

Final report of the 2012 technical
review of the greenhouse gas emission
inventory of Lithuania
to support the determination of annual emission
allocations under Decision 406/2009/EC

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Content

Introduction	3
Review Objectives	3
Review approach and scope	4
ESD 2012 technical review conclusions	5
Table 1. Main conclusions from the TERT	5
Statement from Lithuania on the conclusions of the TERT	5
Table 2. Summary of national totals, including any revised estimates or technical corrections identified during the review	6
Annex 1 – Recommendations, revised estimates and technical corrections	8
Table 3. Recommendations of the TERT	8
Annex 2 – Detailed technical corrections	11
Annex 3 – Checks and tests completed	12
Annex 4 – Correspondence references.....	14

Introduction

Pursuant to Article 3.2 of Decision 406/2009/EC⁽¹⁾ (the 'Effort Sharing Decision' – ESD), the European Commission shall determine the annual emission allocations (maximum allowed greenhouse gas emissions) of Member States for the period from 2013 to 2020 in tonnes of carbon dioxide equivalent (CO₂ eq.), using reviewed and verified emission data.

Complete sets of greenhouse gas (GHG) emission estimates for the reference years (2005, 2008, 2009 and 2010) were submitted by each Member State by the 15th of May, 2012 as part of the 2012 national inventory submission under Decision 280/2004/EC (the 'Monitoring Mechanism Decision' – MMD). These estimates must have been reviewed to allow the determination in 2012 of the annual emission allocations for the period from 2013 to 2020.

The 'Guidelines for the 2012 technical review of greenhouse gas emission inventories to support the determination of Member States' annual emission allocations under Decision 406/2009/EC' were endorsed by the Climate Change Committee on 19 May 2011 and published as a European Commission Staff Working Document on 26 April 2012⁽²⁾. The 2012 greenhouse gas emission inventory of Lithuania was reviewed in accordance with these guidelines.

This report presents the findings of the 2012 technical review of the greenhouse gas emission inventory of Lithuania to support the determination of annual emission allocations under Decision 406/2009/EC.

Review Objectives

The purpose of the technical review of Member States' GHG inventories is to support the determination of the annual emission allocations by:

- a) ensuring that the European Commission has accurate, reliable and verified information on annual GHG emissions for the years 2005, 2008, 2009 and 2010 to determine the annual emission allocations under Decision 280/2004/EC;
- b) providing the European Commission and its Member States with a consistent, transparent, thorough and comprehensive technical assessment of GHG emissions, with a focus on data for the years 2005, 2008, 2009 and 2010 reported in 2012;
- c) examining, in a facilitative and open manner, the reported inventory information for consistency with the 'Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories', with the 2000 'Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories', and with the requirements of Decision 280/2004/EC (the 'Greenhouse Gas Monitoring Mechanism' Decision)⁽³⁾;

⁽¹⁾ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020. OJ L 140, 5.06.2009, p. 136.

⁽²⁾ Commission Staff Working Document of 26 April 2012: Guidelines for the 2012 technical review of greenhouse gas emission inventories to support the determination of Member States' annual emission allocations under Decision 406/2009/EC. SWD(2012) 107 final.

⁽³⁾ Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto protocol. OJ L 140, 5.06.2009, p. 136.

- d) assisting Member States in improving the quality of their GHG inventories.

Review approach and scope

The technical review of the 2012 GHG inventory estimates of Lithuania for the years 2005, 2008, 2009 and 2010 was performed by a Technical Expert Review Team (TERT) under service contract 2011/S 234-378130 to the Directorate General for Climate Action of the European Commission.

The review was conducted by the following experts: Kristien Aernouts & Tomas Gustafson for Stationary combustion (CRF categories 1.A.1, 1.A.2, 1.A.4, 1.A.5) + Reference approach; Maria Liden & Tinus Pulles for CRF categories 1.A.3 Transport + 1.C International bunkers; Ralph Harthan & John Watterson for CRF category 1.B Fugitive; Anke Herold & IIs Moorkens for CRF categories 2.A Mineral products + 2.B Chemical industry + CRF sector 3 Solvents; Kristina Saarinen & Dusan Vacha for CRF categories 2.C Metal production + 2.D Other production + 2.G Other; Maria Jose Lopez & Karin Kindbom for CRF categories 2.E Production of Halocarbons and SF₆ + 2.F Consumption of Halocarbons and SF₆; Michael Anderl & Steen Gyldenkaerne for CRF categories 4.A Enteric fermentation + 4.B Manure management; Sorin Deaconu & Etienne Mathias for CRF categories 4.C Rice cultivation + 4.D Agricultural soils, 4.E Prescribed burning of savannas, 4.F Field burning of agricultural residues; Juraj Farkas & Celine Gueguen for CRF sector 6 Waste. Ole-Kenneth Nielsen, Suvi Monni, Klaus Radunsky and Tatiana Tugui acted as lead reviewers. The review was coordinated by Bernd Gugele and Justin Goodwin. The TERT acknowledges the support of the EEA review secretariat Martin Adams, Francois Dejean and Melanie Sporer.

