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# **Review of the 2016 Adjustment Application by Luxembourg**

Expert Review Team Report for the EMEP Steering Body

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## Expert Review Team

<b>Role</b>	<b>Sectors</b>	<b>Name</b>	<b>Country</b>
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Primary expert reviewer	Agriculture 3B, 3De	Mette H. Mikkelsen	Denmark
Secondary expert reviewer	Agriculture 3B, 3De	J Webb	United Kingdom
Basic checks (Step 1 and 2)	N/A	Katarina Mareckova	CEIP

## Executive Summary

1. As mandated by Decision 2012/3 (ECE/EB.AIR/111/Add.1) of the Executive Body to the Convention on Long-range Transboundary Air Pollution (CLRTAP) the nominated expert review team (reviewers) undertook a detailed review of the adjustment application submitted by Luxembourg. The review was undertaken on behalf of the EMEP<sup>1</sup> Steering Body (SB) and following the guidance published in the Annex to decision 2012/12 (ECE/EB.AIR/113/Add.1) and 2014/1 (ECE/EB.Air/130).
2. Each sector of the application was reviewed by two independent sectoral experts during May and June 2016. The findings were discussed at the meeting held from 20-24 June 2016 in Copenhagen at the EEA. The conclusions and recommendations for the EMEP SB are documented in this country report.

**Table ES1: Summary Information on the Submitted Application, Luxembourg 2016**

Reasons for adjustment application (Decision 2012/3, para 6 as amended by decision 2014/1, annex, para 3)	Agriculture: 3B, 3De New sources
Pollutant/sector for which adjustment is applied for	NO <sub>x</sub> , NMVOC
Year(s) for which inventory adjustment is applied	2010 - 2014
Date of notification of adjustment to the Secretariat	17 February 2016
Date of submission of supporting documentation	18 March 2016, resubmission 15 <sup>th</sup> April

3. The expert review team (reviewers) reviewed and evaluated the documents submitted by Luxembourg.
4. **NO<sub>x</sub> and NMVOC emissions from agriculture (3B, 3De):** Luxembourg provided information that transparently presented the addition of “new sources” of NO<sub>x</sub> and NMVOC in the agriculture sector, and also clearly quantified the impact of including these sources. The Expert Review Team has concluded that the application does meet all of the requirements laid out in Decision 2012/12 of the Executive Body of the CLRTAP, and therefore recommends that the EMEP Steering Body **ACCEPT** this adjustment application.
5. The quantity and impact of the adjustment recommended for acceptance is summarized in tables **Table ES2** and **Table ES3** below.

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<sup>1</sup> Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

**Table ES2: Aggregated sum of 2016 inventory adjustments (ktonnes), Luxembourg, 2010-2014**

Pollutant		2010	2011	2012	2013	2014
NOx - agriculture	kt	-0.83	-0.88	-0.83	-0.85	-0.85
NM VOC – agriculture	kt	-2.38	-2.32	-2.28	-2.35	-2.40

**Table ES3: Impact of 2016 inventory adjustments on national emissions, Luxembourg, 2010 and 2014**

Poll.	GP Emission Commitment (kt)	2010 Emission reported in 2016 (kt)	2010 Emission (adjusted) (kt)	Difference (%)	2014 Emission reported in 2016 (kt)	2014 Emissions (adjusted) (kt)	Difference (%)
NOx	11	16.97	16.14	-5%	14.18	13.33	-6%
NM VOC	9	9.81	7.43	-24%	9.83	7.43	-24%

6. **Adjustments approved in 2015:** The ERT has undertaken a full assessment of NOx adjustments for the sectors road transport (1A3bi-iv) previously accepted in 2015 and recommends that the EMEP Steering Body continue accept these adjustments.

**Table ES4: Impact of all inventory adjustments on national emissions, Luxembourg, 2010 and 2014**

Poll.	GP Emission Commitment (kt)	2010 Emission reported in 2016 (kt)	2010 Emission (adjusted) (kt)	Difference (%)	2014 Emission reported in 2016 (kt)	2014 Emissions (adjusted) (kt)	Difference (%)
NOx	11	16.97	13.44	-21%	14.18	10.31	-27%
NM VOC	9	9.81	7.43	-24%	9.83	7.43	-24%

7. Luxembourg's national total emissions will be below the Gothenburg Protocol ceilings from 2013 onwards for NOx, and 2010 onwards for NM VOC, if the proposed adjustments are accepted.

