



United Nations

FCCC/ARR/2015/LTU



Framework Convention on
Climate Change

Distr.: General
6 March 2017

English only

Report on the individual review of the annual submission of Lithuania submitted in 2015*

Note by the expert review team

Summary

Each Party included in Annex I to the Convention must submit an annual greenhouse gas (GHG) inventory covering emissions and removals of GHG emissions for all years from the base year (or period) to two years before the inventory due date (decision 24/CP.19). Parties included in Annex I to the Convention that are Parties to the Kyoto Protocol are also required to report supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol, with the inventory submission due under the Convention. This report presents the results of the individual inventory review of the 2015 annual submission of Lithuania, conducted by an expert review team in accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol”. The review took place from 5 to 10 September 2016 in Bonn, Germany.

* In the symbol for this document, 2015 refers to the year in which the inventory was submitted, not to the year of publication.

GE.17-03492(E)



* 1 7 0 3 4 9 2 *

Please recycle 



Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction	1–6	3
II. Summary and general assessment of the 2015 annual submission.....	7	4
III. Status of implementation of issues and/or problems raised in the previous review report	8	7
IV. Issues identified in three successive reviews and not addressed by the Party	9	13
V. Additional findings made during the 2015 technical review	10	14
VI. Application of adjustments.....	11	35
VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol	12	35
VIII. Questions of implementation	13	35
 Annexes		
I. Overview of greenhouse gas emissions and removals for Lithuania for submission year 2015 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol		36
II. Information to be included in the compilation and accounting database		41
III. Additional information to support findings in table 2		42
IV. Documents and information used during the review		43
V. Acronyms and abbreviations		45

I. Introduction¹

1. This report covers the review of the 2015 annual submission of Lithuania organized by the UNFCCC secretariat, in accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol” (decision 22/CMP.1, as revised by decision 4/CMP.11) (hereinafter referred to as the Article 8 review guidelines). As indicated in the Article 8 review guidelines, this review process also encompasses the review under the Convention, as described in the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” (hereinafter referred to as the UNFCCC review guidelines) and particularly part III, “UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention”. The review took place from 5 to 10 September 2016 in Bonn, Germany, and was coordinated by Ms. Suvi Monni and Mr. Pedro Torres (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of Lithuania.

Table 1

Composition of the expert review team that conducted the review of Lithuania

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	Mr. Ricardo Fernandez	European Union
	Mr. Michael Strogies	Germany
Energy	Mr. Jerome Elliott	Bahamas
	Ms. Carmen Meneses Lopez	Bolivarian Republic of Venezuela
	Mr. Anand Sookun	Mauritius
	Ms. Songli Zhu	China
IPPU	Ms. Valentina Idrissova	Kazakhstan
	Mr. Kakhaberi Mdivani	Georgia
Agriculture	Ms. Marta Alfaro	Chile
	Mr. Yuriy Pyrozhenko	Ukraine
LULUCF	Mr. Javier Fernandez	Costa Rica
	Mr. Vladimir Korotkov	Russian Federation
	Ms. Diana Marcela Vargas	Colombia
Waste	Ms. Maryna Bereznytska	Ukraine
	Mr. Ching Tiong Tan	Malaysia

¹ At the time of publication of this report, Lithuania had not yet submitted its instrument of ratification of the Doha Amendment, and the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Lead reviewers	Mr. Ricardo Fernandez Ms. Songli Zhu	

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry.

2. This report contains findings based on the assessment by the ERT of the 2015 annual submission against the Article 8 review guidelines. The ERT has made recommendations to resolve those findings related to issues,² including issues related to problems.³ Other findings, and if applicable, the ERT’s encouragements to resolve them, are also included.

3. A draft version of this report was communicated to the Government of Lithuania, which provided no comments.

4. Annex I shows annual greenhouse gas emissions for Lithuania, including totals excluding and including the land use, land-use change and forestry sector, indirect carbon dioxide emissions and emissions by gas and by sector. Annex I also contains background data related to emissions and removals from activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and additional activities under Article 3, paragraph 4, of the Kyoto Protocol, if elected, by gas, sector and activity for Lithuania.

5. Information to be included in the compilation and accounting database can be found in annex II.

6. The ERT notes that Lithuania’s 2015 annual submission was delayed, consistent with decision 6/CMP.9, paragraph 4. As a result, the review of the 2015 annual submission is being held in conjunction with the review of the 2016 annual submission, in accordance with decision 10/CMP.11, paragraph 1. To the extent that identical information is presented in both annual submissions, the ERT has reviewed this information only once, and, as appropriate, has replicated the findings below in both the 2015 and the 2016 annual review reports.

II. Summary and general assessment of the 2015 annual submission

7. Table 2 provides the ERT assessment of the annual submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5 below.

Table 2
Summary of review results and general assessment of the inventory of Lithuania

<i>Assessment</i>	<i>Issue or problem ID#s in tables 3 and/or 5^a</i>
Dates of submission	Original submission: 17 June 2016 (NIR), 15 June 2016, version 2 (CRF tables), 7 June 2016 (SEF tables)

² Issues are defined in decision 13/CP.20, annex, paragraph 81.

³ Problems are defined in decision 22/CMP.1, annex, paragraphs 68 and 69, as revised by decision 4/CMP.11.

<i>Assessment</i>			<i>Issue or problem ID#s in tables 3 and/or 5^a</i>
	Revised submissions: 14 October 2016, version 3 (CRF tables)		
	The values from the latest submission are used in this report		
Review format	Centralized		
Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and Wetlands Supplement (if applicable)	Have any issues been identified in the following areas:		
	1. Identification of key categories	No	
	2. Selection and use of methodologies and assumptions	Yes	L.5
	3. Development and selection of emission factors	No	
	4. Collection and selection of activity data	Yes	L.6
	5. Reporting of recalculations	No	
	6. Reporting of a consistent time series	No	
	7. Reporting of uncertainties, including methodologies	No	
	8. QA/QC	QA/QC procedures were assessed in the context of the national system (see below)	
	9. Missing categories/completeness ^b	Yes	L.7
	10. Application of corrections to the inventory	No	
Significance threshold	For categories reported as insignificant, has the Party provided sufficient information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines?	The Party did not report “NE” for any insignificant categories	
Description of trends	Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable?	Yes	
Supplementary information under the Kyoto Protocol	Have any issues been identified in the following areas:		
	1. National system:		
	(a) The overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements	No	
	(b) Performance of the national system functions	No	
	2. National registry:		
	(a) Overall functioning of the national registry	No	

<i>Assessment</i>	<i>Issue or problem ID#s in tables 3 and/or 5^a</i>
(b) Performance of the functions of the national registry and the technical standards for data exchange	No
3. ERUs, CERs, AAUs and RMUs and on information on discrepancies reported in accordance with decision 15/CMP.1, annex, chapter I.E, taking into consideration any findings or recommendations contained in the SIAR	Yes G.9
4. Matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, including any changes since the previous annual submission	No
5. LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol:	
(a) Reporting in accordance with the requirements of decision 2/CMP.8, annex II, paragraphs 1–5	No
(b) The Party has demonstrated methodological consistency between the reference level and reporting on forest management in accordance with decision 2/CMP.7, annex, paragraph 14	No
(c) The Party has reported information in accordance with decision 6/CMP.9	No
(d) The Party plans to apply the provisions for natural disturbances to afforestation and reforestation	No
(e) The Party plans to apply the provisions for natural disturbances to forest management	No
(f) Country-specific information has been reported to support provisions for natural disturbances, in accordance with decision 2/CMP.7, annex, paragraphs 33 and 34	NA
(g) Other issues	No
CPR Was the CPR reported in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision 1/CMP.8, paragraph 18?	Yes
Adjustments Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol?	No
Response from the Party during the review Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for the assessment of conformity with the UNFCCC Annex I inventory reporting guidelines and any	Yes

Assessment	Issue or problem ID#s in tables 3 and/or 5 ^a
Recommendation for an exceptional in-country review	<p>further guidance adopted by the Conference of the Parties?</p> <p>On the basis of the issues identified, does the ERT recommend that the next^c review be conducted as an in-country review?</p> <p>No</p>
Question of implementation	<p>Did the ERT list a question of implementation?</p> <p>No</p>

Abbreviations: AAU = assigned amount unit, CER = certified emission reduction, CPR = commitment period reserve, CRF = common reporting format, ERT = expert review team, ERU = emission reduction unit, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control, RMU = removal unit, SEF = standard electronic format, SIAR = standard independent assessment report, UNFCCC Annex I inventory reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, Wetlands Supplement = 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands.

^a The ERT identified additional issues in the general, energy, IPPU, agriculture, LULUCF and waste sectors and for KP-LULUCF activities that are not specifically listed in table 2 but are included in table 3 and/or 5.

^b Missing categories, for which methods are provided in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, may affect completeness and are listed in annex III to this document.

^c Owing to the timing of the review of the 2015 annual submission, “next” in this context refers to the review of the 2017 annual submission.

III. Status of implementation of issues and/or problems raised in the previous review report

8. Table 3 compiles all the recommendations made in the previous review report. For each issue and/or problem, the ERT specified whether it believes the issue and/or problem has been resolved by the conclusion of the review of the 2015 annual submission and provided the rationale for its determination, taking into consideration the publication date of the previous review report and national circumstances.

