat through the Executive Secretary of the United Nations Economic Commission for Europe by 15 February at the latest if the application is to be reviewed during the same year. All supporting information requested in Executive Body decision 2012/12, as amended by decision 2014/1 and clarified in the Technical Guidance, must be provided as part of the Party's informative inventory report, or in a separate report, by 15 March of the same year for review by the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP Steering Body).

6. The present report summarizes the review of the inventory adjustment applications submitted by Hungary and the United Kingdom of Great Britain and Northern Ireland in 2018 in accordance with Executive Body decisions 2012/3, 2012/4, 2012/12 and 2014/1 and in light of the Technical Guidance. It also provides information on adjustments approved prior to 2018 and on applications for adjustments submitted by Spain with "open" status after the 2017 review.

7. The report is based on the documents submitted by Parties and those prepared by the expert review team (ERT) during the review process in 2018. It was prepared by the EMEP Centre on Emission Inventories and Projections (CEIP) in line with its mandate under the 2017–2018 workplan for implementation of the Convention (ECE/EB.AIR/140/Add.1) and with the activities set out in the informal document, submitted to the Executive Body for the Convention at its thirty-seventh session, entitled "Draft revised mandates for scientific task forces and centres under the Convention".

II. Organization of the review

8. As mandated by Executive Body decision 2012/12, applications for adjustments submitted by Parties are subject to expert review. Technical coordination of and support for the 2018 review was provided by CEIP, led by Ms. Katarina Mareckova (Slovakia). The members of the review team were selected from the experts appointed to the CEIP roster of experts by the Parties.

9. The adjustment review was performed in parallel with the Stage 3 review. The ERT comprised lead reviewers, Mr. Chris Dore (United Kingdom of Great Britain and Northern Ireland) and Ms. Kristina Saarinen (Finland) and eight sectoral experts: Ms. Magdalena Zimakowska-Laskowska, transport (Poland); Ms. Anaïs Durand, agriculture (France); Mr. Giorgos Mellios, transport (European Union); Dr. J. Webb, agriculture (United Kingdom); Ms. Helen Heintalu, transport (Estonia); Ms. Isabelle Higuet stationary combustion (Belgium); Mr. Hakam Al-Hanbali, agriculture (Sweden); and Mr. Benjamin Pearson, stationary combustion (United Kingdom). The team assessed:

(a) New adjustment applications submitted in 2018;

(b) Adjustments with "open" status from previous years;

(c) Adjustments approved prior to 2018.

10. Each sector was reviewed by two independent sectoral experts during May and June 2018 (desk review). The findings were discussed at a meeting held at the European Environment Agency (EEA) in Copenhagen from 18 to 21 June 2018. The conclusions and recommendations from the review for submission to the EMEP Steering Body were discussed during the review week. They are summarized in chapters III to V below.

11. CEIP has developed a dedicated web page[1] for the review process, which provides an introduction, links to documentation and other information on the adjustments submitted by Parties in 2018 and those approved prior to 2018, as well as the tool used by the reviewers in assessing adjustment applications approved prior to 2018.

III. Assessment of new adjustment applications

12. Hungary and the United Kingdom submitted new adjustment applications to the secretariat in early 2018. Both Parties applied for adjustments to their national emission inventories. For the details of the applications, see table 1 below.

[1] www.ceip.at/adjustments_gp (last updated in June 2018).

Table 1
New applications for adjustments to emission reduction commitments or inventories in 2018

Country	*Sector*	*NFR source category*[a]	*Pollutant*	*Years*	*Extraordinary circumstances (decision 2012/3, para. 6[a])*
Hungary	Agriculture	3.B	NMVOC	2010–2016	new emission source category
Hungary	Agriculture	3.D.e	NMVOC	2010–2016	new emission source category
United Kingdom	Transport	1.A.3.b.i-iv	NO_x	2010	significant changes in emission factors

Abbreviations: NFR = Nomenclature for Reporting; NMVOC = non-methane volatile organic compound; NO_x = nitrogen oxides.

[a] For a description of source categories, see the *EMEP/EEA air pollutant emission inventory guidebook 2016*, EEA Technical report No. 21/2016 (Luxembourg, Publications Office of the European Union, 2016), available at www.eea.europa.eu/publications/emep-eea-guidebook-2016 and Annex 1 to Reporting Guidelines.