This technical review was performed on the basis of GHG emission data and the national inventory report (NIR) officially reported by Member States by the 15th of April, 2012 under the MMD. Resubmissions reported by Member States were taken into account until the 15th of May, consistent with the reporting practice for resubmissions under Decision 280/2004/EC. Emissions from international transport and land use, land-use change and forestry (LULUCF) were not reviewed. The review was performed with a focus on data for the years 2005, 2008, 2009 and 2010, reported in 2012.

The technical review process for GHG inventories comprised three stages, each of which considered different aspects of the inventories in such a way that the purposes described above were achieved by the end of the process. The three stages were:

- Stage 1, completed by 15 April 2012 – initial completeness checks of each Member State GHG inventory (submitted by 15 January and by 15 March);
- Stage 2, completed by 15 April 2012 – initial consistency and comparability checks of each Member State GHG inventory (submitted by 15 January and by 15 March);
- Stage 3, to be completed by the end of August 2012 – detailed *technical review* of each Member State GHG inventory (submitted by 15 May).

The detailed timeline of the review, including a summary of the correspondence with Lithuania, is presented in Annex 4.

ESD 2012 technical review conclusions

Table 1. Main conclusions from the TERT

Findings
1. The TERT considers that the GHG emission inventory estimates of Lithuania for the years 2005, 2008, 2009 and 2010 submitted in 2012 under the MMD included emission overestimates .
2. The TERT did not identify inconsistency issues between the reported GHG emission inventory estimates and verified emission data under the EU ETS.
3. During the course of the technical review, the TERT received revised GHG emission inventory estimates from Lithuania in response to its initial findings (see Table 2).
4. The TERT considers that the aggregated revised GHG emission inventory estimates from Lithuania for the years 2005, 2008, 2009 and 2010 do not include emission overestimates .
5. The TERT suggests that it is not necessary to implement any technical correction to the GHG emission inventory estimates and to amend the reported GHG total.
6. As stated beneath Table 1, Lithuania accepts the aggregated GHG emission inventory estimates presented in Table 2 including any revised estimate received from Lithuania and accepted by the TERT.
7. The TERT identified non-binding recommendations for improvements of Lithuania's GHG inventory (see Table 3 in Annex 1).
8. The TERT considers that it received a response from Lithuania that was sufficient in order to undertake the review appropriately.

Statement from Lithuania on the conclusions of the TERT

Thank you for the incorporation of our comments into the report. We also checked updated values in Table 2 and confirm that the numbers are correct.

Table 2. Summary of national totals, including any revised estimates or technical corrections identified during the review

Data / Category	Reference	Status of GHG emission revision or correction	2005	2008	2009	2010
			Gg CO ₂ eq.	Gg CO ₂ eq.	Gg CO ₂ eq.	Gg CO ₂ eq.
Total GHG emissions as reported in the 2012 submission under the MMD	16 May 2012, LTU-2012-v2.3		22 918.616	24 330.850	19 959.467	20 809.737
Revised estimates provided by Lithuania (⁴)						
Crop residue, N ₂ O	19.06.2012, LT_Agriculture recalculations 20120619.xls, LT-4C-4F-3	Accepted by the TERT	-139.691	-119.557	-131.649	-89.229
N-fixing crops, N ₂ O	19.06.2012, LT_Agriculture recalculations 20120619.xls, LT-4C-4F-3	Accepted by the TERT	75.698	65.776	67.470	26.681
Total GHG emissions including any accepted revised estimate received from Lithuania and/or technical correction as proposed by the TERT			22 854.624	24 277.068	19 895.287	20 747.188

⁴ Difference: revised estimates – original estimates. A positive difference indicates an increase compared to reported emissions. A negative difference indicates a decrease compared to reported emissions. For more information on revised estimates, see Annex 1.

