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Report on the technical review of the third biennial report of Lithuania

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third biennial report of Lithuania, conducted by an expert review team in accordance with 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".

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Contents

Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
EPA	Environment Protection Agency
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NEIS	National Energy Independence Strategy
NF_3	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
N_2O	nitrous oxide
non-ETS sectors	sectors not covered by the EU ETS
PaMs	policies and measures
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
RES	renewable energy sources
SF_6	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	"UNFCCC biennial reporting guidelines for developed country Parties"
UNFCCC reporting guidelines on NCs	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications"
WAM	'with additional measures'
WEM	'with measures'
WOM	'without measures'

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the BR3[1] of Lithuania. The review was organized by the secretariat in accordance with 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", particularly "Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of Lithuania, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 12 to 17 March 2018 in Bonn by the following team of nominated experts from the UNFCCC roster of experts: Ms. Asia Adlan (Sudan), Mr. Menouer Boughedaoui (Algeria), Mr. Christo Christov (Bulgaria), Ms. Nancy Liliana Gamba Cabezas (Colombia), Mr. Domenico Gaudioso (Italy), Mr. Liviu Gheorghe (Romania), Mr. Dirk Günther (Germany), Ms. Fui Pin Koh (Malaysia), Ms. Sangchan Limjirakan (Thailand), Mr. Juan Luis Martin Ortega (Spain), Mr. Engin Mert (Turkey), Ms. Gherghita Nicodim (Romania), Mr. Koki Okawa (Japan), Ms. Marcela Itzel Olguin-Alvarez (Mexico), Mr. Brian Quirke (Ireland), Ms. Kristina Saarinen (Finland), Ms. Marina Shvangiradze (Georgia) and Ms. Caroline Tagwireyi (Zimbabwe). Mr. Gaudioso, Ms. Saarinen and Ms. Shvangiradze were the lead reviewers. The review was coordinated by Ms. Veronica Colerio, Ms. Suvi Monni and Ms. Sevdalina Todorova (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR3 of Lithuania in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR3 was submitted on 29 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were submitted on 3 January 2018. During the review, Lithuania explained that the CTF tables were submitted on 29 December 2017 (together with the BR3) but they were not uploaded due to technical issues with the new UNFCCC submission portal. Lithuania also provided a screenshot of the CTF submission, proving that the submission had been made on 29 December 2017. The ERT considered the information provided by the Party and agreed that the submission had been made on time.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Lithuania in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

[1] The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

Table 1
Summary of completeness and transparency of mandatory information reported by Lithuania in its third biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendations*
GHG emissions and trends	Complete	Transparent	
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	Issues 1 and 2 in table 3
Progress in achievement of targets	Complete	Mostly transparent	Issues 1 and 2 in table 5 Issue 1 in table 7 Issue 2 in table 11
Provision of support to developing country Parties[a]	NA	NA	NA

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

[a] Lithuania is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention.

II. Technical review of the information reported in the third biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

7. Total GHG emissions[2] excluding emissions and removals from LULUCF decreased by 58.2 per cent between 1990 and 2015, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 69.9 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Lithuania.

Table 2
Greenhouse gas emissions by sector and by gas for Lithuania for the period 1990–2015

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2014*	*2015*	*1990–2015*	*2014–2015*	*1990*	*2015*
Sector									
1. Energy	33 107.67	10 808.18	12 874.68	11 049.58	11 057.09	–66.6	0.1	68.9	55.0
A1. Energy industries	13 552.63	5 055.97	5 329.59	3 167.59	3 155.10	–76.7	–0.4	28.2	15.7
A2. Manufacturing industries and construction	6 164.93	1 091.49	1 290.66	1 309.09	1 187.30	–80.7	–9.3	12.8	5.9
A3. Transport	5 835.06	3 206.20	4 418.65	4 857.19	5 113.75	–12.4	5.3	12.1	25.4
A4. and A5. Other	7 289.26	1 242.45	1 589.52	1 429.38	1 302.47	–82.1	–8.9	15.2	6.5
B. Fugitive emissions from fuels	265.78	212.07	246.27	286.32	298.48	12.3	4.2	0.6	1.5
C. CO_2 transport and	NO	NO	NO	NO	NO	NA	NA	NA	NA

[2] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2017 annual submission, version 4.

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2014*	*2015*	*1990–2015*	*2014–2015*	*1990*	*2015*
storage									
2. IPPU	4 502.71	3 094.39	2 239.19	3 176.87	3 396.58	–24.6	6.9	9.4	16.9
3. Agriculture	8 853.48	4 156.97	4 329.22	4 529.73	4 600.30	–48.0	1.6	18.4	22.9
4. LULUCF	–3 511.89	–9 820.50	–9 901.15	–7 331.99	–6 705.03	90.9	–8.6	NA	NA
5. Waste	1 576.72	1 540.77	1 339.40	1 112.96	1 042.25	–33.9	–6.4	3.3	5.2
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Gas[a]									
CO_2	35 807.13	11 806.06	13 712.65	12 874.38	13 141.77	–63.3	2.1	74.5	65.4
CH_4	6 953.76	3 840.26	3 660.82	3 432.90	3 376.34	–51.4	–1.6	14.5	16.8
N_2O	5 279.69	3 931.20	3 143.50	3 106.10	3 093.94	–41.4	–0.4	11.0	15.4
HFCs	NO	22.08	259.52	449.48	478.36	NA	6.4	NA	2.4
PFCs	NO	NO	NO	NO	NO	NA	NA	NA	NA
SF_6	NO	0.72	5.99	5.98	5.54	NA	–7.2	NA	0.0
NF_3	NO	NO	NO	0.29	0.26	NA	–11.7	NA	0.0
Total GHG emissions without LULUCF	**48 040.58**	**19 600.32**	**20 782.48**	**19 869.14**	**20 096.21**	**–58.2**	**1.1**	**100.0**	**100.0**
Total GHG emissions with LULUCF	**44 528.69**	**9 779.82**	**10 881.33**	**12 537.14**	**13 391.18**	**-69.9**	**6.8**	**NA**	**NA**

Source: GHG emission data: Lithuania's 2017 annual submission, version 4.

[a] Emissions by gas without LULUCF and without indirect CO_2.

8. The decrease in total GHG emissions occurred mainly in the early 1990s and was mainly driven by the transition to a market-based economy by restructuring manufacturing industries, energy industries and agriculture.