A. Hungary – manure management (3.B) and cultivated crops (3.D.e)

13. The ERT conducted a full and thorough assessment of Hungary's application for an adjustment to its NMVOC emissions inventory for 2010–2016, based on new sources, for manure management (3.B) and cultivated crops (3.D.e).

14. Hungary now includes NMVOC emissions from manure management (3.B) and cultivated crops (3.D.e) in its inventory in accordance with the methodology presented in the 2016 *EMEP/EEA air pollutant emission inventory guidebook* (2016 Guidebook) and has identified these as new sources that were not accounted for when its emission reduction commitments were set. The second edition of the *EMEP/CORINAIR Atmospheric Emission Inventory Guidebook 1999* (1999 Guidebook)[2] did not provide methodologies for estimating NMVOC from these sources. The impact of the adjustments is summarized in table 2 below.

Table 2
Impact of adjustment on Hungary's NMVOC emissions inventory for manure management (3.B) and cultivated crops (3.D.e) sectors for 2010–2016

	Thousands of tons (ktons) of NO_x						
NFR source category	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
3.B Manure management	-21.57	-21.36	-21.41	-21.44	-21.99	-22.67	-22.91
3.D.e Cultivated crops	-3.63	-3.57	-3.62	-3.61	-3.64	-3.58	-3.55
Total NMVOC	**-25.2**	**-24.93**	**-25.03**	**-25.05**	**-25.63**	**-26.25**	**-26.46**

[2] Technical report No. 30 (Copenhagen, European Environment Agency, 1999). Available from www.eea.europa.eu//publications/EMEPCORINAIR.

15. Hungary indicates that its national total of NMVOC emissions will be below the emission ceiling in accordance with the Gothenburg Protocol as from 2010 if the proposed adjustments are accepted.

16. The ERT concluded that the adjustment applications met all of the requirements set out in decision 2012/12 and in the Technical Guidance and therefore recommended that the EMEP Steering Body accept these adjustment applications.

B. United Kingdom – road transport (1.A.3.b.i-iv)

17. The ERT conducted a full and thorough assessment of the application by the United Kingdom for an adjustment to its NO_x emissions inventory for 2010 for road transport (1.A.3.b.i-iv) based on significant changes in emission factors.

18. In its informative inventory report, the United Kingdom described in detail the updated emission factors used for the adjustment, noting that these were consistent with the 2016 Guidebook and with the latest COPERT 5 software model, and provided a spreadsheet with detailed calculations. The review team examined the activity data and emission factors used in calculating the adjustment for all vehicle categories and Euro standards and requested clarification concerning (i) the use of appropriate emission factors for Euro 5 as compared to Euro 4 vehicles; and (ii) the calculations for pre-Euro-5 light commercial vehicles. The United Kingdom provided the requested clarification. The impact of the adjustments is summarized in table 3 below.

Table 3
Impact of adjustment on the United Kingdom's NO_x emissions inventory for exhaust emissions from road transport for 2010

	Thousands of tonnes (ktons) of NO_x						
NFR source category	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
1.A.3.b.i-iv Road transport	-102.213	N/A	N/A	N/A	N/A	N/A	N/A

N/A = not applicable

19. The United Kingdom indicated that its national total of NO_x emissions would be below the emission ceiling in accordance with the Gothenburg Protocol as from 2010 if the proposed adjustment was accepted.

20. The ERT concluded that the adjustment application met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance. It therefore recommended that the EMEP Steering Body accept the adjustment application.

IV. Assessment of adjustment applications with "open" status

A. Spain – manure management (3.B) and agricultural soils (3.D.a.2.a and 3.D.a.3) – "open" status

21. In 2017, Spain submitted an adjustment application for NH_3 from:

(a) 3.B Manure management;

(b) 3.D.a.2.a Animal manure applied to soils; and

(c) 3.D.a.3 Urine and dung deposited during grazing

on the basis of "significant changes in methodologies applied".

During the 2017 expert review, the reviewers were unable to reach a conclusion regarding the application. Since then, however, the information provided by Spain has been considered in greater detail.

22. The reviewers noted that Spain had quantified the adjustment by comparing current emissions inventory estimates with those of 1999. This represents a comparison between the default emission factors resulting from use of the Tier 2 methodology in 2017 and the default Tier 1 emission factor based on the 1992 CORINAIR Guidebook.