Table 3
Status of implementation of issues and/or problems raised in the previous review report of Lithuania

ID#	Issue and/or problem classification ^{a, b}	Recommendation made in previous review report	ERT assessment and rationale
General			
G.1	Completeness (table 3, 2014) Completeness*	Estimate and report emissions from all mandatory categories (the Party has not estimated CO ₂ , CH ₄ and N ₂ O emissions from other (fuel combustion activities) – mobile – military use of jet kerosene (for 1990–2000))	Resolved. As explained in the NIR 2016 ^c (page 173), Lithuania applied gap-filling procedures (extrapolation) to gather the missing AD for jet kerosene and included the estimates in its inventory
G.2	QA/QC and verification (table 3, 2014) Adherence to UNFCCC Annex I inventory	Reinforce the implementation of appropriate tier 1 QC procedures	Resolved. The ERT noted improvements in QC (see E.1, I.5 and A.1). The NIR 2016 (figure 1-3) presents the QC

<i>ID#</i>	<i>Issue and/or problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	reporting guidelines		procedures
G.3	QA/QC and verification (table 3, 2014) (11, 2013) Not an issue	Explain how the “basic internal review” referred to in the NIR is used to make improvements to the inventory	No longer relevant. The term “basic internal review” is not used in the NIR 2016. According to the NIR 2016 (section 1.2.3.1) the QA procedures have been rearranged and include, for example, reviews under European Union decision 406/2009/EC. During the review, Lithuania also explained that external reviews have been carried out in the Lithuania–Norway partnership project
G.4	QA/QC and verification (table 3, 2014) Not an issue	Explain that the institutes carrying out the review are not directly involved in inventory preparation, in order to justify the basic internal review as a QA activity rather than a QC activity	No longer relevant. See G.3
G.5	Key category analysis (table 4, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Correct the tier 2 key category analysis	Resolved. The mistake made in the 2014 submission has been corrected. Annex I to the NIR 2016 identifies as key also the first category exceeding the threshold of 90% for level and trend assessment using approach 2
G.6	Article 3, paragraph 14, of the Kyoto Protocol (92, 2014) Completeness*	Report any change(s) in the information provided under Article 3, paragraph 14	Resolved. Chapter 15 in the NIR 2016 related to minimization of adverse impacts has been updated with the focus on recent changes
Energy			
E.1	1. General (energy sector) (20, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Improve the QC procedures in order to ensure consistency between the values reported in the NIR and the CRF tables	Resolved. No inconsistencies were found
E.2	International aviation – jet kerosene – CO ₂ , CH ₄ and N ₂ O	Correct the information in the NIR regarding the use of jet kerosene for	Resolved. The Party has explained in the NIR 2016 (pp. 171–173) the methods

<i>ID#</i>	<i>Issue and/or problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	(23, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	domestic/international aviation	used to obtain the AD for domestic and international aviation and corrected the error identified in the 2014 annual review report
E.3	International navigation – gas/diesel oil – CO ₂ (24, 2014) Transparency*	Include in the NIR the information regarding the country-specific CO ₂ EF for gas/diesel oil	Resolved. The information about the country-specific CO ₂ EF (72.89 t/TJ) for gas/diesel oil has been provided in the NIR 2016 (p. 89, section 3.2.2). The EF is within the range of 72.6–74.8 t/TJ given in the 2006 IPCC Guidelines, volume 2, table 3.5.2
E.4	Feedstocks, reductants and other NEU of fuels – refinery feedstocks (25, 2014) Transparency*	Correct the information regarding the refinery feedstocks by reporting “NO” in CRF table 1.A(d) and include relevant explanations in the NIR	Resolved. The Party corrected its reporting in CRF table 1.A(d) and an explanation is included in the NIR 2016 (section 3.2.1)
E.5	1.A. Fuel combustion – sectoral approach – liquid and gaseous fuels – CO ₂ (26–27, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Include a more detailed explanation of the selection of the plant-specific EFs for public electricity and heat production and for petroleum refining in the NIR	Resolved. In the NIR 2016, the Party has provided information on the selection of the plant-specific EFs (section 3.2.6 for public electricity and heat production and section 3.2.7 for petroleum refining). See also E.10
IPPU			
I.1	2.A.2 Lime production – CO ₂ (40, 2014) Transparency*	Explain the methodology and data sources used to estimate CO ₂ emissions from lime production in sugar refining plants	Resolved. The Party has provided explanatory information in its NIR 2016, pages 222–223
I.2	2.B.1 Ammonia production – CO ₂ (32, 2014) Transparency*	Correct the errors in the NIR regarding the data and method used for the estimation of emissions from ammonia production	Resolved. The Party has corrected the information in the NIR 2016 (section 4.3.1.2) regarding the data and estimation method used
I.3	2.B.1 Ammonia production – CO ₂ (33, 2014) Transparency*	Correct the notation key in CRF table summary 3 on the CO ₂ EF for chemical industry	Resolved. The Party has reported the correct notation key “CS” (country-specific) in CRF table summary 3
I.4	2.B.1 Ammonia production – CO ₂	Provide more accurate and transparent information on the CO ₂ EF in the NIR	Resolved. The Party has provided more detailed

<i>ID#</i>	<i>Issue and/or problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	(33, 2014) (37, 2013) Transparency*		information in its NIR 2016, page 238
I.5	2.B.1 Ammonia production – CO ₂ (33, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Improve QC procedures in order to rectify errors in the NIR and the CRF tables	Resolved. The ERT did not identify errors in the NIR 2016 or the CRF tables for this category
I.6	2.C.1 Iron and steel production – CO ₂ (42, 2014) Not an issue	Carry out an analysis of the potential overestimation due to the use of default EFs which are not applicable for cast iron production from iron scrap but for production from iron ores in blast furnaces and for production of steel in electric arc furnaces, and provide a discussion on the subject in the NIR	No longer relevant. The ERT noted from the information in the NIR 2016, page 247, that Lithuania has revised the method used for iron and steel production and no longer uses the EFs which the 2014 annual review report indicated as causing potential overestimation of the emissions
Agriculture			
A.1	3. General (agriculture) (46, 2014) (50, 2013) (87, 2012) Adherence to UNFCCC Annex I inventory reporting guidelines	Improve the completeness and QC of reporting in the CRF tables	Resolved. All CRF tables are filled in with data, and appropriate notation keys are used
A.2	3. General (agriculture) (46, 2014) (53, 2013) Transparency*	Provide in the NIR an explanation for the difference in animal population numbers between the inventory and the FAO data	Resolved. The explanation is provided in the NIR 2016 (section 5.2.2.2) (see footnote number 27 on p. 314). Annual statistical data about livestock population on 1 January coincide with the corresponding FAO data for the previous year (see also A.12)
A.3	3.A Enteric fermentation – CH ₄ (48, 2014) Transparency*	Provide additional information in the NIR on the approach used to estimate DMI for sheep	Resolved. Sufficient information is included in the NIR 2016 (section 5.2.2.3)
A.4	3.A Enteric fermentation – CH ₄ (49, 2014) Transparency*	Include in the NIR the specific animal and feed characteristics and DMIs per subcategory	Resolved. The information is included in the NIR 2016 (section 5.2.2, tables 5–16, 5–17, 5–21, 5–22, 5–24 and 5–25)

<i>ID#</i>	<i>Issue and/or problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
A.5	3.A Enteric fermentation – CH ₄ (51, 2014) Transparency*	Provide the methane conversion rate (Y _m) values for sheep and swine in both the NIR and the CRF tables	Resolved. The information is included in the NIR 2016 (section 5.2.2.3) and CRF table 3.A
A.6	3.B Manure management (47, 2014) (50, 2013) (86, 2012) Adherence to UNFCCC Annex I inventory reporting guidelines	Include in the NIR the information regarding how the overall AD uncertainties have been derived for the manure management category	Resolved. Relevant information is included in the NIR 2016 (sections 5.3.3 and 5.4.1.3)
A.7	3.B Manure management – CH ₄ and N ₂ O (52, 2014) Transparency*	Explain in the NIR that the methane conversion factor of zero applied to anaerobic lagoons with digesters was based on information provided by the biogas plant that all CH ₄ was collected and combusted	Resolved. Relevant information is included in the NIR 2016 (section 5.3.2.2)
A.8	3.B.2 Sheep – CH ₄ (53, 2014) Transparency*	Report the value for Bo for sheep in the NIR and CRF table 4.B(a)	Resolved. Relevant information is included in the NIR 2016 (section 5.3.2.3) and CRF table 3.B(a)
A.9	3.B.2 Sheep – N ₂ O (54, 2014) Accuracy*	Explore the possibility of applying the tier 2 method for estimating the manure management N ₂ O emissions from sheep	Resolved. The Party used the tier 2 method with country-specific nitrogen excretion rates to estimate these emissions (NIR 2016, section 5.4.1.2)
A.10	3.D.a.1 Inorganic N fertilizers – (46, 2014) (50, 2013) (101, 2012) Not an issue	Continue to investigate the differences between the national data on synthetic fertilizer consumption provided by UAB Agrochema and the data provided by the International Fertilizer Industry Association	No longer relevant. Consumption data for inorganic nitrogen fertilizers from the International Fertilizer Industry Association for the whole time series were used (NIR 2016, p. 356)

LULUCF

L.1	4.A.1 Forest land remaining forest land – CO ₂ (59, 2014) Accuracy	Further explore different opportunities regarding how the data presented in the national forestry inventory could be allocated during the five-year inventory cycle	Resolved. Explanations are provided in chapter 6 of the NIR 2016 (pp. 413–414)
L.2	4.D.2 Land converted to wetlands – CO ₂ (61 and table 3, 2014) Completeness	Report the carbon stock changes in living biomass in cropland and grassland converted to wetlands	Resolved. Living biomass losses are reported in CRF table 4.D for grassland and cropland converted to flooded land when they occur (e.g. for 2014 in grassland converted to flooded land and 2006 for

<i>ID#</i>	<i>Issue and/or problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
			cropland converted to flooded land). The method is explained in the NIR 2016 (section 6.5.2.4)
L.3	4 (II) Emissions and removals from drainage and rewetting and other management of organic/mineral soils – CH ₄ and N ₂ O (62, 2014) Comparability	Use the notation key “NO” instead of “NE” for the drainage of soils and wetlands in forest land – mineral soil	Resolved. The Party has corrected the reporting in the CRF tables
L.4	4 (V) Biomass burning – CO ₂ , CH ₄ and N ₂ O (64, 2014) Accuracy	Use the country-specific data and methodology that takes into account combustion efficiency values or use default values for combustion efficiency	Resolved. As explained in the NIR 2016 (p. 418), the method in the 2006 IPCC Guidelines (vol. 4, page 2.42) is used with a country-specific factor for combustion efficiency
Waste			
W.1	5.A Solid waste disposal on land – CH ₄ (69, 2014) Transparency*	Include the amount of solid waste disposed in each category of SWDS in the NIR	Resolved. The Party provided the information in the NIR 2016 (table 7-22, p. 514)
W.2	5.A Solid waste disposal on land – CH ₄ (70, 2014) Transparency*	Include the amount of sewage sludge disposed in each category of SWDS in the NIR	Resolved. The Party provided the information in the NIR 2016 (table 7-23, p. 515)
W.3	5.D Wastewater treatment and discharge – CH ₄ (71, 2014) Transparency*	Include in the NIR the information on the contribution of BOD load from industrial wastewater	Resolved. The Party provided transparent information on BOD load from industrial wastewater in the NIR 2016, section 7.5.1
W.4	5.D Wastewater treatment and discharge – CH ₄ (72, 2014) Not an issue	Report the percentages of handling systems for wastewater in CRF table 6.B or provide a justification for the use of the notation key “NE”	No longer relevant. The sectoral background data table referred to in the 2014 annual review report is not included in the new CRF tables in accordance with the UNFCCC Annex I inventory reporting guidelines. However, the Party provided information on the distribution of wastewater handling systems in the NIR