9. National inventory arrangements are described in the BR3, and Lithuania refers to the NIR of the 2017 annual submission for further information. In brief, Lithuania's national inventory arrangements were established in accordance with a number of key regulatory legal acts by the Government of Lithuania and the Minister of Environment, which assigned responsibility for GHG inventory preparation to various institutions. In particular, starting in 2011, the Lithuanian EPA under the Ministry of Environment was nominated as the entity responsible for GHG inventory preparation by Order No. D1-1017 of the Minister of Environment (repealed by Order No. D1-61 of the Minister of Environment, 23 January 2014). There have been no changes in Lithuania's national inventory arrangements since its BR2. The Ministry of Environment is the national focal point to the UNFCCC and is designated as the single national entity responsible for the national GHG inventory. It has overall responsibility for the national system of the GHG inventory and is in charge of the legal, institutional and procedural arrangements for the national system and the strategic development of the national inventory. The responsibilities of EPA are the development and implementation of the QA/QC plan and specific QA/QC procedures, collection of activity data and emission factors used to calculate emissions, collaboration with sectoral experts on the selection of the best available methods for complying with the IPCC methodology, accomplishment of cross-cutting issues (key categories analysis, overall uncertainty assessment, analysis of GHG trends), and establishment of a GHG inventory database and archive where the GHG inventory submissions and all supporting reference material are stored and maintained. Since 2014, the EPA personnel responsible for the submission have also been responsible for the IPPU sector and the agricultural soils part of the agriculture sector.

2. Assessment of adherence to the reporting guidelines

10. The ERT assessed the information reported in the BR3 of Lithuania and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting

guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Assumptions, conditions and methodologies related to attainment of the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

11. For Lithuania the Convention entered into force on 22 June 1995. Under the Convention Lithuania committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The EU offered to move to a 30 per cent reduction target on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

12. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 using global warming potential values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

13. The EU 2020 climate and energy package includes the EU ETS and the ESD. The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

14. Under the ESD, Lithuania has a target of limiting its emission growth to 15 per cent above the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Lithuania's AEA changes follow a linear path from 12,936.66 kt CO_2 eq in 2013 to 15,240.06 kt CO_2 eq in 2020.[3]

15. The National Strategy for Climate Change Management Policy sets the sectoral 2020 goals and objectives in the field of climate change mitigation: the GHG emissions of the EU ETS sector are limited to 8,530 Mt CO_2 eq; for non-ETS sectors the Party has to comply with its annual GHG emission targets so that in 2020 it will not exceed 15.24 Mt CO_2 eq; the share of RES, by comparison with the overall final energy consumption of the country, will account for a minimum of 23 per cent; energy consumption will be reduced by 1.5 per cent every year to achieve in 2020 a reduction by 17 per cent compared with the 2009 level; and at least 0.38 per cent of the country's GDP will be assigned for implementation of the short-term climate change mitigation targets. Lithuania reported in its BR3 on its ratification of the Paris Agreement in 2016 and its commitment jointly with the EU and all member States to a binding target of at least 40 per cent domestic reduction of GHG emissions by 2030 in comparison with 1990. The target will be delivered by the reductions in the EU ETS and non-ETS sectors, amounting to 43 per cent and 30 per cent, respectively, by 2030 compared with 2005. The 2030 framework objectives will be achieved by the implementation of the EU climate and energy policies, mainly through the EU ETS and the effort-sharing regulation for 2021–2030, as well as the clean energy package legislation. Lithuania will promote the development of a low-carbon and climate-

[3] European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States' AEAs for the period from 2017 to 2020.

resilient economy in order to reduce jointly the GHG emissions within the EU by 80–90 per cent by 2050.

2. Assessment of adherence to the reporting guidelines

16. The ERT assessed the information reported in the BR3 of Lithuania and identified issues relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 3.

Table 3
Findings on the quantified economy-wide emission reduction target from the review of the third biennial report of Lithuania

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	Lithuania reported in CTF table 2(b) the base years for the gases covered by the target as 1990 for CO_2, CH_4 and N_2O and as 1995 for HFCs, PFCs and SF_6. In response to a question raised by the ERT during the review, Lithuania confirmed that these are the base years for its commitment under the Convention. However, the ERT considers that the base year for the target referred to in paragraph 11 above for Lithuania, as a member State of the EU, is 1990 for all gases (CO_2, CH_4, N_2O, HFCs, PFCs and SF_6). The ERT recommends that Lithuania improve the transparency of its reporting in the next BR by reporting in CTF table 2(b) the base years for each gas in accordance with its target (i.e. 1990 for CO_2, CH_4, N_2O, HFCs, PFCs and SF_6).
2	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	Lithuania reported in CTF table 2e(I) under "Other mechanism units under the Convention" the "Credits entitlements for 2013–2020 under the EU ETS" of 3,068.78 kt CO_2 eq. The ERT considers that the EU ETS is an internal EU mechanism and should not be reported as "other market-based mechanisms", which refers to mechanisms under the Convention. The ERT recommends that Lithuania improve transparency by including in CTF table 2e(I) only the relevant information related to the market-based mechanisms established under the Convention.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

C. Progress made towards the achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

17. Lithuania provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention. The Party reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

18. Lithuania provided information on a set of PaMs similar to those previously reported, except those that are new or revised, such as its NEIS (from 2012, with a revision currently under preparation), the National Renewable Energy Resources Programme for 2016–2020, the Programme on Heat Industry Development in 2015–2021 or the National Water Area Development Programme 2017–2023.

19. In response to a recommendation made by the previous ERT, the Party also provided in its BR3 information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance,

monitoring, reporting, archiving of information and evaluation of the progress made towards its target. Lithuania described the institutional arrangements and referred to its NC7; it also stated that it has not made any major changes to its domestic institutional arrangements since the submission of the BR2.

20. The Party did not report on its self-assessment of compliance with the emission reduction target and national rules for taking action against non-compliance.

21. The key overarching cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package.

22. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industries, PFC emissions from aluminium production and CO_2 emissions from some industrial processes (since 2013) that were not covered in the earlier phases of EU ETS.

23. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and it includes binding annual targets for each member State for 2013–2020.

24. Lithuania introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported are its NEIS, the National Renewable Energy Resources Development Strategy, the Strategy on Dwellings of the Republic of Lithuania, the law on energy from renewable sources and the Energy Efficiency Action Plan 2017–2019. In the energy sector, the mitigation actions with the highest estimated impact in 2020 are promoting energy efficiency in industry, which includes economic and information measures to promote the implementation of energy efficiency measures, and increasing the share of RES used by households, which is a regulatory measure aimed at increasing the share of RES in heating by 80 per cent between 2013 and 2020. In the transport sector, reduction of the final energy consumption in the transport sector is a regulatory measure that is expected to yield an emission reduction of 2,320 kt CO_2 eq by 2030. Of all the individual mitigation actions, the mitigation effect of biodegradable municipal waste management is expected to be the most significant in 2020. Other policies that are expected to deliver significant emission reductions by 2020 are increasing the forest area and increasing the share of electricity generated from RES.