CO₂ emissions from 1.A.3.a Civil aviation	16 May 2012, LTU-2012-v2.3		1.777	4.355	2.560	1.621
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Note: National totals exclude emissions from LULUCF and emissions reported under memo items (e.g. international aviation and maritime transport)

Annex 1 – Recommendations, revised estimates and technical corrections

Table 3. Recommendations of the TERT

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
No	2.A.2. Lime production CO ₂ 1990–2010	Production of lime occurs in the sugar factories in Lithuania, but emissions from auto-produced lime in sugar factories were not estimated. Omitting those emissions leads to underestimation of emissions.	The TERT recommends that Lithuania estimate emission from lime production in the sugar factories, using appropriate activity data and EF.	No	No
No	2.F(a).1. Refrigeration and air conditioning equipment HFC 2005–2010	The TERT noted that the uncertainty of the estimates of HFC emissions from refrigeration and air conditioning equipment is high. Users of F-gases provided initial data on imports and use of F-gases in 2009 but the TERT concluded that the collected data was not complete and accurate.	The TERT recommends that Lithuania collect new national data to improve on the estimates on HFC emissions from refrigeration and air conditioning equipment and include detailed descriptions on activity data, EFs, methods and assumptions in the NIR.	No	No
No	2.F(a).2. Foam blowing HFC 2005–2010	HFC emissions from foam blowing are estimated using data on the use of imported foam products. The data was collected in a survey of the biggest companies importing foam products. Only two companies confirmed the use of products containing F-gases. The TERT concluded that this may not represent all HFCs	The TERT recommends that Lithuania explore possibilities to improve national data collection to ensure that emissions are not underestimated. The TERT also recommends that Lithuania continue increasing its efforts in applying quality assurance and quality control procedures and include detailed	No	No

⁵ The GHG emission estimate for this category was revised by Lithuania during the technical review.

⁶ The GHG emission estimate for this category is subject to a technical correction proposal by the TERT.

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		released from foams in the country.	descriptions on activity data, EFs, methods and assumptions in the NIR.		
No	2.F(a).3. Fire extinguishers HFC 2005–2010	Estimates of HFC emissions from fire extinguishers for the period 2000–2010 are based on 2009 activity data with additional assumptions on annual increase from 2000. The TERT noted that this may not accurately reflect the real consumption of HFCs from this sector for the years 2000 – 2008.	The TERT recommends that Lithuania collect new national data to improve the estimates on HFC emissions from fire extinguishers and include detailed descriptions on activity data, EFs, methods and assumptions in the NIR.	No	No
No	2.F(a).4. Aerosols HFC 2005–2010	Estimates of HFC emissions from aerosols are elaborated using data on sales. During the ESD review Lithuania confirmed that the completeness of the inventory has not been assessed and no explanations on the annual changes of emissions are provided in the NIR.	The TERT recommends that Lithuania investigates the quality and completeness of the reported data and ensure that emissions are not underestimated.	No	No
No	2.F(a).8. Electrical equipment SF ₆ 2005–2010	The trend of SF ₆ emissions from electrical equipment fluctuates, and emissions are particularly low in 2008 and 2009. The estimates are based on data from companies. In response to a question from the TERT Lithuania explained that emission estimates for 2008 and 2009 are rather low due to zero emissions from electrical equipment breakdown reported by electrical companies for 2008 and 2009.	The TERT recommends that Lithuania ensure that the emissions from electrical equipment are not underestimated, and revise the estimates if appropriate. The TERT also recommends that Lithuania increase the quality assurance and quality control procedures for data provided by industries.	No	No
Yes	4.D.1.4. Crop residue N ₂ O 1990-2010	The TERT noted that Lithuania estimated the N ₂ O emissions from crop residues using a combination of Tier 1a and 1b approaches based on equations 4.28 and 4.29 in the IPCC good practice guidance and a value of 0.45 for the fraction of total aboveground	The TERT recommends that Lithuania revise its GHG inventory following the revision submitted to TERT.	Yes	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		<p>biomass that is removed from field as crop ($Frac_R$) from IPCC 1996 Guidelines. The use of a value of 0.45 for $Frac_R$ is inconsistent with the provisions in pages 4.59 and 4.63 of 2000 IPCC Good Practice Guidance (GPG): the equation 4.28 of 2000 IPCC GPG uses a default value of 2 to convert the nitrogen amount in the N-fixing and non-N-fixing crops annual production to total aboveground crop residue and product which is not consistent with the $Frac_R$ value of 0.45. The use of a $Frac_R$ value of 0.45 led to emissions overestimation. During the review, Lithuania submitted revised emissions estimates associated with the Crop residues category. TERT agreed with the revised emissions estimates submitted by Lithuania.</p>			
Yes	N-fixing crops N ₂ O 1990-2010	<p>The TERT noted that lucerne and clover were not taken into account in the estimation of emissions from N-fixing crops, which led to underestimation of emissions. During the review, Lithuania submitted revised emissions estimates. TERT agreed with the revised emissions estimates submitted by Lithuania.</p>	<p>The TERT recommends that Lithuania revise its GHG inventory following the revision submitted to TERT.</p>	Yes	No

Annex 2 – Detailed technical corrections

There are no technical corrections applied to Lithuania's estimates of emissions.