<i>ID#</i>	<i>Issue and/or problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
------------	---	--	-------------------------------------

2016 (table 7-40)

KP-LULUCF

There were no recommendations related to KP-LULUCF in the previous review report

Abbreviations: AD = activity data, Bo = methane producing capacity, BOD = biochemical oxygen demand, CRF = common reporting format, DMI = dry matter intake, EF = emission factor, ERT = expert review team, FAO = Food and Agriculture Organization of the United Nations, IPCC = Intergovernmental Panel on Climate Change, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NE = not estimated, NEU = non-energy use, NIR = national inventory report, NO = not occurring, QA/QC = quality assurance/quality control, SWDS = solid waste disposal site, UNFCCC Annex I inventory reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, 2006 IPCC Guidelines = 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

^a References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) where the issue was raised. Issues are further classified as defined in decision 13/CP.20, annex, paragraph 81. In the review of the supplementary information reported in accordance with Article 7, paragraph 1, of the Kyoto Protocol, the ERT has applied the classification in decision 22/CMP.1, annex, paragraph 69, in conjunction with decision 4/CMP.11.

^b An asterisk is included next to each issue type for all issues that are also problems, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

^c Any reference to the 2016 submission in this table refers to the 2016 submission of the Party, which the Party has indicated constitutes a submission under the Convention for the year 2016, a resubmission under the Convention for the year 2015 and a submission under the Kyoto Protocol for the years 2015 and 2016.

IV. Issues identified in three successive reviews and not addressed by the Party

9. In accordance with paragraph 83 of the UNFCCC review guidelines, and as documented in table 4 below, the ERT has assessed that there are no issues to be included in a prominent paragraph.

Table 4

Issues identified in three successive reviews and not addressed by Lithuania

<i>ID#^a</i>	<i>Previous recommendation for the issue identified</i>	<i>Number of successive reviews issue not addressed</i>
General	No such general issues were identified	
Energy	No such issues for the energy sector were identified	
IPPU	No such issues for the IPPU sector were identified	
Agriculture	No such issues for the agriculture sector were identified	
LULUCF		

<i>ID#^a</i>	<i>Previous recommendation for the issue identified</i>	<i>Number of successive reviews issue not addressed</i>
	No such issues for the LULUCF sector were identified	
Waste	No such issues for the waste sector were identified	
KP-LULUCF	No such issues for KP-LULUCF activities were identified	

Abbreviations: IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry.

^a An asterisk is included after any issue ID# where the underlying issue is related to accuracy or completeness of a key category, a missing category or a potential key category, as indicated in decision 13/CP.20, annex, paragraph 83.

V. Additional findings made during the 2015 technical review

10. Table 5 contains findings made by the ERT during the technical review of the 2015 annual submission of Lithuania that are additional to those identified in table 3 above.

Table 5

Additional findings made during the 2015 technical review of the annual submission of Lithuania