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## 1 Introduction and Context

8. Parties may apply to adjust their inventory data or emission reduction commitments if they are (or expect to be) in non-compliance with their emission reduction targets<sup>2</sup>. However, in making an adjustment application, they must demonstrate that extraordinary circumstances have given rise to revisions to their emissions estimates. These extraordinary circumstances fall into three broad categories:

- a) Emission source categories are identified that were not accounted for at the time when the emission reduction commitments were set; or
- b) 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
- 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.

9. Any Party submitting an application for an adjustment to its inventory is required to notify the Convention Secretariat through the Executive Secretary by 15 February at the latest. The supporting information detailed in Decision 2012/12 must be provided (either as part of the Informative Inventory Report, or in a separate report) by 15 March of the same year.

10. As mandated by Decision 2012/12 as amended by the Decision 2014/1 of the Executive Body of the CLRTAP, applications for adjustments that are submitted by Parties are subject to an expert review<sup>3</sup>. Technical coordination and support to the review is provided by EMEP's Centre on Emission Inventories and Projections (CEIP). The members of the review team are selected from the available review experts<sup>4</sup> that Parties have nominated to the CEIP roster of experts.

11. The reviewers undertake a detailed technical review of the adjustment application in cooperation with the EMEP technical bodies and make a recommendation to the EMEP Steering Body on the acceptance or rejection of the application. The EMEP Steering Body then takes its decision on any adjustment application based on the outcome of the technical assessment completed by the reviewers.

12. The flow diagram below outlines the different stages of the technical review. The following sections of this report are structured in the same way, and describe in detail the findings of the reviewers at each of the decision gates in the process.

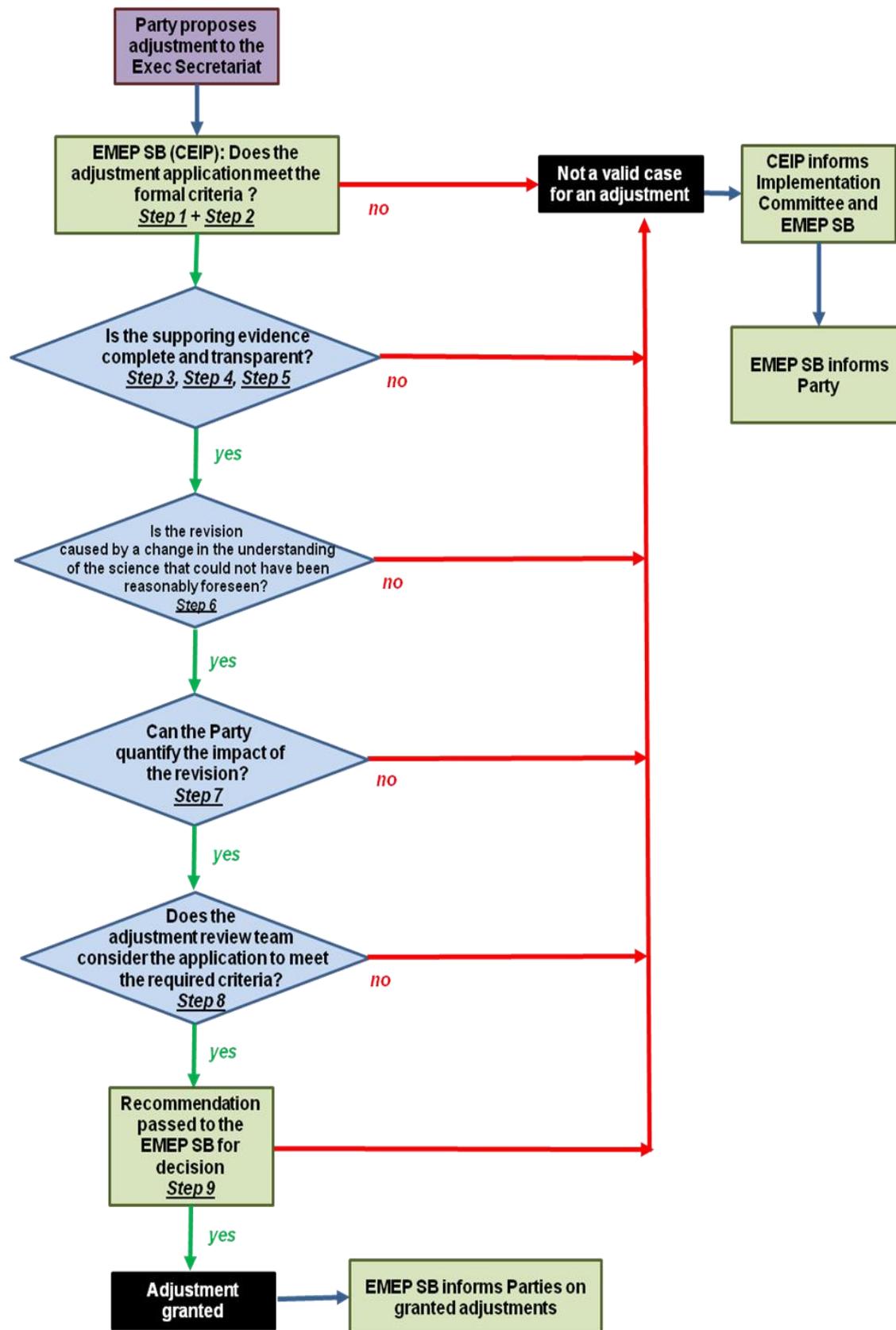
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<sup>2</sup> Throughout this report the term "emission reduction commitments" is used. However, the term "emission ceilings" is equally applicable.