25. Lithuania highlighted the domestic mitigation actions that are under development, such as the revised NEIS in the energy sector, which will affect the primary and final energy intensity. The Party reported in the PaMs sectoral tables mainly on the implemented mitigation actions. It reported on one adopted mitigation action in the energy sector (recommendation on the main energy strategic directions for industry subsectors) and one in the IPPU sector (ratification of the Kigali Amendment to the Montreal Protocol), and one planned mitigation action in the transport sector (taxation for vehicles in Lithuania). Table 4 provides a summary of the reported information on the PaMs of Lithuania.

Table 4
Summary of information on policies and measures reported by Lithuania

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	NEIS		
	National Renewable Energy Resources Development Strategy		
Energy			
Transport	Promotion of RES use in transport sector	423	
	Reduction of final energy consumption in transport sector		2 320
Renewable energy	Increasing the share of RES used by households	800	
	Increasing the share of electricity generated from RES	747	
Energy efficiency	Promotion of energy efficiency in industry	1 496	
	Renovation (modernization) of multi-apartment buildings	355	
IPPU	Best available technology use in cement production	500	
Agriculture	Implementation of the EU nitrates directive	100	
LULUCF	Increasing forest area	1 680	
Waste	Biodegradable municipal waste management	1940	

Note: The estimates of mitigation impact are estimates of emissions of CO_2 or CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

(b) Policies and measures in the energy sector

26. **Energy supply**. The objective of Lithuania's energy policy is to ensure security in supplying energy at competitive prices and with the lowest possible environmental impacts. The revised NEIS has the main goal of ensuring the energy independence of Lithuania by reducing electricity imports. The target is to produce domestically, in 2030, 70 per cent of electricity. To achieve this goal the Party implemented two projects for cogeneration plants with high efficiency based on biomass and waste. The plan is to use forest residues as well as softwood, with the potential being one billion cubic metres annually. The strategy sets the direction until 2050.

27. **Renewable energy sources**. Lithuania implements PaMs that aim to increase the share of electricity and district heating produced from RES and promote the use of RES in industry and in households. The law on energy from renewable sources, adopted in 2011 and updated in 2015, established targets for 2020 for RES to account for 23 per cent of final energy consumption, 20 per cent of electricity consumption and at least 60 per cent of district heating production. In the transport sector the target is for RES to account for a 10 per cent share of total energy use. Some of these targets were overachieved before 2020: the share of RES in total final energy consumption was 25.5 per cent in 2016.

28. **Energy efficiency**. The Energy Efficiency Action Plan for 2017–2019 implements improvements in policies related to fuel taxation, public and residential building renovation, energy audits in industry, saving energy in companies or replacing boilers in households. Energy efficiency in Lithuania is expected to increase by 1.5 per cent each year until 2020. The Programme on Heat Industry Development in 2015–2021 (adopted in 2015) is expected to contribute to the development and modernization of the relevant industry, including technical solutions and the appropriate mix of fuels for thermal energy production. The programme also describes the demand and potential for higher-efficiency cogeneration, investments and relevant time frames.

29. **Residential and commercial sectors**. The programme on multi-apartment building renovation aims to reduce the use of thermal energy in buildings that were built before 1993 by at least 20 per cent by the end of 2020. Their energy consumption is expected to be reduced by at least 1,000 GWh/year, corresponding to a GHG emission reduction of 230 kt CO_2 eq/year compared with the 2005 level. The public building renovation programme provides for the renovation of 700,000 m^2 by 2020, and is expected to reduce primary energy consumption by 60 GWh annually. In Lithuanian cities, approximately 72 per cent of residential space is heated via centralized heating systems. A reduction of 5 per cent in heat consumption for centralized heating is expected to be achieved by 2021 in comparison with the 2014 level as a result of efficiency improvements in public and multi-apartment buildings.

30. **Transport sector**. The National Programme on the Development of Transport and Communications for 2014–2022 has, among others, objectives to increase the mobility of goods and passengers, to improve the corridors of the EU Trans-European Transport Networks as well as their connections with national and local transport networks, to increase the energy efficiency of transport, to reduce the adverse impact of transport on the environment and to improve the safety and security of traffic. It contains an analysis of the potential future development of road, rail, maritime, inland waterways and air transport. The programme also identifies the main goals for the development of infrastructure for alternative transport energy sources, including electricity. In the Lithuanian fleet, around 15,000 electric cars are anticipated by 2025, of which there are expected to be 6,000 in 2020. Lithuania also has in place strategic documents that consider longer time frames; for example, according to "Recommendations on Lithuania's main energy strategy directions", approved by Order No. 1-1314 of the Minister of Energy of the Republic of Lithuania in 2016, the energy intensity of transport shall be reduced by 2.4 times in comparison with the current level in the transport sector by 2050.

31. **Industrial sector**. The Programme for Investment Incentives and Industry Development for 2014–2020 aims at more efficient use of energy and increased use of RES. The implementation of this programme is financed from the EU structural funds. According to "Recommendations on Lithuania's main energy strategy directions", the promotion of low energy intensive industry subsectors and the application of eco-innovative technologies are expected to save around 620 GWh of electricity consumption by 2025. Energy intensity in the industrial sector is expected to be reduced by 2.4 times compared with the current level by 2050.

(c) Policies and measures in other sectors

32. **Industrial processes**. Lithuania implements the control of volatile organic compound emissions resulting from the storage of petrol and its distribution from terminals to service stations through a law adopted on 2000 and revised in 2016 implementing the EU legislation in this area. The Party also has in place a regulation to reduce the direct and indirect impact on the environment and the potential risk on human health of volatile organic compound emissions released by paints, solvents, adhesives and other products. The new EU F-gas regulation (517/2014) aims at cutting total EU emissions from F-gases by two thirds by 2030 compared with the 2014 level. It prohibits placing F-gases on the market in certain circumstances where alternatives are available. For 2018 to 2020, quotas for legally placing HFCs on the EU market were reduced to 63 per cent of the 2015 level. Lithuania implements the EU F-gas regulation through four domestic orders of the Minister of Environment. Lithuania also amended its Administrative Infringement Code in 2016 to establish more stringent responsibilities for breaching the requirements of handling F-gases.

33. **Agriculture**. The National Rural Development Programme promotes the growth of the agriculture sector based on technologies that are territorially and environmentally balanced, climate-friendly, resilient, competitive and innovative. It also promotes sustainable farming, crop rotation, rational use of the synthetic fertilizers, and their replacement by organic fertilizers. Since 2014 Lithuania has produced biogas from livestock holdings. Another important mitigation action is the protection of waters against nitrate pollution (such as implementation of the EU nitrates directive and its latest amendment (1137/2008)), which contribute to reducing N_2O emissions.