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
General			
G.7	Recalculations	The Party submitted its original 2015 NIR under the Convention on 6 November 2015. On 17 June 2016 the Party resubmitted its 2016 submission, indicating that its official inventory submission of 2016 constitutes a submission under the Convention for the year 2016, a resubmission under the Convention for the year 2015 and a submission under the Kyoto Protocol for the years 2015 and 2016. The ERT noted that the 2016 submission contains only information on recalculations between the original 2015 submission and the 2016 submission, and that information on the full extent of recalculations between the 2014 submission and the final 2015 submission is not included. The ERT concludes that the reporting is not transparent but noted that this situation was related to the unique circumstances referred to in paragraph 6 of this document	Not an issue
G.8	Archiving	The NIR 2016 ^c provides a description of the archiving system which could be understood as saying that there is one central archiving system within the Lithuanian Environmental Protection Agency (EPA) and additional ones coordinated by the different sector experts. During the review, Lithuania provided more information and clarified that the central archiving system in the EPA is the central place where all the information required to develop the GHG inventory is archived. The process is based on the EPA Director's Order No. AV-152 on archiving of the information. The archives maintained by the sector experts contain, for example, additional background information and calculation sheets The ERT recommends that Lithuania include in the NIR information explaining that the central archiving system in the EPA is the central place where all the information required to develop the GHG inventory is archived and that, in addition, the archives maintained by the sector experts contain, for example, additional background information and calculation sheets	Yes. Transparency*
G.9	National registry	The ERT noted that, according to the SIAR, the national registry has fulfilled the requirements regarding the public availability of information in accordance with section II.E of the annex to decision 13/CMP.1. However, the information on projects undertaken under Article 6 of the Kyoto Protocol did not include the years of ERU issuance in accordance with decision 13/CMP.1, annex, paragraph	Yes. Completeness*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		<p>46(c)</p> <p>The ERT reiterates the recommendation in the SIAR that the Party amend the publicly available information on project activities undertaken under Article 6 of the Kyoto Protocol to include the years of ERU issuance in accordance with decision 13/CMP.1, annex, paragraph 46(c)</p>	
Energy			
E.6	Fuel combustion – reference approach – liquid and gaseous fuels – CO ₂	<p>The ERT noted that, in CRF table 1.A(b), an oxidation rate of 0.99 was reported for liquid and gaseous fuels, whereas the default value in the 2006 IPCC Guidelines is 1.00. During the review, the Party clarified that the use of the oxidation rate of 0.99 for liquid and gaseous fuels is a mistake, as it should be 1.00 for all fuels as the default value. The Party further confirmed that, in the sectoral approach, the oxidation rate of 1.00 was used for all fuels. The Party also provided revised data for the reference approach using the oxidation rate of 1.00 for all fuels. These revised data show that, in 2014, the discrepancy in the CO₂ emissions reported under the reference approach and the sectoral approach is 2.09% (1.85% in 2013), which is higher than the discrepancy reported in the annual submission, 1.43% (1.22% in 2013)</p> <p>The ERT recommends that the Party use the correct oxidation rate of 1.00 for all fuels in the reference approach. The ERT also recommends that if discrepancies of more than 2% occur between the CO₂ emissions under the reference and sectoral approaches, the Party investigate and document the reasons for the discrepancies</p>	Yes. Accuracy
E.7	1.A.1.a Public electricity and heat production – solid fuels – CO ₂	<p>The ERT noted that the plant-specific CO₂ EFs of anthracite for the subcategory heat plants, as listed in table 3-15 of the NIR 2016 (106.6 kg/GJ for 1990–2004, with a range of 106.0–107.1 for 2005–2014), are higher than the default value in the 2006 IPCC Guidelines (table 2.2, p. 2.16), which is 98.3 kg/GJ with a range of 94.6–101.0 kg/GJ. During the review, the Party clarified that anthracite was combusted by one operator (JSC Akmenes cementas) in 2000, 2009 and 2010, and that a tier 3 method was applied in this subcategory by using plant-specific EFs based on EU ETS data. The Party also provided the relevant EU ETS reports, with documentation on the EFs</p> <p>The ERT recommends that Lithuania include in the NIR transparent information on the choice of EFs for anthracite used in heat plants, particularly when these factors are outside the uncertainty range of the relevant EFs described in the 2006</p>	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
IPCC Guidelines			
E.8	1.A.1.a Public electricity and heat production – liquid fuels and other fossil fuels – CO ₂	<p>In the NIR 2016 (section 3.2.6.3.4), Lithuania explained that recalculations were carried out for combined heat and power (CHP) generation owing to a correction of the CO₂ plant-specific EF for petroleum gas (referred to in the NIR 2016 as “not liquefied petroleum gas”), orimulsion and emulsified vacuum residue based on EU ETS data; and a correction of the AD for municipal waste (disaggregation of municipal waste biomass fraction and municipal waste non-biomass fraction) based on the newest information provided by Lithuanian Statistics. Lithuania reported that the difference between the original 2015 submission (see G.7) and the 2016 submission was –42.14 kt CO₂ eq (–2.3%) for 2013. The ERT noted that the explanation provided in the NIR 2016 for the recalculation lacked transparency. During the review, Lithuania explained that the difference occurred mainly because of the correction of AD for municipal waste. In the previous submission all municipal waste combusted in CHP plants was accounted for as non-biomass fraction (929 TJ) and in the 2016 submission municipal waste was disaggregated to municipal waste biomass fraction (461 TJ) and municipal waste non-biomass fraction (468 TJ). The Party also explained that the combustion of municipal waste started in Lithuania in 2013, and therefore Lithuanian Statistics did not start to provide disaggregated AD on municipal waste until 2015 (NIR 2016, annex III)</p> <p>The ERT recommends that Lithuania provide transparent information on the types of municipal waste combusted in public electricity and heat production, including a quantitative disaggregation of the biogenic and non-biogenic waste input, in its NIR. The ERT also encourages Lithuania to provide additional information on municipal waste generated before and after 2013, including other possible uses (such as incineration without energy recovery or landfilling), and how different streams of municipal waste are reflected in the GHG inventory</p>	Yes. Transparency*
E.9	1.A.1.a Public electricity and heat production – biomass, peat and other fossil fuels – CH ₄ and N ₂ O	<p>According to the NIR 2016 (p. 99), CH₄ and N₂O EFs for biogas, peat and used tyres were from the country-specific study “Determination of national GHG emission factor for energy sector”. The ERT noted that the EFs included in the NIR 2016 for peat and biogas (tables 3-9 and 3-14) are the same as the default values in the 2006 IPCC Guidelines (volume 2, p. 2.17). During the review, the Party clarified that there is an error in the NIR 2016, because in fact the CH₄ and N₂O EFs for peat, biogas and used tyres were from the 2006 IPCC Guidelines (EFs for industrial wastes were used for used tyres)</p>	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
E.10	1.A.1.b Petroleum refining – liquid fuels – CO ₂	<p>The ERT recommends that the Party correct the error in the NIR by changing the notation key “CS” (country specific) into “T1” (tier 1) for CH₄ and N₂O EFs for peat, biogas and used tyres in the relevant tables in the NIR and by correcting the information in the text (p. 99 in the NIR 2016)</p> <p>The ERT found that the plant-specific CO₂ EFs for residual fuel oil in table 3-19 of the NIR 2016 (average for 1990–2004 of 81.2 kg/GJ and range for 2005–2014 of 79.0–83.0 kg/GJ) are higher than the default value in the 2006 IPCC Guidelines, volume 2, table 2.2 (77.4 kg/GJ with a range of 75.5–78.8 kg/GJ). During the review, Lithuania explained that the residual fuel oil contains two different types of oil – regular residual fuel oil and non-tradable residual oil. The non-tradable residual oil has a much higher carbon content than regular residual oil, resulting in an average plant-specific EF of 81.2 kg/GJ. The plant-specific CO₂ EF of regular residual oil is 77.6 kg/GJ (which is in the range given in the 2006 IPCC Guidelines). The Party further explained that recalculations of the values reported in the original 2015 submission for this category were performed for the 2016 annual submission owing to a correction of the CO₂ plant-specific EF for residual fuel oil based on annual data instead of average EU ETS data</p> <p>The ERT recommends that the Party explain in the NIR that residual fuel oil contains both regular residual fuel oil and non-tradable residual oil, and that the Party provide the CO₂ EFs and information on how they are derived for both types of residual fuel oil</p>	Yes. Transparency*
E.11	1.B.2.b Natural gas – CO ₂ and CH ₄	<p>The ERT noted in the NIR 2016 (section 3.6.4.2) that the recalculations between the original 2015 submission and the 2016 submission (see G.7), carried out to apply the tier 2 method for fugitive emissions from natural gas instead of the tier 1 method, resulted in significant changes for the entire time series for both CO₂ and CH₄ (differences for CO₂ eq emissions of CO₂ and CH₄ ranging from 34.8% for 1990 to –55.3% for 2011). The NIR 2016 (section 3.6.3.2) states that an operator (JSC Lietuvos Dujos) provided data on natural gas leakages in transmission and distribution networks for the period 2005–2014. The data on natural gas leakages for the period 1990–2004 were based on expert judgement. The NIR 2016 further explains that the data were converted into TJ using a country-specific net calorific value for natural gas provided in the NIR 2016 (table 3-11) and into tonnes using natural gas density (table 3-64). However, the ERT considered that the information provided in the 2016 NIR was not sufficiently transparent regarding the sources of data and calculations undertaken</p>	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		<p>for 1990–2004. During the review, Lithuania provided detailed information on the methodologies used, including the calculation spreadsheets. The Party explained that the data from Lietuvos Dujos for 2005–2014 included data on natural gas leakages in transmission and distribution networks and chemical composition of natural gas. The Party also explained that for 1993–2004 the average observed leakage rate (in per cent) in 2005–2014 was applied, whereas for 1990–1992, regression analysis was used</p> <p>The ERT recommends that Lithuania explain in its NIR the methodology and data sources used to estimate CO₂ and CH₄ emissions in 1990–2004 from this category, namely by explaining that (i) for 1993–2004 the average observed leakage rate (in per cent) in 2005–2014 is applied, and (ii) for 1990–1992, regression analysis is used</p>	
IPPU			
I.7	2.G.3 N ₂ O from product uses – N ₂ O	<p>Table 4-51 of the NIR 2016 shows that, from 2008 onwards, emissions of N₂O used for anaesthesia were lower than in 1990–2007 (for example, 28.92 kt CO₂ eq in 2007 and 4.17 kt CO₂ eq in 2008). However, the NIR 2016 did not include an explanation of the trend or the consistency of the reported emissions and AD. During the review, Lithuania explained that N₂O sales data were provided by the State Medicines Control Agency. The decrease in N₂O emissions since 2008 was related to the decreasing use of inhalational anaesthesia (using N₂O) compared with injection anaesthesia, which has been used more widely in Lithuania recently</p> <p>The ERT recommends that Lithuania explain in the NIR that the decrease in N₂O emissions from anaesthesia since 2008 is related to the decreasing use of inhalational anaesthesia (using N₂O) compared with injection anaesthesia, which has been used more widely in Lithuania recently</p>	Yes. Transparency*
I.8	2.H Other (industrial processes and product use) – CO ₂	<p>CRF table 2(I).A-Hs2 includes CO₂ emissions and the amount of limestone used for flue gas desulphurization. However, the IPPU chapter of the NIR 2016 does not contain a description of the category (e.g. methodology, selection of EFs). During the review, Lithuania explained that, owing to a problem with the CRF Reporter software it was not possible to report these emissions in the energy sector, where they actually occurred. Also, Lithuania referred to the energy chapter of the NIR 2016 (section 3.2.6.5) where the category is described and the methodology provided</p>	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		The ERT recommends that Lithuania include in the IPPU chapter of the NIR a reference to the section in the energy chapter where information on CO ₂ emissions from limestone used for flue gas desulphurization is included	
Agriculture			
A.11	3. General (agriculture) – CO ₂ , CH ₄ and N ₂ O	<p>Paragraph 19 of the UNFCCC Annex I inventory reporting guidelines states that Parties included in Annex I to the Convention should implement QA procedures by conducting a basic expert peer review of their inventories in accordance with the 2006 IPCC Guidelines. However, the ERT noted that category-specific QA procedures in the agriculture sector are not transparently described in the NIR 2016 of Lithuania. During the review, the Party stated that it is going to participate in the “Baltic Expert Network for Greenhouse Gas Inventory, Projections and PaMs Reporting” project. The project’s main objective is to increase the quality of GHG inventories and projections through knowledge and experience sharing. During this project, peer reviews of the inventories of the Baltic states, including Lithuania, are planned</p> <p>The ERT encourages the Party to follow the 2006 IPCC Guidelines (vol. 1, chapter 6) and to document the results of peer reviews or audits in the NIR, for example by using a checklist format that shows the findings and recommendations for improvement. The ERT further encourages Lithuania to report a summary of implemented QA activities and key findings for the agriculture sector categories in the NIR</p>	Not an issue
A.12	3. General (agriculture) – CH ₄ and N ₂ O	The ERT noted that the annual livestock population data used to estimate emissions resulting from livestock (CH ₄ from enteric fermentation, CH ₄ and N ₂ O from manure management, and the direct and indirect N ₂ O emissions from agricultural soils associated with livestock) are based on statistics as of 1 January of each year (2016 NIR, section 5.2.2.2, p. 314) instead of using average annual population as recommended by the 2006 IPCC Guidelines (vol. 4, sections 10.2.2 and 10.3.1). During the review week, the Party provided the ERT with revised estimates for the emissions for enteric fermentation (3.A), manure management (3.B) and agricultural soils (3.D), based on updated average annual livestock population data for the entire time series. For adult animals, population data were based on the average between two years of data on 1 January. For growing animals (e.g. market swine, broilers) equation 10.1 from the 2006 IPCC Guidelines was used to estimate annual population. Nevertheless, the ERT considered that this issue led to a potential problem in the original annual	Yes. Transparency*

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
		<p>submission, because the emissions for 2013 and 2014 were underestimated. In response to the list of potential problems and further questions raised by the ERT, Lithuania submitted revised CRF tables on 14 October 2016 for 1990–2014, reflecting the revised livestock population data and emission estimates in categories 3.A, 3.B and 3.D. As result of these revisions, total emissions for enteric fermentation, manure management and agricultural soils for 2013 and 2014 increased by 46.93 and 66.05 kt CO₂ eq, respectively. The ERT agrees with the revised estimates</p> <p>The ERT recommends that Lithuania include in the NIR an explanation of how the average annual livestock data are derived for each animal type</p>	
A.13	3. General (agriculture) – CH ₄	<p>Information about the drivers influencing inter-annual changes in the CH₄ IEFs for cattle enteric fermentation and manure management is not included in the NIR 2016. During the review, the Party explained that the inter-annual changes in the CH₄ IEF, as well as fluctuations in GE values, are mainly determined by the milk yields, herd structure and, to a minor extent, by the ratio of high to low productive cows</p> <p>The ERT encourages the Party to include explanatory information on the drivers behind substantial inter-annual changes of cattle enteric fermentation and manure management CH₄ IEFs in the NIR with supporting charts (e.g. correlation analysis)</p>	Not an issue
A.14	3. General (agriculture) – CH ₄ and N ₂ O	<p>The ERT noted that average live weight of horses (reported in CRF table 3.B(a)) decreased for the period 1990–2014 by 25.8% (from 520.00 to 386.00 kg). During the review, Lithuania clarified that, during the reporting period, there had been a significant decrease in the number of working horses and an increase in the number of ponies</p> <p>The ERT encourages Lithuania to include explanatory information regarding the substantial decrease in the live weight of horses in the NIR</p>	Not an issue
A.15	3. General (agriculture) – CH ₄	<p>Lithuania uses tier 2 methods with country-specific EFs to estimate CH₄ emissions from enteric fermentation and manure management of cattle, sheep and swine. In its uncertainty analysis, the Party applies likely uncertainty ranges for tier 2 methods (±20 per cent) from the 2006 IPCC Guidelines (sections 10.3.4 and 10.4.4). However, according to the 2006 IPCC Guidelines (p. 10.33) inventory compilers using the tier 2 method for estimation of</p>	Not an issue