Annex 3 – Checks and tests completed

The initial checks (stage 1 and 2 checks), which cover the national inventory submissions, informed the stage 3 technical review with a view to:

- a) assess whether all emission source categories and gases are reported as required under Decision 280/2004/EC;
- b) assess whether sub-category sums are consistent with sectoral and national totals;
- c) assess whether emission data time series are consistent;
- d) assess whether implied emission factors across Member States are comparable;
- e) assess the use of 'Not Estimated' notation keys where IPCC Tier 1 methodologies exist;
- f) compare with the previous year's inventory submission of the Member State;
- g) limited sector-specific checks performed by ETC/ACM sector experts.

The EU initial checks were extended in 2012 to address additional elements needed for the 2012 technical review. The extended checks included:

- a) a detailed analysis of recalculations performed for the 2012 inventory submissions, in particular if recalculations are based on methodological changes.
- b) a comparison of the verified emissions reported under the EU ETS with the greenhouse gas emissions reported in GHG inventories. The verified emissions under the EU ETS are not fully comparable with the emissions reported in the GHG inventories. This comparison may only highlight areas where some Member States' data and trends deviate considerably from those of other Member States.
- c) a comparison of the results from Eurostat's reference and sectoral approach, based on energy data reported under Regulation (EC) No 1099/2008, with the Member States' reference and sectoral approach.

The specific activities of the 2012 technical review included:

- a) an analysis of the Member States' implementation of recommendations related to improving inventory estimates in accordance with the Revised 1996 IPCC Guidelines and the 2000 IPCC good practice guidance (GPG) as listed in the UNFCCC Annual Review Reports from the 2010 and 2011 UNFCCC review processes. Where UNFCCC recommendations have not been implemented, the analysis included an assessment as to whether the Member State provided adequate justification for this;
- b) an assessment of the time series consistency of the greenhouse gas emissions estimates, with a particular focus on the 2005 and 2008-2010 estimates;
- c) checking whether problems identified for one Member State in UNFCCC reviews might also have been a problem for other Member States (whether identified by the UNFCCC expert review team or not);
- d) an assessment of any recalculations made by a Member State in its inventory since the previous submission, and an assessment as to whether these were transparently reported and were in accordance with IPCC good practice guidance;
- e) a follow-up on any outstanding findings from existing and extended stage 1 and 2 checks;
- f) the inclusion of revised estimates as provided by Member States in response to the review, and as accepted by the TERT during the review;

- g) the provision of an estimate for any 'technical correction' to emission estimates reported by a Member State where it is believed that emissions reported by the Member State are overestimated, and a statement of the significance of these 'technical corrections' in comparison to the overall reported inventory estimates;
- h) the provision of recommendations where problems have been identified that do not require technical corrections.

Material from previous UNFCCC inventory reviews was used to inform the technical review, including the previous years' Annual Review Reports, which provide an indication of the overall quality of the inventory.

The TERT used additional technical information in the review process, such as EU ETS data, information from Eurostat, and F-gas data from the 'Preparatory study for a review of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases (⁷), as well as data from other international organisations.

⁷ Service contract 070307/2009/548866/SER/C4 to the European Commission

Annex 4 – Correspondence references

Date	Reference
26 April 2012	Final NIR submission under the MMD
16 May 2012	Final CRF submission under the MMD, version LTU-2012-v2.3
21, 23 May 2012	Initial questions raised by the TERT during the desk review
7, 13, 14 June 2012	Additional questions raised by the TERT during the centralised review
1, 4, 8, 15, 19, 20 June 2012	Responses from Lithuania to TERT questions
13 July 2012	Draft review report from TERT to Lithuania
3 August 2012	Response from Lithuania to draft review report
13 August 2012	Draft final review report from TERT to Lithuania
16 August 2012	Response and additional information from Lithuania to final review report
17 August 2012	Final review report to European Commission