34. **LULUCF**. The National Forest Area Development Programme 2012–2020 aims to increase forest coverage to 34.2 per cent of the territory by 2020 through afforestation of abandoned lands and by providing financial incentives for forest regeneration. In the period of the Rural Development Programme 2007–2013, an area of 17,200 ha was afforested and 8,400 ha were afforested in the period 2014–2016. The Forest Law, amended in 2011, provides that changing forest land to any other land is allowed only in exceptional cases.

35. **Waste management**. The National Waste Management Plan for 2014–2020 has the objective to minimize GHG emissions in the waste sector. By 2020, the reuse and recycling of waste materials such as paper, metal, plastic and glass from households, and from other sources where waste streams are similar to those from households, shall be increased to a minimum of 50 per cent, by weight, of overall waste. Also, reuse, recycling and other material recovery shall be increased to a minimum of 70 per cent, by weight, of total waste. Lithuania has 54 waste collection areas for biodegradable waste. According to the plan adopted in 2017 on implementing the EU circular economy package, the amount of recycled, reclaimed or otherwise used municipal waste is targeted to be around 65 per cent of total waste in 2020.

(d) Response measures

36. Lithuania did not report any information on the assessment of the economic and social consequences of response measures.

(e) Assessment of adherence to the reporting guidelines

37. The ERT assessed the information reported in the BR3 of Lithuania and identified issues relating to transparency, completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5
Findings on mitigation actions and their effects from the review of the third biennial report of Lithuania

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	The ERT noted that the information contained in the CTF table 3 is not consistent with the information reported in the textual part of the BR3. Specifically the ERT found the following inconsistencies: (a) In chapter 3.4 of the BR3, concerning PaMs in the energy sector, two planned projects are reported by the Party in the textual part. These PaMs are reported as "implemented" in the sectoral tables of the BR3 (table 3-3) and in CTF table 3. They refer to cogeneration power plants in Vilnius and Kaunas, for which the specified period for implementation is 2017–2020; (b) Lithuania did not report any mitigation actions in CTF table 3 as "planned", although in BR3 table 3-5 the mitigation action taxation for vehicles in Lithuania is reported as a planned mitigation action; (c) Lithuania reported in its BR3 for the LULUCF sector six mitigation actions (PaMs) in table 3-9 and provided the estimated mitigation impact for four of them, as with the reporting on PaMs in the NC7; in CTF table 3 of the BR3, for the same sector, only four policies are reported, including two with quantified impact; (d) In the tables of the BR3 the mitigation impact has been estimated for 2015, 2020 and 2030, whereas in CTF table 3 the mitigation impact is reported for 2020, 2025 and 2030. During the review, the Party explained that: (a) Lithuania applies the status definition of the PaMs provided in the UNFCCC reporting guidelines on NCs. In this respect the cogeneration power plants at Vilnius and Kaunas have the status "implemented" because the financing agreements for both plants have already been signed and the construction works of the new Vilnius cogeneration plant have already started; (b) In CTF table 3 the mitigation actions circular economy package in the waste sector and taxation for vehicles in the transport sector are reported as

		implemented by mistake; instead they should be reported as "planned"; (c) The textual part of the BR3 referring to the LULUCF sector provides the correct information about mitigation actions (PaMs). CTF table 3 should contain six PaMs for the LULUCF sector, including four with quantified impacts; (d) The lack of reporting for 2015 in CTF table 3 is due to the reporting template, which does not allow users to create the year 2015 for reporting. The ERT recommends that Lithuania improve the transparency of its reporting by providing in its next BR correct and consistent information on its mitigation actions in the textual part of the BR and in the tables. Regarding point (d) above, the ERT notes that 2015 is a historical year and is therefore not relevant for the future estimated impact of the reported mitigation actions.
2	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	The Party reported the notation key "NA" for the estimated mitigation impact of some PaMs and for some years in CTF table 3. In response to a question from the ERT, the Party stated that it is not currently possible to provide mitigation impacts for all PaMs and years and that the notation key "NE" would be more suitable. The ERT recommends that the Party improve the transparency of its reporting by including in its next BR information on the estimated mitigation impact of its mitigation actions in CTF table 3 or by providing clear explanations as to why this may not be possible due to its national circumstances.
3	Reporting requirement specified in paragraph 8 Issue type: completeness Assessment: encouragement	Lithuania did not provide in its BR3 information on the assessment of the economic and social consequences of response measures. In response to a question raised by the ERT, the Party provided a general reference to the NC7 (para. 4.12 on minimization of adverse effects), to specific projects listed in chapter 7 of the NC7, and to the 2017 NIR. The ERT encourages the Party to improve, in its next BR, the completeness of its reporting on the assessment of the economic and social consequences of response measures by providing the relevant information or by including a reference to the sections of the NC and the NIR where this information has been provided.
4	Reporting requirement specified in paragraph 24 Issue type: completeness Assessment: encouragement	The Party did not report on its self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science. It also did not report on national rules for taking action against non-compliance. During the review, Lithuania clarified that, in order to reach the 2020 ESD target, the quantitative annual GHG emission targets are established by sector in the National Climate Change Management Strategy, which was approved by the Parliament. The criteria for assessing the progress towards targets are set in the Strategy Implementation Action Plan, approved by the Government. Reports on the implementation of sectoral GHG emission targets under the ESD and EU ETS are presented to the Government annually. Representatives of the Ministry of Agriculture and the Ministry of Transport and Communications analyse and identify additional measures in the agriculture and transport sectors to comply with annual GHG emission allocations. The ERT encourages the Party to improve completeness by providing in the next BR, to the extent possible, information on the self-assessment of compliance with emission reductions in comparison with emission reduction commitments and on the progress made in the establishment of national rules for taking action against non-compliance, in line with the information provided during the review.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

38. For 2014 Lithuania reported in CTF table 4 annual total GHG emissions excluding LULUCF of 19,869.14 kt CO_2 eq, which is 58.6 per cent below the 1990 base-year level. In 2014 emissions from non-ETS sectors relating to the target under the ESD amounted to 12,922.27 kt CO_2 eq.

39. For 2015 Lithuania reported in CTF table 4 annual total GHG emissions excluding LULUCF of 20,096.21 kt CO_2 eq, which is 58.2 per cent below the 1990 base-year level. In 2015 emissions from non-ETS sectors relating to the target under the ESD amounted to 13,250.96 kt CO_2 eq.