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		<p>emissions should undertake an analysis of uncertainties reflecting their particular situation</p> <p>The ERT encourages Lithuania to conduct an approach 1 uncertainty analysis based on a country-specific uncertainty estimate for each parameter used to derive the country-specific CH₄ EFs for cattle, sheep and swine enteric fermentation and manure management, as opposed to applying default uncertainty values from the 2006 IPCC Guidelines. Alternatively, the ERT encourages Lithuania to use expert judgement to evaluate the applicability of the currently used uncertainty estimates from the 2006 IPCC Guidelines. The ERT further encourages the Party to report on the results in the NIR</p>	
A.16	3.A Enteric fermentation – CH ₄	<p>The ERT noted that information on the chemical composition of rations for cattle, sheep and swine per types of feed and the corresponding GE content per kg dm was not included in the NIR 2016. The ERT considers that this is not in line with the 2006 IPCC Guidelines (vol. 4, section 10.3.5), which state that, if the tier 2 method is used, full documentation of the data used should be reported. During the review, the Party provided the information in response to a question raised by the ERT</p> <p>The ERT recommends that the Party include in the NIR tables showing the chemical composition of rations for cattle, sheep and swine per types of feed and the corresponding GE content per kg dm</p>	Yes. Transparency*
A.17	3.A.1 Cattle – CH ₄	<p>As stated in the NIR 2016 (p. 319), the Party applied the methane conversion rate (Y_m) for cattle of 6.5% from the 2006 IPCC Guidelines (vol. 4, chapter 10, table 10.12). However, according to CRF table 3.A, in 2014 these values were 6.52% and 6.57% for dairy and non-dairy cattle, respectively (6.53% and 6.56%, respectively, in 2013). During the review, the Party clarified that, for highly productive dairy cattle and other non-dairy cattle a Y_m of 6.5% was applied, whereas for low productive dairy cattle and beef cattle the applied Y_m was 7.5%</p> <p>The ERT recommends that the Party include the correct Y_m values applied for cattle in the NIR, with references to the data sources used</p>	Yes. Transparency*
A.18	3.A.1 Cattle – CH ₄	<p>The ERT noted that the NIR 2016 does not provide specific values of feed consumed depending on milk yields, weight and growing rate for cattle subcategories. This is not in line with the 2006 IPCC Guidelines (vol. 4, section 10.3.5), which state that, when the tier 2 method is used, full documentation of</p>	Yes. Transparency*

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
		<p>the data used should be reported. During the review, in response to a question raised by the ERT, the Party provided the information requested</p> <p>The ERT recommends that the Party include in its NIR tables showing feeding standards depending on dairy cattle milk yields as well as weight and growing rate of non-dairy cattle</p>	
A.19	3.B.1 Cattle – CH ₄	<p>According to the NIR 2016 (p. 335) and CRF table 3.B(a), Bo for non-dairy cattle (0.18 m³ CH₄/kg VS) from the 2006 IPCC Guidelines (table 10A-5) was used. However, the ERT noted that, according to table 10A-5 of the 2006 IPCC Guidelines, Bo for non-dairy cattle in Eastern Europe is 0.17 m³ CH₄/kg VS. During the review, the Party stated that, in Lithuania, cattle growing and forage preparation technology is close to that of Western Europe, and therefore the Western European value for Bo is used for non-dairy cattle</p> <p>The ERT recommends that the Party include in its NIR the information that cattle growing and forage preparation technology used in Lithuania is close to that of Western Europe, in order to justify the use of the default value for non-dairy cattle methane producing capacity for Western Europe instead of the value for Eastern Europe</p>	Yes. Transparency*
A.20	3.B.1 Cattle – CH ₄	<p>The ERT noted that the Party used a country-specific Bo value (0.21 m³ CH₄/kg VS) to estimate emissions from dairy cattle manure (CRF table 3.B(a)). These data are in agreement with the default value in the 2006 IPCC Guidelines, table 10A-4 (0.24 m³ CH₄/kg VS). However, the NIR 2016 does not contain information to confirm that the country-specific Bo value was derived using standardized methods in line with the 2006 IPCC Guidelines. During the review, the Party clarified that the Bo for dairy cattle was obtained using a standardized method and is based on the total as-excreted VS and typical cattle rations as recommended in the 2006 IPCC Guidelines (chapter 10, p. 10.43)</p> <p>The ERT encourages Lithuania to include in its NIR the explanatory information that the Bo for dairy cattle was obtained using a standardized method and is based on the total as-excreted VS and typical cattle rations as recommended in the 2006 IPCC Guidelines</p>	Not an issue
A.21	3.B.1 Cattle – N ₂ O	<p>The ERT noted that the NIR 2016 does not include the mature body weight data used to estimate the net energy for growth of non-dairy cattle (NIR 2016, p. 343). During the review, the Party provided the weight data for non-dairy cattle from the Party's "Livestock manual" (2007),^d and indicated that it assumed moderate</p>	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		body condition	
		The ERT recommends that Lithuania provide in the NIR mature body weight in moderate body condition (reference weight) for growing cattle, with supporting references	
A.22	3.B.2 Sheep – CH ₄	<p>The ERT noted that the VS values for sheep for 1990–2014 in table 5-33 of the NIR 2016 (0.63–0.64 kg dm/head/day) are higher than the value in the 2006 IPCC Guidelines, volume 4, table 10A-9 (0.40 kg dm/head/day). During the review, the Party clarified that the VS calculation formula includes the GE value, which is based on sheep nutrition norms and feed nutrition tables provided in the “Livestock manual” (2007), therefore the difference between default and country-specific VS value is influenced by national nutritional standards. In addition, lambs are usually weaned at 4 months old, and on this basis more feed is needed for ewes, which leads to a higher GE value</p> <p>The ERT recommends that Lithuania include in its NIR the explanation that the differences between default and country-specific VS values are influenced by national nutritional standards because Lithuania’s VS calculation formula includes the GE value, which is based on sheep nutrition norms and feed nutrition tables provided in the “Livestock manual” (2007). The ERT also recommends that the Party explain in the NIR that lambs are usually weaned at 4 months old in Lithuania, and on this basis more feed is needed for ewes, which leads to a higher GE value</p>	Yes. Transparency*
A.23	3.B.3 Swine – CH ₄ and N ₂ O	<p>The ERT noted that data on fractions of market and breeding swine within the total swine population are not provided in the NIR 2016 or in the CRF tables. During the review, the Party explained that the fractions of market and breeding swine within the total swine population in 2014 are 92% and 8%, respectively</p> <p>The ERT recommends that Lithuania include data about the swine population distribution between market and breeding swine, with supporting references in the NIR</p>	Yes. Transparency*
A.24	3.B.3 Swine – CH ₄ and N ₂ O	<p>The ERT noted that the percentage of swine manure managed in liquid systems (CRF table 3.B(a)) significantly increased during the reporting period (from 16.0% in 1990 to 81.7% in 2014). The NIR 2016 states (p. 331) that this was a result of the shift from small private farms with solid manure storage to large swine enterprises with liquid systems. During the review, the Party explained that both government policy (including stricter swine health standards) and economic</p>	Not an issue

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
		<p>reasons (low profitability of small farms) led to the concentration of the swine population in large enterprises</p> <p>The ERT encourages the Party to include in its NIR explanatory information regarding the growing trend of the fraction of swine manure managed in liquid systems during the time series</p>	
A.25	3.B.3 Swine – CH ₄ and N ₂ O	<p>Information about the drivers influencing inter-annual changes in the swine manure management CH₄ and N₂O IEFs is not included in the NIR 2016. During the review, the Party explained that the inter-annual CH₄ and N₂O IEF fluctuation is determined by the allocation of manure per animal waste management system and structure of the swine herd</p> <p>The ERT encourages the Party to include in its NIR explanatory information, with supporting charts (e.g. correlation analysis), on the drivers that are behind the substantial inter-annual changes of CH₄ and N₂O IEFs of swine manure management</p>	Not an issue
A.26	3.B.4 Other livestock – CH ₄	<p>The ERT noted that table 5-37 of the NIR 2016 includes, inter alia, CH₄ EFs for manure management of geese and other poultry (0.078 kg/head/year) with references to the 2006 IPCC Guidelines tables 10.15 and 10.16. The ERT noted that these tables do not include the EFs for geese and other poultry. During the review, the Party clarified that the correct reference for the EF for other poultry is the Revised 1996 IPCC Guidelines (vol. 3, table B-7, page 4.47). The Party also explained that, because an EF for geese is not available in either the 2006 IPCC Guidelines or the Revised 1996 IPCC Guidelines, the EF used for other poultry was also applied for geese</p> <p>The ERT recommends that the Party include in the NIR the information that because a CH₄ EF for geese is not available in either the 2006 IPCC Guidelines or the Revised 1996 IPCC Guidelines, the Party applied the EF for poultry from the Revised 1996 IPCC Guidelines (vol. 3, table B-7, p.4.47) for geese, and that this EF is also used for other poultry</p>	Yes. Transparency*
A.27	3.B.4 Other livestock – N ₂ O	<p>The ERT noted that in its submission of 15 June 2016 the Party reported incorrectly the total amount of N excreted with rabbit manure in CRF table 3.B(b). The rabbit population was reported as 120 541 head in 2014 and the N excretion rate as 8.10 kg/head/year. Therefore, the total N excreted should be 976 382.10 kg N/year instead of 800 000.00 kg N/year in 2014, as reported in the CRF tables (15 June 2016). During the review, Lithuania clarified that this</p>	Not an issue