23. The reviewers noted that upgrading from a Tier 1 to a Tier 2 methodology is not considered an "extraordinary" circumstance (Executive Board Decision 2012/3, para. 6) and that Tier 2 methodologies treat nitrogen (N) excretion rates as activity data; therefore, the impact of changes in these factors should not be included in the quantification of the adjustment. The reviewers also noted that Spain's original emission estimates are based on the 1992 CORINAIR Guidebook and do not represent the scientific information available from the 1999 (or 1996) edition of the Guidebook when the ceilings were set.

24. The reviewers conducted their assessment independently but, recognizing that similar considerations had been taken into account by a team that had carried out reviews in 2017 under 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 (the National Emission Ceilings Directive), they coordinated with that team in order to ensure that their approach was consistent with the published guidance on assessing adjustment applications.

25. Using the information provided by Spain, the reviewers performed calculations based on a comparison between the current methodology used by Spain and the methodology set out in the 1999 Guidebook. The resulting adjustment represented an upward revision of the emission estimates used for compliance purposes (i.e. making compliance more difficult).

26. Consequently, the reviewers concluded that this adjustment application did not meet the requirements set out in decision 2012/12 and, in particular, that Spain's application did not follow the methods for quantifying an adjustment presented in the Technical Guidance for Parties Making Adjustment Applications and for the Expert Review of Adjustment Applications (ECE/EB.AIR/130).They therefore recommended that the EMEP Steering Body reject this adjustment application.

V. Assessment of adjustments approved prior to 2018

27. The reviewers assessed the adjustments reported by Belgium, Denmark, Finland, France, Germany, Luxembourg and Spain that had been approved prior to 2018 as reported in annex VII to the reporting guidelines.[3] Details on these adjustments may be downloaded from the CEIP website. A summary is presented in table 5 below.

A. Belgium – road transport (1.A.3.b.i-iv)

28. The reviewers conducted an assessment of the adjustment of NO_x emissions from road transport (1A3bi-iv) for Belgium based on significant changes in emission factors. The adjustment had been recalculated and adjustment values increased (by 0.03 percent for 2010 and 11.6 per cent for 2015). During the review, Belgium explained that those differences had

[3] www.ceip.at/reportinginstructions/annexes-to-the-reporting-guidelines/.

resulted from a revision of emission factors in a newer version of COPERT (COPERT 4 v11.4) and submitted additional data to support its recalculation of the adjustment. The emissions were estimated using the methodology previously presented to and approved by the ERT. The reviewers therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that the application met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

B. Belgium – manure management (3.B), agricultural soils (3.D.a.1 and 3.D.a.2.a) and cultivated crops (3.D.e)

29. The reviewers conducted an assessment of the adjustment for Belgium, based on a new source, for

(a) NO_x emissions from manure management (3.B), inorganic N-fertilizers (includes also urea application) (3.D.a.1) and animal manure applied to soils (3.D.a.2.a); and

(b) NMVOC from manure management (3.B) and cultivated crops (3.D.e).

Belgium provided a declaration stating that the criteria and methodologies used in the calculation of adjustments for the years 2010–2016 for all sectors and pollutants were unchanged from the year in which the adjustments had been approved. The reviewers noted that recalculations with an impact on quantification of the adjustment (revisions to livestock numbers in Flanders for 2014 and 2015, correction of the amount of excreted N from poultry in Flanders for 2013 and a downward revision of the amount of organic fertilizer used in Wallonia) had been made. They were satisfied with the explanations provided and concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

C. Denmark – inorganic N-Fertilizers (3.D.a.1), cultivated crops (3.D.e) and manure management (3.B)

30. The reviewers conducted an assessment of the adjustment for Denmark for

(a) NH_3 emissions from inorganic N-fertilizers (3.D.1.a) and cultivated crops (3.D.e) based on significantly different emission factors and new sources, respectively; and

(b) NMVOC emissions from cultivated crops (3.D.e) based on a new source.

For NH_3, recalculations based on the update of emissions factors in the 2016 Guidebook had affected the quantification of the adjustment. The reviewers confirmed that the calculations had been made appropriately. NH_3 emissions from cultivated crops were unchanged. For NMVOC, revised livestock data had resulted in slight changes in the adjustment. The reviewers concluded that there had been no change in the methodologies that would alter the original approval of the adjustment applications and that they met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustments continue to be accepted.