40. On its use of units from LULUCF activities, Lithuania reported in CTF tables 4 and 4(a) the notation key "NA" because it is not using such units to achieve its target under the Convention. Furthermore, it reported in CTF tables 4 and 4(b) as zero the use of units from market-based mechanisms under the Convention and its Kyoto Protocol in 2014 and 2015 towards the achievement of its 2020 target. Table 6 illustrates Lithuania's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6
Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Lithuania to achieve its target

Year	*Emissions excluding LULUCF (kt CO_2 eq)*	*Contribution of LULUCF (kt CO_2 eq)*[a]	*Emissions including contribution of LULUCF (kt CO_2 eq)*	*Use of units from market-based mechanisms (kt CO_2 eq)*
1990	48 040.58	NA	NA	NA
2010	20 782.48	NA	NA	NA
2011	21 344.57	NA	NA	NA
2012	21 227.96	NA	NA	NA
2013	19 948.07	NA	NA	0
2014	19 869.14	NA	NA	0
2015	20 096.21	NA	NA	0

Sources: Lithuania's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

[a] The EU's unconditional commitment to reduce GHG emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF.

41. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Lithuania's emission reduction target under the Convention for non-ETS sectors is 15 per cent above the 2005 base-year level (see para. 14 above). In 2015 Lithuania's emissions from non-ETS sectors were 3.0 per cent (407.67 kt CO_2 eq) below the AEA under the ESD. The ERT noted that the Party's target does not include LULUCF and that it did not use market-based mechanisms in 2015.

42. The ERT noted that Lithuania is making progress towards its emission reduction target by implementing and planning mitigation actions that are delivering significant emission reductions. On the basis of the results of the projections (see para. 54 below), the ERT also noted that the Party will continue contributing to the achievement of the EU target under the Convention.

(b) Assessment of adherence to the reporting guidelines

43. The ERT assessed the information reported in the BR3 of Lithuania and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 7.

Table 7
Findings on estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry from the review of the third biennial report of Lithuania

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 10 Issue type: transparency Assessment: recommendation	In CTF table 4, Lithuania reported: (a) Under "Quantity of units from the market-based mechanisms under the Convention" in columns D and E "NA" for 1990 and 2010–2012 and zero for 2013–2016. The Party did not further explain the use of the notation key "NA" or the zeros; (b) Under "Quantity of units from other market-based mechanisms", for the years 2013–2016, the quantity of units and the respective amount in kt CO_2 eq for each year without providing any explanations of what these other market-based mechanisms are. During the review, Lithuania explained that: (a) The notation key and zero values represented the units used for compliance under the ESD; (b) The figures reported under "Quantity of units from other market-based mechanisms" should be reported in CTF table 4(b) under "Credit entitlements for 2013–2020 under the EU ETS for years 2015 and 2016". Lithuania also provided updated figures for the quantity of the corresponding amount in CO_2 eq. Regarding (b), the ERT considers the EU ETS as an internal EU mechanism and that it should not be reported as "other market-based mechanisms", which refer to mechanisms under the Convention (and such mechanisms have not been agreed yet), and that the EU ETS should not be reflected in CTF tables 4 or 4(b) at all. The ERT recommends that the Party improve the transparency of its reporting by providing in its next BR the information provided during the review relating to the use of notation keys and values in CTF table 4 and by reporting in its next CTF table 4 only the relevant information related to market-based mechanisms established under the Convention.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

44. Lithuania reported updated projections for 2020 and 2030 relative to actual inventory data for 2014 under the WEM scenario. The WEM scenario reported by Lithuania includes implemented and adopted PaMs.

45. In addition to the WEM scenario, Lithuania reported the WAM scenario. The WAM scenario includes planned PaMs. The definitions of the scenarios correspond to those provided in the UNFCCC reporting guidelines on NCs, namely that WEM corresponds to implemented and adopted measures and WAM corresponds to planned measures.

46. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions for 2015–2035, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) as well as NF_3 for 2020–2035. The projections are also provided in an aggregated format for each sector. During the review, the Party confirmed that global warming potential values were taken from the AR4.

47. Lithuania did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

48. Emission projections related to international aviation and navigation were reported separately in BR3 CTF tables 6(a) and 6(b) and were not included in the totals. Lithuania reported on factors and activities affecting emissions for each sector.

(b) Methodology, assumptions and changes since the previous submission

49. The methodology used for the preparation of the projections is different from that used for the preparation of the emission projections for the NC6. The BR3 indicates that projections have been calculated according to "Methodological guidance for the preparation of national GHG emission projections", prepared in 2016 by the Lithuanian Energy Institute. During the review, Lithuania reported supporting information explaining the methodologies and the changes made since the NC6:

(a) GHG emissions for the NC6 report were estimated using the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* and the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, while for the BR3 the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* was used;

(b) The global warming potential values in the NC6 were taken from the Second Assessment Report of the Intergovernmental Panel on Climate Change, while in the BR3 they were taken from the AR4;

(c) A WOM scenario was not developed in the BR3, but it was presented in the NC6;

(d) A WAM scenario was presented in the NC6 for all sectors excluding LULUCF, while in the BR3 a WAM scenario was presented for the energy, waste and LULUCF sectors;

(e) The F-gas projections were calculated in the BR3, while constant emission values were used in the NC6. NF_3 projections were included in the BR3;

(f) New country-specific emission factors for fuels were used for projections in the BR3;

(g) The projection for population was obtained from Lithuanian institutions in the NC6, but it was taken from *EU Reference Scenario 2016* for the BR3;

(h) Road transport projections were prepared taking into consideration the linearly extrapolated number of road vehicles of different types in the BR3, while the NC6 used forecasts of activity data for road transport in five-year intervals prepared by the Ministry of Transport and Communications.

50. Key underlying assumptions for the projections, such as population growth, GDP growth and international fuel prices, were reported in CTF table 5. During the review, Lithuania confirmed that the assumption on population growth was obtained from *EU Reference Scenario 2016*, and assumptions for GDP growth rate and international fuel prices were obtained from a Lithuanian energy sector development analysis published by the Lithuanian Energy Institute.

51. During the review, Lithuania also provided a comparison of the parameters used for the projections for the NC6 and BR3 for 2020.

52. The Party reported sensitivity analyses for the energy, agriculture and LULUCF sectors. Sensitivity analyses were conducted for a number of important assumptions, such as GDP and carbon price. During the review, the Party confirmed that sensitivity analyses of energy prices and population were not performed for the BR3.

(c) Results of projections

53. The projected emission levels under different scenarios and the quantified economy-wide emission reduction target are presented in table 8 and the figure below.