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		discrepancy was due to a typing error in the CRF table. In its submission of revised estimates of 14 October 2016 the Party corrected the error. The corrected value (903 996.45 kg N/year for 2014) was also impacted by the revised animal population numbers	
A.28	3.D Direct and indirect N ₂ O emissions from agricultural soils – N ₂ O	Paragraph 19 of the UNFCCC Annex I inventory reporting guidelines states that Parties included in Annex I to the Convention should implement QA procedures by conducting a basic expert peer review of their inventories in accordance with the 2006 IPCC Guidelines. However, the ERT noted that only general QC procedures were applied to emission estimates in agricultural soils, which is a key category. During the review, the Party clarified that the results of a peer review of this category, performed as part of a Lithuania–Norway partnership project, will be reported in the next annual submission. Additionally, the Party informed the ERT that, starting from 2015, the GHG inventories of EU member States are also subject to annual review to check compliance with targets under the EU effort-sharing decision	Not an issue
		The ERT encourages the Party to include explanations of the QA procedures performed for the category agricultural soils in the NIR	
A.29	3.D.a.1 Inorganic N fertilizers – N ₂ O	The ERT noted that the AD reported in CRF table 3.D for inorganic N fertilizers application in the 15 June submission (154 000 t N) for 2014 was the same as that reported for 2013. Lithuania stated in the 2016 NIR (section 5.6.1.2, p. 356) that data from the International Fertilizer Industry Association (the data source for inorganic fertilizer application) were not available for the year 2014 at the time of preparation of the GHG inventory and therefore it was assumed that values for 2013 and 2014 are the same. However, the ERT noted that figure 5-13 of the NIR 2016 shows a growing trend of inorganic N application for the period 1996–2013 (94.9% increase). The ERT noted that, considering that the trend is increasing over time and that estimates are not available for the most recent inventory year, the extrapolation method given in the 2006 IPCC Guidelines (vol. 1, section 5.3.3.4) should be used to obtain the missing AD. During the review, the Party provided the ERT with a revised estimate of inorganic N fertilizer application for 2014 based on the extrapolation method. As a result of the use of the extrapolation method, the amount of inorganic N application for the year 2014 increased from 154 000 t to 158 400 t, and emissions increased by 20.66 kt CO ₂ eq. The ERT considered that this issue led to a potential problem in the original submission, because the emissions for 2014 were underestimated. In	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		<p>response to the list of potential problems and further questions from the ERT, the Party submitted revised CRF tables (on 14 October 2016) for the entire time series, including revised estimates for N₂O emissions from inorganic N fertilizers for 2013 and 2014. The Party explained that revised 2013 data as well as 2014 data on the amount of inorganic N fertilizers applied from the International Fertilizer Industry Association became available, and these data were used in the revised estimates instead of the extrapolation method. As a result of these recalculations, emissions in 2013 and 2014 increased by 4.68 kt CO₂ eq (from 721.16 to 725.84 kt CO₂ eq) and by 37.46 kt CO₂ eq (from 721.16 to 758.62 kt CO₂), respectively. The ERT agrees with the revised estimates</p> <p>The ERT recommends that the Party explain in the NIR how the AD for inorganic fertilizer application have been derived for the last inventory year, in particular if extrapolation instead of actual data is used</p>	
A.30	3.D.a.2 Organic N fertilizers – N ₂ O	<p>The ERT noted that the NIR 2016 does not provide a reference to the source of data about N in bedding per animal species. During the review, Lithuania clarified that it used default values for N in bedding from the 2006 IPCC Guidelines</p> <p>The ERT recommends that the Party include data on the amount of N in bedding per animal species in the NIR with an appropriate reference to the 2006 IPCC Guidelines</p>	Yes. Transparency*
A.31	3.D.a.3 Crop residues – N ₂ O	<p>According to the NIR 2016 (table 5-55) the fraction of total area that is renewed annually (Frac_{RENEW}) is equal to 1 for perennial grasses including legume mixtures (e.g. clover, alfalfa) and pastures, assuming that the crops are alive only for a year. During the review, the Party stated that, based on the statistics, renewal of perennial grasses is conducted every five years and therefore, the value for Frac_{RENEW} should be 0.2 instead of 1. The ERT noted that this issue led to a potential overestimation of the base year emissions. During the review week, the Party provided the ERT with revised estimates for the crop residues subcategory for the entire time series, stating that these revised emission estimates reflect the following changes in the AD:</p> <ul style="list-style-type: none"> (a) A revision of the fraction of pasture renewed (0.2 instead of 1) (b) Removal of double counting of N in perennial grasses returned to soils for 2003–2014 (previously total perennial grasses were included in addition 	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		to alfalfa, clover, their mixture and other perennial grasses)	
		(c) The inclusion in the GHG inventory of additional crops (mixed dry pulses, maize for silage and green fodder, meadows and natural pastures, triticale, soya) for 1990–2002	
		These revisions were included in the Party’s revised CRF tables submitted on 14 October 2016. The ERT noted that, compared with the 15 June 2016 submission, the revised estimates for crop residues were 139.4% (193.94 kt CO ₂ eq) higher in 1990 and 36.3% (120.27 kt CO ₂ eq) and 32.9% (116.48 kt CO ₂ eq) lower in 2013 and 2014, respectively. The ERT agrees with the estimates provided by the Party	
		The ERT recommends that the Party update the description of this category in the NIR by including in NIR tables 5-54 to 5-56 data on all crop types included in the calculation, and by correcting the fraction of pasture renewed in table 5-55 (0.2 instead of 1) with supporting references	
A.32	3.D.a.3 Crop residues – N ₂ O	The NIR 2016 (p. 360) states that, in order to estimate the amount of N returned to soil in crop residues it was assumed that “crops” consists of grain (product), straw and stubble (stubble includes stem and roots). In response to a request made by the ERT during the review that the Party justify reporting that stubble includes stem and roots (i.e. the amount of N in stubble and roots is the same), the Party stated that the information provided in the NIR 2016 (p. 360) is incorrect. “Stubble” values represent the N content of below-ground residues (roots) and “straw” values represent the N content of above-ground residues	Yes. Transparency*
		ERT recommends that the Party report the correct definitions for above-ground residues (straw and stubble) and below-ground residues (roots) in the NIR, in line with the 2006 IPCC Guidelines	
A.33	3.D.a.6 Cultivation of organic soils (i.e. histosols) – N ₂ O	The ERT noted that the NIR 2016 does not contain data about the area of organic soils that are cultivated in Lithuania for the period 1990–2014 and does not provide a reference to the data source. During the review, the Party clarified that the area of organic soils is determined from the data of the national forest inventory, based on the field measurements in each sampling plot. The Party also stated that, for the next submission, it is planning to use a national definition of organic soils, which it has developed using FAO guidelines for soil classification	Yes. Transparency*
		The ERT commends the Party for the continuous improvement of the estimates for this category and encourages it to implement the planned improvements. The	

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
		ERT recommends that the Party include in the NIR the organic soil definition and data source for the AD	
A.34	3.D.a.6 Cultivation of organic soils (i.e. histosols) – N ₂ O	<p>In the 2016 NIR (p. 364), Lithuania reports that it has estimated direct N₂O emissions from cultivation of organic soils using the area of organic soils under cropland and grassland as AD and the default EFs in the 2006 IPCC Guidelines (chapter 11, table 11.1). The ERT noted that the default EF for temperate organic cropland and grassland soils is 8 kg N₂O-N/ha, while in the CRF tables of 15 June 2016 (CRF table 3.D, subcategory 3.D.6), the IEF for 1990–2014 is 0.008 kg N₂O-N/ha. During the review week, the Party stated that the reason for such a discrepancy was an error made in the area of organic soils in the calculation spreadsheets, and that this affects the entire time series (values expressed as “thousand ha” instead of “ha”). During the review, the Party provided the ERT with revised estimates for N₂O emissions from cultivated organic soils for 1990–2014. The ERT considered that this issue led to a potential problem in the original submission, because N₂O emissions for 2013 and 2014 were underestimated by 663.12 and 651.81 kt CO₂ eq, respectively. In response to the list of potential problems and further questions from the ERT, the Party submitted revised CRF tables on 14 October 2016 for 1990–2014, reflecting the revised N₂O emissions from cultivation of organic soils. As a result, emissions in 2013 increased from 0.66 to 663.78 kt CO₂ eq and in 2014 from 0.65 to 652.46 kt CO₂ eq. The ERT agrees with the revised estimates</p> <p>The ERT recommends that the Party enforce the implementation of its general QC procedures, which according to the NIR (p. 52) include the evaluation of the emission calculation by assessing the correctness of units, to identify any unit errors in the calculation spreadsheets for this category, and report on such improvement in the NIR</p>	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
	LULUCF		
L.5	4. General (LULUCF) – CO ₂	Lithuania reports CO ₂ emissions from soils in forest land converted to other land uses in the conversion year only. During the review, Lithuania explained that it has a strong legal protection of forests, and deforestation is generally allowed only for infrastructure development with strict regulation and compensation requirements in other cases. Therefore, forest land in Lithuania is converted only to flooded land, settlements or other land. It is therefore assumed that all carbon stocks accumulated in DOM and soil are removed in the event of conversion, with no additional changes happening in subsequent years. Consequently,	Yes. Accuracy

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
L.6	4. General (LULUCF) – CO ₂	<p>Lithuania reports all carbon stock changes as emissions from instantaneous oxidation in the year of conversion. However, the ERT noted that, according to the 2006 IPCC Guidelines (volume 4, section 2.3.3.1) the soil carbon stock change should not be reported in a single year of land conversion. Instead, Parties must calculate the net change between the previous and the current land use and apportion such change to the 20 years following the year of conversion</p> <p>The ERT recommends that Lithuania report carbon stock change in soils for forest land converted to settlements and other land across the whole 20-year period or provide a justification for the current assumption about instantaneous oxidation of soil organic matter in the year of conversion</p> <p>Lithuania reports area of forest land converted to flooded land as 1.60 kha in 2013 and 2014, forest land converted to settlements as 0.80 kha in 2013 and 2014 and forest land converted to other land as 0.80 kha in 2013 and 0.40 kha in 2014 in CRF tables 4.D, 4.E and 4.F, respectively. At the same time Lithuania reports area of deforestation under Article 3, paragraph 3, of the Kyoto Protocol as 1.57 kha in 2013 and 1.98 kha in 2014 in CRF table 4(KP-I)A.2. The ERT noted from the information provided by the Party during the review that the AD (area) for forest land converted to other land uses used for reporting under the Convention are obtained from the national forest inventory (NFI) by a sampling method, whereas AD for reporting deforestation under the Kyoto Protocol are obtained by a wall-to-wall method. During the review, Lithuania further explained that an inconsistency between areas estimated by different methods had occurred because of the very small areas of deforestation. The average annual deforestation area according to the wall-to-wall method is only 102 ha from 2000 to 2014 whereas, according to the sampling method, it is 160 ha from 2000 to 2014. The difference between the wall-to-wall and sampling methods is 36.3%, while the standard error for the sampling method for forest land conversions is 41%. The Party also stated that, because the average annual deforestation area is considerably smaller than the area represented by sampling plot (400 ha), forest conversion to other land uses cannot be reported annually for Convention reporting</p> <p>The ERT recommends that Lithuania provide in the NIR additional information on the accuracy of AD estimates made using the two methods (NFI sampling method used under the Convention and wall-to-wall method used under the Kyoto Protocol) for forest land converted to other land uses and that the Party</p>	Yes. Accuracy