D. Finland – stationary combustion (1.A.4.a.i, 1.A.4.b.i, 1.A.4.c.i)

31. The reviewers conducted an assessment of the NH_3 emissions adjustments for Finland for

(a) commercial/industrial stationary combustion (1.A.4.a.i);

(b) residential stationary combustion (1.A.4.b.i); and

(c) agriculture/forestry/fishing stationary combustion (1.A.4.c.i) based on significant revisions to emission factors.

The adjustments were unchanged from the values approved in 2017. The reviewers therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

E. Finland – road transport (1.A.3.b.i-iv)

32. The reviewers conducted an assessment of the NH_3 emissions adjustments for Finland for passenger cars (1.A.3b.i), light duty vehicles (1.A.3.b.ii), heavy duty vehicles and buses (1.A.3.b.iii) and mopeds and motorcycles (1.A.3.b.iv) based on significant changes in emission factors. The adjustment had been recalculated and values had increased by 10.2 to 12.1 per cent for the years 2010–2015. All relevant information concerning these changes was provided in the Declaration on consistent reporting of Approved Adjustments, which stated that recalculations had been made as a result of the correction of emission factors in emission calculations. The reviewers verified that the revised emission factors were consistent with the 2016 Guidebook and concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

F. France – road transport (1.A.3.b.i-iv)

33. The reviewers conducted an assessment of the adjustment for France with respect to NO_x emissions from road transport based on significant changes in emission factors. The reviewers noted that there had been recalculations for the years 2010–2015 for a variety of reasons, the most important of which was an increase in NO_x emissions factors for Euro 5 light commercial vehicles since the previous year's submission. The magnitude of the recalculations was 1.9–17.6 per cent and was highest for 2015. The reviewers verified that the revised emission factors were consistent with the 2016 Guidebook and concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

34. However, they expressed concern about the validity of some of the parameters used in the calculations that had resulted in an increase in NO_x emission factors for Euro 5 light commercial vehicles. They therefore recommended that France review and, where necessary, improve the data used to calculate road transport emissions, as well as the adjustment, and report on the outcome of that review in its next inventory report.

G. Germany – road transport (1.A.3.b.i-iv)

35. The reviewers conducted an assessment of the adjustment for Germany for NO_x emissions from road transport based on significant changes in emission factors. Germany had reported significantly revised emission estimates for the road transport NO_x adjustment in 2018 and the reviewers concluded that a full and thorough assessment, using a process as

detailed as that used for a new adjustment application, was required. The recalculations increased the adjustment values significantly (by 13.9–47.5 per cent for the period 2010–2015. During the review, they requested more detailed information from Germany, particularly with regard to the data used in quantifying the recalculation of the NO_x adjustment for road transport, and Germany provided that information. The reviewers therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

H. Germany – manure management (3.B), agricultural soils (3.D) and storage of energy crops (3. I)

36. The reviewers conducted an assessment of the adjustment for Germany for:

(a) NO_x from manure management, (3.B), agricultural soils (3.D), and storage of energy crops (3.I) based on new sources;

(b) NH_3 from agricultural soils (3.D) and storage of energy crops (3.I) based on significant revisions to emission factors and a new source, respectively; and

(c) NMVOC from manure management (3.B) and agricultural soils (3.D) based on new sources.

37. The Declaration on consistent reporting of Approved Adjustments that Germany submitted states that the methodologies used to calculate all previously-accepted adjustments are unchanged from the year in which the adjustments were approved.

38. For NO_x emissions from agricultural soils (3.D), the reviewers noted substantial recalculations owing to the inclusion of emissions from sludge application and a revision of emission factors in line with the information reported in the 2016 Guidebook. The recalculations were large enough that the reviewers considered it necessary to conduct a full and thorough assessment using a process as detailed as that used for a new adjustment application.

39. The reviewers were satisfied with the information provided by Germany and therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

I. Luxembourg – road transport (1.A.3.b.i-iv)

40. The reviewers conducted an assessment of the adjustment for Luxembourg with respect to NO_x emissions from road transport based on a significant change in emission factors. The reviewers noted recalculations for the years 2010–2015 had been made owing to an increase in NO_x emissions factors for Euro 5 and 6 diesel vehicles since the previous year's submission. The magnitude of the recalculations was 10.1–24.1 per cent and was highest for 2015. The reviewers therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

J. Luxembourg – manure management (3.B), agricultural soils (3.D) and cultivated crops (3.D.e.)

41. The reviewers conducted an assessment of the adjustment for Luxembourg with regard to:

(a) NO_x from manure management (3B) and agricultural soils (3.D.a.1, 3.D.a.2.a, 3.D.a.2.b and 3.D.a.2.c), and

(b) NMVOC emissions from manure management (3.B) and cultivated crops (3.D.e).