Table 8
Summary of greenhouse gas emission projections for Lithuania

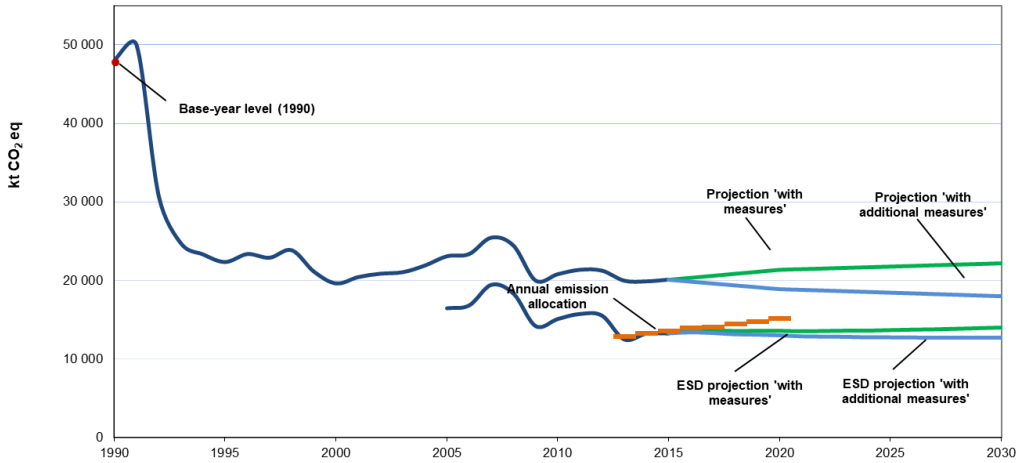
	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year level (%)*	*Changes in relation to 1990 level (%)*
Quantified economy-wide emission reduction target under the Convention[a]	NA	NA	NA
Inventory data 1990[b]	48 040.58	NA	NA
Inventory data 2015[b]	20 096.21	–58.2	–58.2
WEM projections for 2020[c]	21 330.29	–55.6	–55.6
WAM projections for 2020[c]	18 874.84	–60.7	–60.7
WEM projections for 2030[c]	22 135.62	–53.9	–53.9
WAM projections for 2030[c]	17 944.58	–62.6	–62.6

[a] The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its 28 member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020.

[b] From Lithuania's BR3 CTF table 6.

[c] From Lithuania's NC7 and/or BR3.

Greenhouse gas emission projections reported by Lithuania



Sources: (1) Data for the years 1990–2015: Lithuania's 2017 annual inventory submission, version 4; total GHG emissions excluding LULUCF; (2) data for the years 2020 and 2030: the Party's BR3 CTF tables 6(a) and 6(c); total GHG emissions excluding LULUCF; (3) data for historical ESD emissions 2005–2014 and projected ESD emissions 2015–2030 provided by the Party during the review.

54. Lithuania's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 21,330.29 and 22,135.62 kt CO_2 eq, respectively, under the WEM scenario, which represents a decrease of 55.6 and 53.9 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 60.7 and 62.6 per cent and amount to 18,874.84 and 17,944.58 kt CO_2 eq, respectively. The 2020 projections suggest that Lithuania will continue contributing to the achievement of the EU target under the Convention (see para. 11 above).

55. Lithuania's target for non-ETS sectors is to limit its emission growth to 15 per cent above the 2005 level by 2020 (see para. 14 above). Lithuania's AEA, which corresponds to its national emission target for non-ETS sectors, changes linearly from 12,936.66 kt CO_2 eq in 2013 to 15,240.06 kt CO_2 eq in 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 13,571.56 kt CO_2 eq by 2020. Under the WAM scenario, Lithuania's emissions from non-ETS sectors in 2020 are projected to be 13,002.06 kt CO_2 eq. The projected emission levels under the WEM and

WAM scenarios are 10.9 and 14.7 per cent, respectively, below the AEA for 2020. The ERT noted that this suggests that Lithuania expects to meet its ESD target under the WEM scenario.

56. Lithuania presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Lithuania presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	27 272.61	6 196.60	3 971.56	6 587.12	3 068.14	–77.3	–85.4	–75.8	–88.8
Transport	5 835.06	5 560.96	5 334.45	6 285.24	5 666.15	–4.7	–-8.6	7.7	–2.9
Industry/industrial processes	4 502.71	3 945.26	3 945.26	3 742.89	3 742.89	–12.4	–12.4	–16.9	–16.9
Agriculture	8 853.48	4 989.38	4 989.38	5 093.04	5 093.04	–43.6	–43.6	–42.5	–42.5
LULUCF	–3 511.89	–7 954.16	–8 652.91	–7 988.96	–8 988.74	126.5	146.4	127.5	156.0
Waste	1 576.72	638.09	634.19	427.31	374.35	–59.5	–59.8	–72.9	–76.3
Total GHG emissions without LULUCF	**48 040.58**	**21 330.29**	**18 874.84**	**22 135.62**	**17 944.58**	**–55.6**	**–60.7**	**–53.9**	**–62.6**

Source: Lithuania's BR3 CTF table 6.

57. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy and agriculture sectors, amounting to projected reductions of 21,076.01 kt CO_2 eq (77.3 per cent) and 3,864.10 kt CO_2 eq (43.6 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario remains the same. Significant increases in removals are also projected to occur for LULUCF between 1990 and 2020 (4,442.27 kt CO_2 eq (126.5 per cent) under the WEM scenario).

58. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector remain the same.

59. Lithuania presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 10.

Table 10
Summary of greenhouse gas emission projections for Lithuania presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Gas	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2	35 807.13	14 428.77	12 027.37	15 552.70	11 510.99	–59.7	–66.4	–56.6	–67.9
CH_4	6 953.76	2 908.46	2 876.91	2 774.45	2 661.81	–58.2	–58.6	–60.1	–61.7
N_2O	5 279.69	3 669.99	3 647.49	3 696.68	3 659.99	–30.5	–30.9	–30.0	–30.7
HFCs	NO	316.59	316.59	105.31	105.31	NA	NA	NA	NA
PFCs	NO	NO	NO	NO	NO	NA	NA	NA	NA
SF_6	NO	5.98	5.98	5.98	5.98	NA	NA	NA	NA
NF_3	NO	0.50	0.50	0.50	0.50	NA	NA	NA	NA
Total GHG emissions without LULUCF	**48 040.58**	**21 330.29**	**18 874.84**	**22 135.62**	**17 944.58**	**–55.6**	**–60.7**	**–53.9**	**–62.6**

Source: Lithuania's BR3 CTF table 6.

60. For projections under the WEM scenario presented by gas, for 1990 to 2020 the most significant reductions are projected for CO_2 and CH_4: 21,378.36 kt CO_2 eq (59.7 per cent) and 4,045.30 kt CO_2 eq (58.2 per cent), respectively.

61. The pattern of projected emissions reported for 2030 by gas under the WEM scenario remains the same.

62. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 and 2030 presented by gas remain the same.