<sup>3</sup> The EMEP Steering Body, in conjunction with other appropriate technical bodies under EMEP, shall review the supporting documentation and assess whether the adjustment is consistent with the circumstances described in paragraph 6 of EB decision 2012/3 and the further guidance in EB decision 2012/12 as amended by EB decision 2014/1 and Technical guidance document ECE/AB.Air/130.

<sup>4</sup> [http://www.ceip.at/fileadmin/inhalte/emep/pdf/2016/0\\_Roster\\_2016.pdf](http://www.ceip.at/fileadmin/inhalte/emep/pdf/2016/0_Roster_2016.pdf)

Figure 1: Flow Diagram/Decision Tree for the Review of Adjustment Applications



## 2 Review of Adjustments Submitted 2016

### 2.1 Assessment of Formal Criteria

13. Luxembourg notified the Convention Secretariat through the Executive Secretary of its intention to apply for a new adjustment on 17/02/2016 and thus after the legal deadline of 15 February. All supporting information requested by Decision 2012/12 amended by Decision 2014/1 was provided as part of the Informative Inventory Report by the legal deadline of the 15 March of the same year that it is being submitted for review by the EMEP Steering Body (Decision 2012/12, annex, para 1), however Luxembourg resubmitted their IIR on the 15<sup>th</sup> April. Additional documentation was provided during the review in response to requests from the reviewers. Section 4 lists the documentation provided by the Party.

14. Luxembourg submitted an application for emissions adjustments to 2010-2014 for the pollutants and sectors indicated below:

- a. NO<sub>x</sub>, NMVOC – Agriculture 3B, 3De.

15. Luxembourg does not comply with its emission reduction commitments listed in Annex II of the Gothenburg Protocol (paragraph 1 of Decision 2012/3).

16. Luxembourg 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.

17. Luxembourg did not include information on when it will meet its emission ceilings for NO<sub>x</sub> and NMVOC without the adjustment in the supporting documentation.

### 2.2 Manure Management 3B (NO<sub>x</sub> and NMVOC), Agricultural Soils 3De (NO<sub>x</sub>, NMVOC)

#### 2.2.1 Assessment of Consistency with Requirements of EB Decision 2012/3 as amended by EB Decision 2014/1

18. Luxembourg made an application based on a new source.

19. The adjustment application requires the provision of specific supporting information to demonstrate compliance with specific criteria (Decision 2012/3, para. 6a-c as amended by decision 2014/1, annex, para 3). Luxembourg provided supporting documentation and the reviewers have reviewed this information (see section 4) with regard to these criteria. The reviewers considered the supporting information provided by Luxembourg to be complete.