42. NO_x emissions from manure management (3B) had been calculated using the 2016 Guidebook Tier 2 methodology and emissions from agricultural soils (3.D.a.1, 3.D.a.2.a, 3.D.a.2.b and 3.D.a.2.c) using the Tier 1 methodology. Luxembourg's informative inventory report for 2018 states that there have been some changes in the methodology and emission factors since the introduction of the adjustment in 2016 and 2017. The information provided in that report was insufficient to allow the ERT to verify the calculations of NO_x from manure management. The reviewers recommended that the NO_x adjustments for manure management (3B) and agricultural soils (3D) and continue to be accepted but that Luxembourg provide more detailed information on its manure management (3B) adjustment calculations in future submissions.

43. NMVOC emissions from manure management (3B) had been recalculated for the entire time series following the correction of several errors in the calculation routines and parameters used. The reviewers were initially unable to verify the correctness of the calculations using the Tier 2 approach. Following consultation with Luxembourg, corrected figures were proposed and agreed as seen from table 4 below.

Table 4
Luxembourg manure management (3.B), NMVOC - Original and revised adjustment values

	Thousands of tons (ktons) of $NMVOC_3$						
NFR	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Original 3.B submission	-3.538	-3.408	-3.323	-3.426	-3.542	-3.618	-3.675
Corrected 3.B values	-3.855	-3.718	-3.628	-3.736	-3.858	-3.944	-4.005
Difference	**0.317**	**0.310**	**0.305**	**0.310**	**0.316**	**0.326**	**0.33**

NFR=Nomenclature for reporting

44. In light of the correction of errors in the quantification, the reviewers concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted with the corrected figures.

45. The informative inventory report provides full details of the emission factor used to calculate NMVOC emissions from cultivated crops (3.D.e). The reviewers therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

K. Spain – road transport (1.A.3.b.i and 1.A.3.b.iii)

46. The reviewers conducted an assessment of the adjustment for Spain with respect to NO_x emissions from passengers cars (1.A.3.b.i) and heavy duty vehicles (1.A.3.b.iii) based on significant changes in emission factors. The Declaration on consistent reporting of Approved Adjustments (23 January 2018) states that the methods and criteria used to calculate NO_x emissions for passengers cars and heavy duty vehicles for the period 2010–2016 are unchanged from the year in which the adjustments were approved (2015). Having noted no recalculations from the previously approved adjustment, the reviewers concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

L. Spain – manure management (3.B)

47. The reviewers conducted an assessment of the adjustment for Spain with respect to NO_x emissions from manure management (3.B) based on a new source. The informative inventory report indicates that the method used to calculate the adjustment is the one set out in the Guidebook; table 5.4.2 of the report indicates the page and table in the Guidebook from which the factors used in the calculation were taken. The reviewers therefore concluded that there had been no change in the methodology that would alter the original approval of the adjustment application and that it met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance; they recommended that the adjustment continue to be accepted.

VI. Conclusions and recommendations

A. 2018 adjustment cases

48. Adjustment applications made by Hungary and United Kingdom in 2018 were assessed. In both cases, the ERT determined that additional information was needed and the two Parties provided the requested information during the review. Table 5 below provides a summary of the adjustment applications received in 2018 and the resulting ERT recommendations to the EMEP Steering Body.

Table 5
ERT recommendations on adjustment applications received in 2018

Country	*Sector*	*NFR*	*Pollutant*	*Years*	*ERT recommendation*
Hungary	Agriculture	3.B	NMVOC	2010–2016	Accept
Hungary	Agriculture	3.D e	NMVOC	2010–2016	Accept
United Kingdom	Road transport	1.A.3.b.i-iv	NO_x	2010	Accept

49. The detailed conclusions and recommendations regarding the 2018 adjustment applications may be found in chapter III of the present report. The ERT has prepared country-specific reports explaining the findings, which will be made available to Hungary and the United Kingdom and published on the CEIP website. They will also be available as informal

documents for the fourth joint session of the EMEP Steering Body and the Working Group on Effects (Geneva, 10–14 September 2018).