63. In its BR3, Lithuania referred to its NC7 for detailed information on changes in projections since the NC6. The ERT noted that Lithuania reported in NC7 table 5-7 a comparison of the scenarios with those reported in the NC6. During the review, the Party explained that there were errors in table 5-7. Following corrected information being provided by Lithuania during the review, the ERT noted that, for example, projected emissions under the WEM scenario reported in the BR3 have decreased by 16.5 per cent when compared with the 2020 projections in the NC6. In addition to the summary of changes to the methodology and approach used for preparing projections since the NC6 (see para. 49 above), Lithuania provided, during the review, a comparison of the parameters used for the projections for the NC6 and BR3 for 2020. For example, in the BR3, the values for population and final energy consumption in the industry, residential and services sectors are assumed to be lower for 2020 compared with those parameters used for the projections in the NC6. GDP growth and final energy consumption in transport are higher in the BR3 scenarios compared with the NC6 scenarios for 2020.

(d) Assessment of adherence to the reporting guidelines

64. The ERT assessed the information reported in the BR3 of Lithuania and identified issues relating to transparency, completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 11.

Table 11
Findings on greenhouse gas emission projections reported in the third biennial report of Lithuania

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 28 Issue type: completeness Assessment: encouragement	The chapter in the BR3 on projections does not include a WOM scenario (see para. 49 above), although such a scenario was included in the NC6. During the review, Lithuania explained that a WOM scenario was not provided because its compilation would require human resources. The Party also stated that the value of the WOM scenario, as a backward-looking exercise, would be limited because it would not provide value in steering forward-looking policy decisions. The ERT encourages Lithuania to improve the completeness of its reporting by including a WOM scenario in its next BR or to provide a duly substantiated explanation as to why this information is not included in its BR.
2	Reporting requirement[a] specified in paragraph 31 Issue type: transparency Assessment: recommendation	It is not clear in the BR3 projections chapter (e.g. section 4.1) what year is used as the starting point for the WEM and WAM scenarios. During the review, Lithuania confirmed that the starting point for all sectoral projections was 2014. The ERT recommends that Lithuania clearly indicate the year used as a starting point for its projections in the projections chapter of its next BR in order to enhance transparency.
3	Reporting requirement[a] specified in paragraph 32 Issue: transparency	According to paragraph 32 of the UNFCCC reporting guidelines on NCs, for the WEM and WAM projections, the starting point should generally be the latest year for which inventory data are available in the NC. The ERT considers that as the NC7 was due 1 January 2018, the latest available inventory is that submitted in 2017 and consequently the latest available inventory year is 2015. In chapter 1 of the BR3, inventory data are provided

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: encouragement	for the period 1990–2015 in line with the 2017 annual submission, but 2014 is used as a starting point for the projections. During the review, Lithuania indicated that it did not use the latest available inventory year (2015) as the base year for the projections because the most recently reviewed GHG emission data (1990–2015) were not available until the end of September 2017. For the BR3 it used the projections submitted to the European Commission in March 2017 (updated after the EU internal review in May 2017) under EU regulation 525/2013, with 2014 as the starting point. The Party explained that it considered that the time frame was too short for updating the projections to use 2015 as the starting point. The ERT encourages Lithuania to use the latest inventory year for which inventory data are available as the starting point for scenarios in the next BR in order to enhance transparency or to provide a duly substantiated explanation of why this is not possible in its next BR.
4	Reporting requirement[a] specified in paragraph 35 Issue type: completeness Assessment: encouragement	Projections of indirect GHGs are not provided in the BR3. During the review, the Party explained that it did not provide this information as it is not a mandatory requirement in the NC reporting guidelines. The ERT encourages Lithuania to improve the completeness of its reporting by including projections of indirect gases in its next BR.
5	Reporting requirement[a] specified in paragraph 42 Issue type: completeness Assessment: encouragement	The BR3 indicates that projections of GHG emissions have been calculated according to "Methodological guidance for the preparation of national GHG emission projections", prepared in 2016 by Lithuanian Energy Institute, and a reference to this methodological guidance is included in the BR3. However, there is insufficient information in the BR3 to enable the ERT to obtain an understanding of the models and/or approaches used for projecting GHG emissions. During the review, Lithuania provided a summary of the models and approaches used for the projections. The ERT encourages Lithuania to improve the completeness of its reporting by including in its next BR summary information on the models and/or approaches used for projecting GHG emissions.
6	Reporting requirement[a] specified in paragraph 43 Issue type: transparency Assessment: encouragement	Lithuania's BR3 did not include for each model or approach used for projections information such as the gases/sectors considered, the type of model used (key characteristics, original purpose) and the model's strengths/weaknesses, as well as how it accounts for any overlap or synergies that may exist between different PaMs. In the BR3, the Party referred to the "Methodological guidance for the preparation of national GHG emission projections". During the review, Lithuania provided additional information on the models and approaches used. For example, it explained that the MESSAGE model was used for the energy sector. To increase transparency, the ERT encourages Lithuania to include in the next NC for each model and approach used for projections the following information: the gases/sectors considered, the type of model used (key characteristics, original purpose) and the model's strengths/weaknesses, as well as how it accounts for any overlap or synergies that may exist between different PaMs.
7	Reporting requirement[b] specified in paragraph 12 Issue type:	In the BR3, Lithuania explained that the models and methods used are the same as those used in preparing the projections for the NC6 and BR2. Lithuania also referred to the NC7, which included information on the differences in the results of projections between the NC6 and NC7. However, Lithuania did not report on the main differences in the assumptions used for

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	transparency	projections between its NC6 and BR3.
	Assessment: encouragement	During the review, Lithuania provided information on the main differences in the projections between the NC6 and BR3 (see para. 49 above). This information indicated changes in the methods used. The ERT encourages Lithuania to enhance the transparency of its reporting by including in its BR the main differences in the assumptions and methods used between the projections in its BR and those in its most recent NC.
8	Reporting requirement[b] specified in CTF table 5 Issue type: transparency	In CTF table 5, international fuel prices are not included for historical years. During the review, Lithuania explained that projections of international fuel prices were developed by the Lithuanian Energy Institute on the basis of historical prices published by the Department of Energy of the United States of America and the International Energy Agency.
	Assessment: encouragement	The ERT encourages Lithuania to enhance the transparency of its reporting by including international fuel prices for historical years in CTF table 5 of its next BR.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs and on BRs.

[a] Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

[b] Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs.

D. Provision of financial, technological and capacity-building support to developing country Parties

65. Lithuania is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Lithuania provided information in the BR3 on its provision of support to developing country Parties. The ERT commends Lithuania for reporting this information and suggests that it continue to do so in future BRs.