20. The reviewers noted that no methodologies for the estimation of NO<sub>x</sub> and NMVOC emissions from manure management (including manure application on land), and agricultural soils 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.

21. The reviewers studied the documentation that was provided to support the application (listed in section 4).

22. The supporting information provided by Luxembourg clearly presented the adjustment totals, but the method of calculation was not transparent. However, as the adjustment application is for a new source, the quantification is equal to the sectoral emissions.

### 2.2.2 Assessment of the Quantification of the Impact of the Revision

23. The adjustment application process requires that Luxembourg submits a quantification of the impact of the adjustment for which an application has been submitted. Table 1 provides an overview of the NO<sub>x</sub> adjustment applications of Luxembourg in the Agriculture sector.

**Table 1: Luxembourg's NO<sub>x</sub> and NMVOC adjustment applications for agriculture, 2010-2014**

Reference number	Pollutant	NFR14	unit	2010	2011	2012	2013	2014
LU_3B_NOx	NO <sub>x</sub>	3B	kt	-0.05	-0.05	-0.05	-0.05	-0.05
LU_3D_NOx	NO <sub>x</sub>	3De	kt	-0.77	-0.83	-0.78	-0.79	-0.80
	<b>NO<sub>x</sub></b>	<b>Total</b>	<b>kt</b>	<b>-0.83</b>	<b>-0.88</b>	<b>-0.83</b>	<b>-0.85</b>	<b>-0.85</b>
Reference number	Pollutant	NFR14	unit	2010	2011	2012	2013	2014
LU_3B_NMVOC	NMVOC	3B	kt	-2.27	-2.21	-2.17	-2.24	-2.29
LU_3D_NMVOC	NMVOC	3De	kt	-0.11	-0.11	-0.11	-0.11	-0.11
	<b>NMVOC</b>	<b>Total</b>	<b>kt</b>	<b>-2.38</b>	<b>-2.32</b>	<b>-2.28</b>	<b>-2.35</b>	<b>-2.40</b>

24. The reviewers were not able to determine whether the quantification of the recalculations, as calculated by Luxembourg, includes any calculation errors or is in line with the most up-to-date available EMEP/EEA Inventory guidebook and scientific literature.

25. In the 2016 submission, Luxembourg reported NO<sub>x</sub> and NMVOC emissions from manure management category 3B and NMVOC emission from agricultural soils 3De for the first time. Luxembourg explained that this improvement is based on the updated EMEP/EEA Guidebook (2013) which provides new EFs for animal husbandry, manure management and agricultural soils. At the time of setting the reduction commitments no valid methodology was provided by the 1999 Guidebook.

26. In its application for an adjustment Luxembourg indicated that its national totals of both NO<sub>x</sub> and NMVOC emissions would be below their ceilings in accordance with the Gothenburg Protocol from 2013 onwards, if the proposed adjustments are accepted, although the reviewers note that the NMVOC emissions would be below the Gothenburg ceilings from 2010 onwards.

27. The reviewers concluded that increased emissions are based on new emission sources reported by Luxembourg, and are not the result of new agricultural activities causing additional emissions in Luxembourg. The reviewers are therefore of the opinion that this is a valid case for an adjustment.

### 3 Assessment of Adjustments Accepted in 2015

28. In addition to adjustment applications submitted in 2016, the ERT reviewed the adjustments granted in 2015. Luxembourg had an adjustment granted in 2015 for NO<sub>x</sub> emissions from road transport (1A3bi-iv) and reported these in 2016. See report Review of the 2015 adjustment application by Luxembourg for detailed information.

29. The ERT undertook a full and thorough assessment of Luxembourg's quantification of the adjustments granted in 2015 and noted that the adjustments were identical to those granted in 2015.