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
		consider and report in the NIR how the two data sets may be reconciled for future submissions	
L.7	4.A.2 Land converted to forest land – CO ₂	<p>Lithuania reports carbon stock changes in mineral soils in land converted to forest land as “NO” for the entire time series. The ERT noted that methods and EFs are available in the 2006 IPCC Guidelines (vol. 4, sections 4.3.3 and 2.3.3.1). During the review, the Party explained that information to demonstrate that this unaccounted pool was not a net source of anthropogenic GHG emissions for forest land remaining forest land is provided in the NIR 2016 (section 6.2.3, p. 429). The Party further stated that carbon stock changes in mineral soils in land converted to forest land are not reported under the Convention owing to a lack of data on initial carbon stock and carbon stock after conversion. The ERT considered that the response provided by the Party did not sufficiently justify the use of the notation key “NO”</p> <p>The ERT recommends that Lithuania estimate and report carbon stock changes in mineral soils for land converted to forest land. If this cannot be done, the ERT recommends that the Party use the notation key “NE” instead of “NO”, and provide a justification for the use of the notation key in its NIR and CRF table 9</p>	Yes. Completeness
L.8	4 (II) Emissions and removals from drainage and rewetting and other management of organic/mineral soils – CO ₂	<p>Lithuania reports CO₂ emissions from drained organic soils on peat extraction lands as “NO”, and CO₂ emissions from drained organic soils in cropland and grassland as “NE”. During the review, Lithuania explained that it has included CO₂ emissions from drained peatlands under the total carbon stock change for the subcategory peat extraction remaining peat extraction under wetlands remaining wetlands. Lithuania further explained that CO₂ emissions from drained organic soils in cropland and grassland are included under carbon stock changes in organic soils, in the respective categories</p> <p>The ERT recommends that, instead of using the notation keys “NO” (for CO₂ emissions from drained organic soils on peat extraction lands) and “NE” (for CO₂ emissions from drained organic soils in cropland and grassland), the Party use the notation key “IE”, or report CO₂ emissions from drained lands in CRF table 4(II)</p>	Yes. Comparability
L.9	4 (II) Emissions and removals from drainage and rewetting and other management of	<p>Lithuania reports CH₄ emissions from drained organic soils on peat extraction lands as “NO” and those from drained organic soils in cropland and grassland as “NE”. The ERT noted that calculation methods for these subcategories are presented in the Wetlands Supplement. During the review, Lithuania explained that it used the methods from the 2006 IPCC Guidelines for estimating GHG</p>	Not an issue

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
	organic/mineral soils – CH ₄	emissions from drained organic soils on peat extraction lands, and therefore CH ₄ emissions were considered as not significant The ERT encourages the Party to use the Wetlands Supplement for calculating CH ₄ emissions from drained organic soils on peat extraction lands, cropland and grassland in future annual submissions	
L.10	4 (V) Biomass burning – CO ₂ , CH ₄ and N ₂ O	Significant inter-annual changes in the IEFs occurred between 2012 and 2013 (–30.1%, –59.0% and –59.0% for CO ₂ , CH ₄ and N ₂ O, respectively) and between 2013 and 2014 (49.5%, 175.5% and 206.1% for CO ₂ , CH ₄ and N ₂ O, respectively) for wildfires in forest land remaining forest land. During the review, the Party explained that, since 2013, Lithuania has implemented a new system for the estimation of biomass burned in forest wildfires, which takes into consideration the specific characteristics of each wildfire site, based on the State Forest cadastre. This system was used from 2013 onwards and therefore the values for mass of fuel and combustion factor from 2013 and 2014 were used for 1990–2012. In 2013, the amount of biomass burned during wildfires per area was much smaller than in 2012 and 2014. Therefore, CO ₂ , CH ₄ and N ₂ O emissions released during the forest wildfires was also small, which resulted in smaller IEFs for 2013 compared with the average The ERT acknowledges the explanation and encourages the Party to report separately emissions from different fire types within forest land in order to improve the transparency of its annual submission	Not an issue
L.11	4 (V) Biomass burning – CO ₂ , CH ₄ and N ₂ O	Lithuania reported CO ₂ , CH ₄ and N ₂ O emissions from wildfires in wetlands remaining wetlands as “NE” for the entire time series If AD are available, the ERT encourages the Party to calculate emissions from wildfires on wetlands remaining wetlands using the default values for mass of fuel available for combustion and combustion factor provided in the 2006 IPCC Guidelines (vol. 4, table 2.4) and using EFs published by Akagi et al. (2011) ^e	Not an issue
L.12	4 (V) Biomass burning (settlements) – CH ₄ and N ₂ O	Lithuania reported the notation key “NE” for CH ₄ emissions from biomass burning in settlements for the years 1990, 2003, 2004 and 2006, and for N ₂ O for 2003 and 2005. In response to a question raised during earlier stages of the review, the Party explained that reporting of “NE” was a technical error in the CRF tables and that this will be corrected in the next submission by changing the notation key to “NO”	Yes. Comparability

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is the finding an issue^a and/or a problem^b? If yes, classify by type</i>
		The ERT recommends that the Party use the correct notation key (“NO”) for CH ₄ and N ₂ O emissions from biomass burning in settlements in CRF table 4(V) for the years when the activity did not occur	
L.13	4 (V) Biomass burning (other land) – CO ₂ , CH ₄ and N ₂ O	Lithuania reports the notation key “NE” for CO ₂ , CH ₄ and N ₂ O emissions from biomass burning in other land for the entire time series The ERT encourages the Party to gather the AD and to use EFs published by Akagi et al. (2011) ^e to calculate emissions from wildfires on other lands. In the case of an absence of fires on other land the ERT encourages the Party to use the notation key “NO”	Not an issue
L.14	4.G Harvested wood products – CO ₂	The ERT noted that Lithuania did not report AD and carbon stock change in harvested wood products for 1960–1989 in CRF table 4.G. During the review, Lithuania provided the production, imports and exports data for roundwood, sawnwood, wood-based panels and paper and paperboard from 1961 onwards The ERT recommends that the Party complete CRF table 4.G and the additional information box on factors used to convert from product units to carbon, noting that Parties can do this by setting a custom node year within the data entry screen for harvested wood products in the CRF Reporter software	Yes. Transparency
Waste			
W.5	5.B. Biological treatment of solid waste – CH ₄	The ERT noted that, in its annual submission, Lithuania did not provide information supporting the reporting of “NO” for anaerobic digestion at biogas facilities of municipal solid waste in CRF table 5.B. During the review, the Party explained that the activity did not occur in 1990–2014 and that mechanical-biological treatment facilities processing municipal solid waste in anaerobic digestion plants started operating in Lithuania only in 2016 The ERT encourages the Party to include information in the NIR that anaerobic digestion at biogas facilities of municipal solid waste did not occur in Lithuania between 1990 and 2014	Not an issue
W.6	5.D Wastewater treatment and discharge – CH ₄	In CRF table 5.D of the 2016 submission, Lithuania reported the amount of sludge removed (21.80 kt DC in 2013 and 2014). However, the Party’s 2016 submission did not include information on the share of removed sludge applied to agricultural soils, sludge incinerated and sludge deposited to solid waste disposal sites. During the review, the Party provided the requested data based on	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is the finding an issue ^a and/or a problem ^b ? If yes, classify by type
		<p>information from the Lithuanian EPA</p> <p>The ERT recommends that the Party include the information on sewage sludge application, incineration and deposition in the NIR or in the documentation box of CRF table 5.D</p>	
KP-LULUCF			
KL.1	Biomass burning – CO ₂ , CH ₄ and N ₂ O	<p>The ERT observed significant inter-annual changes in the IEFs of CO₂ (50.2%), CH₄ (2 688.6%) and N₂O (222.8%) between 2013 and 2014 for wildfires under forest management in CRF table 4(KP-II)4. During the review, the Party provided the explanation included in L.10 above</p> <p>The ERT acknowledges the explanation and encourages the Party to report separately emissions from different fire types in order to improve transparency</p>	Not a problem

Abbreviations: AD = activity data, Bo = methane producing capacity, CRF = common reporting format, DC = degradable organic component, dm = dry matter, DOM = dead organic matter, EF = emission factor, ERT = expert review team, ERU = emission reduction unit, EU = European Union, EU ETS = European Union Emissions Trading System, FAO = Food and Agriculture Organization of the United Nations, GE = gross energy, GHG = greenhouse gas, ha = hectare, IE = included elsewhere, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPPU = industrial processes and product use, JSC = joint stock company, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, N = nitrogen, NE = not estimated, NIR = national inventory report, NO = not occurring, QA/QC = quality assurance/quality control, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, SIAR = standard independent assessment report, UNFCCC Annex I inventory reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, VS = volatile solids, Wetlands Supplement = *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*, 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

^a Recommendations are related to issues as defined in decision 13/CP.20, annex, paragraph 81, or problems as identified in decision 22/CMP.1, annex, paragraph 69, identified by the ERT during the review. Encouragements are made to the Party to address all findings not related to such issues.

^b An asterisk is included next to each issue type that is also a problem, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

^c Any reference to the 2016 submission in this table (except in G.7) refers to the 2016 submission of the Party, which the Party has indicated constitutes a submission under the Convention for the year 2016, a resubmission under the Convention for the year 2015 and a submission under the Kyoto Protocol for the years 2015 and 2016

^d Institute of Animal Science, Lithuanian University of Health Sciences. 2007. Livestock manual (Gyvulininkystės žinynas). Baisogala, Lithuania.

^e Akagi SK, Yokelson RJ, Wiedinmyer C, Alvarado MJ, Reid JS, Karl T, Crounse JD and Wennberg PO. 2011. Emission factors for open and domestic biomass burning for use in atmospheric models. *Atmos. Chem. Phys.* 11: pp. 4039–4072.

VI. Application of adjustments

11. The ERT has not identified the need to apply any adjustments to the 2015 annual submission of Lithuania.

VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol

12. Lithuania has elected commitment period accounting and therefore the issuance and cancellation of units for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are not applicable for the 2015 review.

VIII. Questions of implementation

13. No questions of implementation were identified by the ERT during the review.

Annex I

Overview of greenhouse gas emissions and removals for Lithuania for submission year 2015 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

1. Tables 6–9 provide an overview of total greenhouse gas emissions and removals for Lithuania as submitted by the Party.