66. In its BR3, Lithuania provided information on financial resources related to the implementation of the Convention through bilateral, regional and multilateral channels from 2011 to 2017. The multilateral support was provided through the World Bank for the Energy Sector Management Assistance Programme (in 2011 and 2012), the European Bank for Reconstruction and Development for the Eastern Europe Energy Efficiency and Environmental Partnership Fund (in 2011), the European Investment Bank for the Eastern Partnership Technical Assistance Trust Fund (in 2014, 2015 and 2016) and the Green Climate Fund (in 2015). The bilateral and regional support was provided to Armenia, Georgia, Malaysia and the Republic of Moldova. Examples of projects financed by Lithuania include the construction of two solar power plants in Malaysia; the construction of solar power plants and installation of biomass boilers for residential heating in kindergartens, schools and a health centre in the Republic of Moldova; and the construction of solar power plants in schools and kindergartens in Georgia.

67. Lithuania provided in CTF tables 7, 7(a) and 7(b) quantitative information on financial support allocated in 2015 and 2016 through multilateral and bilateral channels towards mitigation and cross-cutting activities. In 2015, of climate-specific funding, EUR 282,233 was for mitigation, EUR 150,000 was for cross-cutting activities and EUR 50,000 was for other. In 2016 the corresponding figures were EUR 390,590, EUR 150,000 and EUR 50,000.

68. The Party's CTF table 7(a) indicates that the country did not make a direct contribution to the Adaptation Fund, established in accordance with decision 10/CP.7.

69. Lithuania also provided information on its capacity-building activities, including waste management system improvement in Serbia and the project Strengthening Sustainable Management of Forests in Georgia.

III. Conclusions and recommendations

70. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Lithuania in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; and progress made by Lithuania in achieving its target.

71. Lithuania's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 58.2 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 69.9 per cent below its 1990 level, in 2015. Emission decreases were driven by the transition to a market-based economy by restructuring manufacturing industries, energy industries and agriculture.

72. Under the Convention Lithuania committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, expressed using global warming potential values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

73. Under the ESD Lithuania has a target of limiting its emission growth to 15 per cent above the 2005 level by 2020. The 2015–2020 linear progression in Lithuania's AEAs (its national emission target for non-ETS sectors) is 13,658.63–15,240.06 kt CO_2 eq.

74. Lithuania's main policy framework relating to energy and climate change is the implementation of the EU 2020 climate and energy package. The key legislation, plans and programmes supporting Lithuania's climate change goals are: NEIS, the Energy Efficiency Action Plan, the National Renewable Energy Resources Programme for 2016–2020, the National Programme for Transport and Communications, the EU regulation on F-gases, the Rural Development Programme 2014–2020, the National Water Area Development Programme 2017–2023, the National Forest Area Development Programme 2012–2020 and the National Waste Management Plan for 2014–2020. The most significant mitigation impacts stem from actions that aim at promoting the use of RES in households, electricity generation and transport or improving energy efficiency in industry, transport and multi-apartment buildings. Measures in agriculture (e.g. implementation of the EU nitrates directive), forestry (e.g. increase of the forest area by afforestation) and waste (e.g. management of biodegradable municipal waste) sectors will also contribute to emission reductions by 2020.

75. For 2015 Lithuania reported in CTF table 4 total GHG emissions excluding LULUCF of 20,096.21 kt CO_2 eq. Lithuania is not planning to make use of market-based mechanisms to achieve its target.

76. The GHG emission projections provided by Lithuania in the BR3 correspond to the WEM and WAM scenarios. Under these scenarios, emissions are projected to be 55.6 and 60.7 per cent below the 1990 level by 2020, respectively. Lithuania's target for the non-ETS sectors is to limit its emission growth to 15 per cent above the 2005 level by 2020. Lithuania's AEA, which corresponds to its national emission target for non-ETS sectors, is 15,240.06 kt CO_2 eq for 2020. The projected level of emissions for non-ETS sectors under the WEM and WAM scenario is 10.9 and 14.7 per cent, respectively, below the AEA for

2020. On the basis of the reported information, the ERT concludes that Lithuania expects to meet its target for non-ETS sectors.

77. Lithuania is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Lithuania provided information in the BR3 on its provision of support to developing country Parties.

78. In the course of the review, the ERT formulated recommendations for Lithuania to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR, namely to improve the transparency of its reporting by:[4]

(a) Reporting in CTF table 2(b) the base year for each gas in accordance with its target (i.e. 1990 for CO_2, CH_4, N_2O, HFCs, PFCs and SF_6) (see issue 1 in table 3);

(b) Including in CTF table 2e(I) only the relevant information related to the market-based mechanisms established under the Convention (see issue 2 in table 3);

(c) Providing correct and consistent information on its mitigation actions in the textual part of the BR and in the tables (see issue 1 in table 5);

(d) Providing information on the estimated mitigation impact of its mitigation actions in CTF table 3 or providing clear explanations as to why this may not be possible due to its national circumstances (see issue 2 in table 5);

(e) Providing information related to the use of notation keys and values in CTF table 4 and reporting in CTF table 4 only the relevant information related to the market-based mechanisms established under the Convention (see issue 1 in table 7);

(f) Clearly indicating the year used as a starting point for its projections (see issue 2 in table 11).

[4] The recommendations are given in full in the relevant chapters of this report.

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Lithuania. Available at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php.

BR3 of Lithuania. Available at http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php.

BR3 CTF tables of Lithuania. Available at http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php.

"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.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at http://unfccc.int/resource/docs/cop5/07.pdf.

"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.

NC7 of Lithuania. Available at http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/10138.php.

Report of the technical review of the second biennial report of Lithuania. FCCC/TRR.2/LTU. Available at http://unfccc.int/resource/docs/2016/trr/ltu.pdf.

Report on the technical review of the sixth national communication of Lithuania. FCCC/IDR.6/LTU. Available at http://unfccc.int/resource/docs/2014/idr/ltu06.pdf.

"UNFCCC biennial reporting guidelines for developed country Parties". Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Jolanta Merkeliene (Ministry of Environment), including additional material. The following documents[1] were provided by Lithuania:

BGI Consulting, UAB. 2015. *Services for the Development of the Criteria for Determining the Rates of Vehicle Circulation Tax, based on the Experience of Other Countries and Statistical Data and Formulation of Recommendations for the Taxation of Vehicles in Lithuania, with Justification of the Recommended Rates and Expected Outcomes. Summary.* Vilnius.

Lithuanian Energy Institute, Laboratory of Energy Systems Research. *Methodological Guidance for the Preparation of National Greenhouse Gas Emission Projections.*

National Energy Independence Strategy. Unofficial translation from Lithuanian to English.

[1] Reproduced as received from the Party.

Seimas of the Republic of Lithuania. 2012. *Resolution Approving the National Strategy for Climate Change Management Policy 6 November 2012, No XI-2375.* Vilnius.