30. The ERT concluded that the adjustments continue to meet all the requirements set out in Executive Body decision 2012/12 and in the Technical Guidance. The ERT therefore recommends that the EMEP Steering Body continue accept the reported adjustments for Luxembourg.

**Table 2: Emission adjustments approved in 2015, as reported by Luxembourg in 2016**

Reference number	Pollutant	NFR14	unit	2010	2011	2012	2013	2014
LU_1A3b_NOx	NO <sub>x</sub>	1A3bi-iv	kt	-2.70	-2.87	-2.97	-3.02	-3.02

### 4 Conclusions and Recommendations

31. The reviewers have undertaken a full and thorough assessment of the application for an adjustment of the NO<sub>x</sub> and NMVOC emissions inventory that was submitted by Luxembourg for Agriculture 3B and 3De.

32. 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. The findings of the reviewers are described in detail in Section 2 of this report.

33. Table 3 below provides a summary of the adjustment applications received from Luxembourg, and the subsequent recommendations made by the reviewers to the EMEP SB.

**Table 3: Recommendations from the reviewers to the EMEP SB, Luxembourg 2016**

Country	Sector	NFRs	Pollutant	Years	reviewers Recommendation
Luxembourg	Agriculture	3B	NO <sub>x</sub>	2010- 2014	Accept
Luxembourg	Agriculture	3De	NO <sub>x</sub>	2010- 2014	Accept
Luxembourg	Agriculture	3B	NMVOC	2010- 2014	Accept
Luxembourg	Agriculture	3De	NMVOC	2010- 2014	Accept

34. **Agriculture 3B 3De, NO<sub>x</sub> NMVOC:** Luxembourg provided information to support their application for an adjustment. During the review, the reviewers requested further information and clarifications from the Party – in particular, information that allowed the reviewers to assess the quantification of the adjusted national totals. However, Luxembourg was not able to provide this

during the review. The reviewers noted that the quantification of the adjustment is equal to the emissions from the relevant NFR category, and can therefore be deduced, and the reviewers therefore recommend that the EMEP Steering Body **ACCEPT** this adjustment application. However the reviewers also recommend that a full review of this adjustment, and in particular the methodology, is undertaken in 2017.

35. **Adjustment approved in 2015:** The ERT has undertaken an assessment of NO<sub>x</sub> adjustments for the road transport (1A3bi-iv) reported in 2016 which was previously accepted in 2015 and recommends that the EMEP Steering Body continue ACCEPT this adjustment.

## 5 Information Provided by the Party

36. Table 4 lists the information provided by the Party in its adjustment application. The information provided by Party can be downloaded from the CEIP website<sup>5</sup>.

**Table 4: Information provided by Germany**

Filename	Short description of content
LU_CLRTAP_2016v1_Notification_2016v1_160215.docx	The notification of a 2016 adjustment application
LU_CLRTAP_2016v1_Appendix_B1_Adjustment_Application_Tables_VIII_160215.xlsx	The detailed calculations for the quantification of the 2016 adjustments.
LU_IIR_2016_draft_160315_v4.pdf	The Informative Inventory Report provided by Luxembourg.

37. The CEIP and the reviewers found it necessary to ask Luxembourg for further information. The information was partly provided in an email.

**Table 5: Additional information provided by Luxembourg**

Filename	Short description of content
E-mail send to Luxembourg 23/6-2016	The reviewers have asked for more information regarding the calculation of NO emission from livestock production (NFR 3B). Luxembourg replied with a partial answer. However, the national expert didn't have the opportunity to answer during the review week.

<sup>5</sup> [http://www.ceip.at/ms/ceip\\_home1/ceip\\_home/adjustments\\_gp/](http://www.ceip.at/ms/ceip_home1/ceip_home/adjustments_gp/)

## 6 References

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.

Data submitted by Parties applying for an adjustment:

[http://www.ceip.at/ms/ceip\\_home1/ceip\\_home/adjustments\\_gp/](http://www.ceip.at/ms/ceip_home1/ceip_home/adjustments_gp/)

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, 2<sup>nd</sup> 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/](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

The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone [http://www.unece.org/env/lrtap/multi\\_h1.html](http://www.unece.org/env/lrtap/multi_h1.html)