Table 6

Total greenhouse gas emissions for Lithuania, base year^a–2013^b

(kt CO₂ eq)

	Total GHG emissions excluding indirect CO ₂ emissions		Total GHG emissions including indirect CO ₂ emissions ^c		Land-use change (Article 3.7 bis as contained in the Doha Amendment) ^d	KP-LULUCF activities (Article 3.3 of the Kyoto Protocol) ^e	KP-LULUCF activities (Article 3.4 of the Kyoto Protocol)	
	Total including LULUCF	Total excluding LULUCF	Total including LULUCF	Total excluding LULUCF			CM, GM, RV, WDR	FM
FMRL								-4 552.00
Base year	44 626.23	48 196.54	44 626.23	48 196.54	NA		NA	
1990	44 619.98	48 190.28	44 619.98	48 190.28				
1995	19 755.81	22 400.51	19 755.81	22 400.51				
2000	10 657.63	19 605.28	10 657.63	19 605.28				
2010	9 894.83	20 755.13	9 894.83	20 755.13				
2011	10 445.65	21 254.46	10 445.65	21 254.46				
2012	12 543.47	21 112.68	12 543.47	21 112.68				
2013	10 248.76	19 850.83	10 248.76	19 850.83		-6.41	NA	-10 209.88

Abbreviations: CM = cropland management, FM = forest management, FMRL = forest management reference level, GHG = greenhouse gas, GM = grazing land management, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, RV = revegetation, WDR = wetland drainage and rewetting.

^a Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs, SF₆ and NF₃. Lithuania has not elected any activities under Article 3, paragraph 4, of the Kyoto Protocol. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

^b Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions.

^c The Party has not reported indirect CO₂ emissions in common reporting format table 6.

^d The value reported in this column refers to 1990.

^e Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

Table 7

Greenhouse gas emissions by gas for Lithuania, excluding land use, land-use change and forestry 1990–2013^a(kt CO₂ eq)

	<i>CO₂^b</i>	<i>CH₄</i>	<i>N₂O</i>	<i>HFCs</i>	<i>PFCs</i>	<i>Unspecified mix of HFCs and PFCs</i>	<i>SF₆</i>	<i>NF₃</i>
1990	35 812.89	7 006.66	5 370.73	NO	NO	NO	NO	NO
1995	15 022.54	4 396.41	2 975.29	6.21	NO	NO	0.05	NO
2000	11 801.96	3 764.72	4 015.79	22.08	NO	NO	0.72	NO
2010	13 618.91	3 672.49	3 198.22	259.52	NO	NO	5.99	NO
2011	13 919.02	3 505.34	3 515.82	306.54	NO	NO	7.74	NO
2012	13 975.52	3 520.26	3 261.87	351.03	NO	NO	3.99	NO
2013	12 987.82	3 420.27	3 031.22	405.15	NO	NO	6.32	0.06
Per cent change 1990–2013	–63.7	–51.2	–43.6	NA	NA	NA	NA	NA

Abbreviations: NA = not applicable, NO = not occurring.

^a Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

^b Lithuania did not report indirect CO₂ emissions in common reporting format table 6.

Table 8
Greenhouse gas emissions by sector for Lithuania, 1990–2013^{a, b}
 (kt CO₂ eq)

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
1990	33 123.67	4 499.32	8 919.71	–3 570.31	1 647.58	NO
1995	14 065.45	2 239.86	4 447.37	–2 644.70	1 647.83	NO
2000	10 808.22	3 091.92	4 100.94	–8 947.65	1 604.20	NO
2010	12 768.70	2 257.61	4 352.60	–10 860.31	1 376.22	NO
2011	11 873.25	3 733.68	4 362.96	–10 808.81	1 284.57	NO
2012	11 908.52	3 576.76	4 366.98	–8 569.21	1 260.42	NO
2013	11 299.34	3 008.06	4 355.36	–9 602.06	1 188.07	NO
Per cent change 1990–2013	–65.9	–33.1	–51.2	168.9	–27.9	NA

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

^a Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

^b Lithuania did not report indirect CO₂ emissions in common reporting format table 6.

Table 9

Greenhouse gas emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by activity, base year^{a, b}–2013, for Lithuania

(kt CO₂ eq)

	<i>Article 3.7 bis as contained in the Doha Amendment</i>			<i>Article 3.3 of the Kyoto Protocol</i>					<i>Forest management and elected Article 3.4 activities of the Kyoto Protocol</i>			
	<i>Land-use change</i>	<i>Afforestation and reforestation</i>	<i>Deforestation</i>	<i>Forest management</i>	<i>Cropland management</i>	<i>Grazing land management</i>	<i>Revegetation</i>	<i>Wetland drainage and rewetting</i>				
FMRL				-4 552.00								
Technical correction				-992.0								
Base year	NA					NA	NA	NA	NA	NA	NA	NA
2013		-219.84	213.43	-10 209.88		NA	NA	NA	NA	NA	NA	NA
Per cent change 1990–2013						NA	NA	NA	NA	NA	NA	NA

Abbreviations: FMRL = forest management reference level, NA = not applicable.

^a Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs, SF₆ and NF₃. Lithuania has not elected any activities under Article 3, paragraph 4, of the Kyoto Protocol. For activities under Article 3, paragraph 3, of the Kyoto Protocol, and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

^b Values in this table include emissions on lands subject to natural disturbances, if applicable.

^c The value reported in this column refers to 1990.

2. Table 10 provides an overview of relevant key data for Lithuania's reporting under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 10

Key relevant data for Lithuania under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

<i>Key parameters</i>	<i>Values</i>
Periodicity of accounting	(a) Afforestation/reforestation: commitment period accounting (b) Deforestation: commitment period accounting (c) Forest management: commitment period accounting (d) Cropland management: not elected (e) Grazing land management: not elected (f) Revegetation: not elected (g) Wetland drainage and rewetting: not elected
Election of activities under Article 3, paragraph 4	None
Election of application of provisions for natural disturbances	No
3.5% of total base year GHG emissions, excluding LULUCF and including indirect CO ₂ emissions	1 686.878 kt CO ₂ eq (13 495.031 kt CO ₂ eq for the duration of the commitment period)
Cancellation of AAUs, ERUs, CERs and/or issuance of RMUs in the national registry for:	
1. Afforestation and reforestation in 2013	NA
2. Deforestation in 2013	NA
3. Forest management in 2013	NA
4. Cropland management in 2013	NA
5. Grazing land management in 2013	NA
6. Revegetation in 2013	NA
7. Wetland drainage and rewetting in 2013	NA

Abbreviations: AAU = assigned amount unit, CER = certified emission reduction, ERU = emission reduction unit, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable, RMU = removal unit.

Annex II

Information to be included in the compilation and accounting database

Table 11 includes the information to be included in the compilation and accounting database for Lithuania. Data shown are from the original annual submission of the Party, including the latest revised estimates submitted, adjustments (if applicable), as well as the final data to be included in the compilation and accounting database.

Table 11

Information to be included in the compilation and accounting database for 2013, including the commitment period reserve, for Lithuania

(t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimates</i>	<i>Adjustment^a</i>	<i>Final^b</i>
Commitment period reserve	102 240 739			102 240 739
Annex A emissions for 2013				
CO ₂	12 987 818			12 987 818
CH ₄	3 387 017	3 420 266		3 420 266
N ₂ O	2 470 011	3 031 221		3 031 221
HFCs	405 146			405 146
PFCs	NO			NO
Unspecified mix of HFCs and PFCs	NO			NO
SF ₆	6 323			6 323
NF ₃	56			56
Total Annex A sources	19 256 370	19 850 829		19 850 829
Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2013				
3.3 Afforestation and reforestation		-219 839		-219 839
3.3 Deforestation		213 432		213 432
Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2013				
3.4 Forest management for 2013			-10 209 876	-10 209 876

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, NO = not occurring.

^a "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

^b "Final" includes revised estimates, if any, and/or adjustments, if any.

Annex III

Additional information to support findings in table 2

Missing categories that may affect completeness

The category for which methods are included in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* and which was reported as “NE” (not estimated) or for which the expert review team otherwise determined that there may be an issue with the completeness of reporting in the Party’s inventory is the following:

Land converted to forest land – mineral soils – CO₂ (see table 5, L.7).

Annex IV

Documents and information used during the review

A. Reference documents

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat. Available at <<http://unfccc.int/resource/webdocs/agi/2015.pdf>>.

Annual status report for Lithuania for 2016. Available at <<http://unfccc.int/resource/docs/2016/asr/ltu.pdf>>.

FCCC/ARR/2014/LTU. Report on the individual review of the annual submission of Lithuania submitted in 2014. Available at <<http://unfccc.int/resource/docs/2015/arr/ltu.pdf>>.

FCCC/ARR/2013/LTU. Report of the individual review of the annual submission of Lithuania submitted in 2013. Available at <<http://unfccc.int/resource/docs/2014/arr/ltu.pdf>>.

FCCC/ARR/2012/LTU. Report of the individual review of the annual submission of Lithuania submitted in 2012. Available at <<http://unfccc.int/resource/docs/2013/arr/ltu.pdf>>.

“Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol”. Decision 19/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Decision 22/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex to decision 24/CP.19. Available at <<http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=4>>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Decision 15/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <<http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf#page=6>>.

“Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part I: implications related to accounting and reporting and other related issues”. Decision 3/CMP.11. Available at <<http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=5>>.

“Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part II: implications related to review

and adjustments and other related issues”. Decision 4/CMP.11. Available at <<http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=30>>.

Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>>.

Intergovernmental Panel on Climate Change. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/kpsg>>.

Intergovernmental Panel on Climate Change. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html>>.

Standard independent assessment report, part 1, for Lithuania for 2016 Available at <http://unfccc.int/files/kyoto_mechanisms/application/pdf/siar_2016_ltu_1_2.pdf>.

Standard independent assessment report, part 2, for Lithuania for 2016. Available at <http://unfccc.int/files/kyoto_mechanisms/application/pdf/siar_2016_ltu_2_2.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Jolanta Merkeliene (Ministry of the Environment), including additional material on the methodology and assumptions used.

Annex V

Acronyms and abbreviations

CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CRF	common reporting format
ERT	expert review team
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
KP-LULUCF	LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
kt	kilotonne
LULUCF	land use, land-use change and forestry
NA	not applicable
NE	not estimated
NIR	national inventory report
NO	not occurring
QA/QC	quality assurance/quality control
SEF	standard electronic format
SIAR	standard independent assessment report
UNFCCC	United Nations Framework Convention on Climate Change