B. "Open" adjustment cases

50. The adjustment applications that had been made by Spain in 2017 and left "open" at the conclusion of the 2017 review were assessed. The ERT determined that, sufficient information having been provided after the end of the previous review, no additional information was required. The 2018 review team coordinated with the 2017 National Emission Ceilings Directive reviewers to ensure that their approach was consistent with the published guidance on assessing adjustment applications. Table 6 below provides a summary of the adjustment applications with "open status" in 2017 and the resulting ERT recommendations to the EMEP Steering Body.

Table 6
Expert review team recommendations on adjustment applications with "open" status at the conclusion of the 2017 review

Country	*Sector*	*NFR*	*Pollutant*	*Years*	*ERT recommendation*
Spain	Agriculture	3.B	NH_3	2010–2015	Reject
Spain	Agriculture	3.D.a.2.a	NH_3	2010–2015	Reject
Spain	Agriculture	3.D.a.3	NH_3	2010–2015	Reject

C. Adjustment cases approved prior to 2018

51. This section provides a summary of the emissions adjustments reported by Belgium, Denmark, Finland, France, Germany, Luxembourg and Spain and accepted by the ERT during the review performed in May and June 2018. The reported adjustments refer to NO_x, NMVOC and NH_3 emissions for various NFR sectors. More detailed information on each reported adjustment may be found in chapter V.

52. The ERT assessed the reported data and concluded that the adjustments met all of the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance. It therefore recommended that the EMEP Steering Body accept all of the adjustments reported by Belgium, Denmark, Finland, France, Germany, Luxembourg and Spain (see table 7).

Table 7
Emission adjustments approved in previous years, as reported by countries in 2018
Thousands of tons (ktons)

Reference number	*Pollutant*	*NFR*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Belgium-1	NO_x	1.A.3.b.i-iv	-48.23	-48.159	-47.87	-49.114	-47.778	-45.153	-43.011
Belgium-2	NO_x	3.B	-0.830	-0.813	-0.811	-0.817	-0.827	-0.831	-0.832
Belgium-3	NO_x	3.D.a.1	-5.949	-5.731	-5.703	-5.972	-6.058	-6.142	-6.219
Belgium-4	NO_x	3.D.a.2.a	-6.918	-6.638	-6.429	-6.37	-6.338	-6.255	-6.259
Belgium-B	NMVOC	3.B	-28.242	N/A	N/A	N/A	N/A	N/A	N/A
Belgium-C	NMVOC	3.D.e	-1.215	N/A	N/A	N/A	N/A	N/A	N/A
Total (BE)	**NO_x**		**-61.927**	**-61.341**	**-60.813**	**-62.273**	**-61.001**	**-58.381**	**-56.321**
Total (BE)	**NMVOC**		**-29.457**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Denmark_01	NH_3	3.D.a.1	-2.140	-1.691	-1.593	-2.118	-2.459	-2.230	-2.841
Denmark_02	NH_3	3.D.e	-5.407	-5.419	-5.401	-5.375	-5.452	-5.400	-5.407
Denmark_03	NMVOC	3.B	-35.436	-35.306	-35.663	-35.842	-35.714	-35.790	-35.783
Total (DK)	**NH_3**		-7.547	-7.110	-6.994	-7.492	-7.911	-7.630	-8.248
Total (DK)	**NMVOC**		**-35.436**	**-35.306**	**-35.663**	**-35.842**	**-35.714**	**-35.790**	**-35.783**
Finland 12-14	NH_3	1.A.4	-0.479	-0.372	-0.391	-0.340	-0.353	-0.339	-0.381
Finland 15-18	NH_3	1.A.3.b.i-iv	-1.514	-1.400	-1.278	-1.183	-1.102	-1.015	-0.928
Total (FI)	**NH_3**		**-1.992**	**-1.772**	**-1.669**	**-1.523**	**-1.455**	**-1.354**	**-1.309**
France	NO_x	1.A.3.b.i-iv	-145.725	-151.759	-154.585	-162.77	-162.945	-159.974	-150.387
Total (FR)	**NO_x**		**-145.725**	**-151.759**	**-154.585**	**-162.770**	**-162.945**	**-159.974**	**-150.387**
Germany-A	NO_x	1.A.3.b	-172.334	-174.453	-177.424	-180.36	-171.479	-148.858	-123.219
Germany-B	NO_x	3.B	-2.046	-2.007	-1.98	-1.976	-1.985	-1.963	-1.944
Germany-C	NO_x	3.D	-112.046	-122.386	-118.045	-120.72	-122.814	-128.861	-124.282
Germany-D	NO_x	3.I	-0.161	-0.183	-0.154	-0.176	-0.174	-0.177	-0.179
Germany-B	NMVOC	3.B	-191.736	-191.699	-194.108	-198.356	-198.946	-197.118	-194.505
Germany-C	NMVOC	3.D	-9.491	-8.992	-10.021	-10.323	-11.34	-9.846	-9.632
Germany-D	NH_3	3.D	-36.939	-46.34	-48.454	-56.279	-56.829	-57.31	-57.749
Germany-D	NH_3	3.I	-2.999	-3.401	-2.877	-3.277	-3.248	-3.299	-3.325
Total (DE)	**NO_x**		**-286.587**	**-299.029**	**-297.603**	**-303.232**	**-296.452**	**-279.859**	**-249.624**
Total (DE)	**NMVOC**		**-201.227**	**-200.691**	**-204.129**	**-208.679**	**-210.286**	**-206.964**	**-204.137**
Total (DE)	**NH_3**	s	**-39.938**	**-49.741**	**-51.331**	**-59.556**	**-60.077**	**-60.609**	**-61.074**
Luxembourg	NO_x	1.A.3.b.i-iv	-2.849	-3.076	-3.243	-3.344	-3.455	-3.327	-3.102

Reference number	*Pollutant*	*NFR*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Luxembourg	NO_x	3.B	-0.056	-0.053	-0.052	-0.054	-0.056	-0.056	-0.056
Luxembourg	NO_x	3.D	-0.917	-0.97	-0.918	-0.935	-0.896	-0.912	-0.947
Luxembourg [a]	NMVOC	3.B	-3.855	-3.718	-3.628	-3.736	-3.858	-3.944	-4.005
Luxembourg	NMVOC	3.D.e	-0.113	-0.113	-0.113	-0.113	-0.113	-0.113	-0.112
Total (LU)	**NO_x**		**-3.822**	**-4.099**	**-4.213**	**-4.333**	**-4.407**	**-4.295**	**-4.105**
Total (LU)	**NMVOC**		**-3.651**	**-3.521**	**-3.436**	**-3.539**	**-3.655**	**-3.731**	**-3.787**
Spain 1-2	NO_x	1.A.3.b.i; 1.A.3.b.iii	-132.486	-125.727	-115.287	-114.974	-114.377	-89.968	N/A
	NO_x	3.B	-3.918	-3.965	-3.870	-3.818	-3.885	-4.145	N/A
Total (ES)	**NO_x**		**-136.403**	**-129.692**	**-119.156**	**-118.792**	**-118.263**	**-94.113**	**N/A**

N/A = not applicable;
a – figures as revised by the expert review team

D. Recommendations from the reviewers

53. The declarations on consistent reporting of approved adjustments that had been provided by countries on a voluntary basis were evaluated by the reviewers and made the assessment process more efficient. It is recommended that the Steering Body continue to encourage countries to submit these declarations annually, together with the completed annex VII to the reporting guidelines.

54. In the road transport sector, Parties should provide transparent information on assumed emission factors, particularly when making original emission estimates for years in which the emission factors available in the original models are not applicable. For this calculation, the reviewers consider it best practice to continue to use Euro 4 emission factors, which reflect the information available at the time, rather than those established after the 2010 emission ceilings were agreed.

55. The reviewers recognized that more detailed information should accompany annex VII to the reporting guidelines where countries recalculate emissions owing to a shift to a higher tier method, improved activity data or a move to country-specific methods. Parties should submit such information annually by the deadline of 15 March so that it can be reviewed in May and June of the same year.

56. It is important that Parties continue to use the same reporting format – i.e., the same units and level of disaggregation across the emission source sectors – for information on previously-approved adjustments. The data-handling systems cannot process the information provided in different submissions unless it is reported in a consistent manner.

57. There is still a high demand for ERT adjustment reviews and unless countries provide complete, sufficient and detailed (NFR categories) information in a timely manner and sufficient resources for reviewers, it may not be possible for adjustment applications to be reviewed and recommendations provided to the EMEP Steering Body in the year of submission.