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Report of the in-depth review of the fifth national communication of Lithuania

Parties included in Annex I to the Convention are requested, in accordance with decision 10/CP.13, to submit a fifth national communication to the secretariat by 1 January 2010. In accordance with decision 8/CMP.3, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their fifth national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. This report presents the results of the in-depth review of the fifth national communication of Lithuania conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

Contents

I. Introduction and summary

A. Introduction

1. For Lithuania the Convention entered into force on 22 June 1995 and the Kyoto Protocol on 16 February 2005. Under the Kyoto Protocol, Lithuania committed itself to reducing its greenhouse gas (GHG) emissions by 8 per cent compared with the base year[1] level during the first commitment period from 2008 to 2012.

2. This report covers the centralized in-depth review (IDR) of the fifth national communication (NC5) of Lithuania, coordinated by the UNFCCC secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 2 to 7 May 2011 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Imran Habib Ahmad (Pakistan), Mr. Luis Silva Caceres (Ecuador), Dr. James Davey (United Kingdom of Great Britain and Northern Ireland), Ms. Laura Dawidowski (Argentina), Ms. Medea Inashvili (Georgia), Ms. Natalya Parasyuk (Ukraine) and Mr. Simon Wear (New Zealand). Ms. Inashvili and Mr. Wear were the lead reviewers. The review was coordinated by Ms. Xuehong Wang and Ms. Ruta Bubniene (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by Lithuania as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Lithuania in its 2011 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

4. In accordance with decision 22/CMP.1, a draft version of this report was communicated to the Government of Lithuania, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

5. The ERT notes that Lithuania's NC5 complies in general with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[2] is provided in the NC5. Lithuania has considered some of the recommendations provided in the report of the centralized in-depth review of the third and fourth national communications of Lithuania.[3] The ERT commends Lithuania for its improved reporting.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above is complete and broadly transparent and was provided on time. During the review, Lithuania provided further relevant information.

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for carbon dioxide, methane and nitrous oxide, and 1995 for perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

[2] Decision 15/CMP.1, annex, chapter II.

[3] FCCC/IDR.4/LTU.

1. Completeness

7. The NC5 covers all sections required by the UNFCCC reporting guidelines and most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol, except for information on policies and measures (PaMs) in accordance with Article 2 of the Kyoto Protocol and a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources. The NC5 does not include some information required by the UNFCCC reporting guidelines, including how Lithuania believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, emission projections presented relative to actual inventory data for the preceding years, emission projections related to fuel sold to ships and aircraft engaged in international transport, information on actions taken to cooperate with developing countries with regard to adaptation, summary information on Global Climate Observing System (GCOS) activities, and information on actions taken to support capacity-building in relation to research and systematic observation in developing countries. The ERT recommends that Lithuania enhance the completeness of its reporting by providing this information in its next national communication. In addition, the ERT encourages Lithuania to provide the methodology used to make GHG projections for the non-energy sectors and sensitivity analyses conducted on assumptions in its next national communication.

2. Transparency

8. The ERT acknowledges that Lithuania's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is broadly transparent. The NC5 provides clear information on all aspects of implementation of the Convention and its Kyoto Protocol. The NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines and supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is easily identifiable.

9. In the course of the review, the ERT formulated a number of recommendations that could help Lithuania to further increase the transparency of its reporting with regard to national circumstances (see para. 12 below), PaMs (see paras. 24, 25, 28, 30, 39, 40, 43 and 44 below), projections and total effects of PaMs (see paras. 50–55 and 63 below), vulnerability, climate change impacts and adaptation (see para. 70 below), research and systematic observation (see paras. 71 and 74 below), education, training and public awareness (see paras. 76 and 78 below), a description of the national system (see para. 17 below), a description of the national registry (see paras. 20 and 21 below) and information on the minimization of adverse impacts (see para. 81 below).

3. Timeliness

10. The NC5 was submitted on 13 February 2010, after the deadline of 1 January 2010 mandated by decision 10/CP.13. Lithuania informed the secretariat about its difficulties with the timeliness of its national communication submission on 4 February 2010 in accordance with paragraph 139 of decision 22/CMP.1. The ERT notes with concern the delay in the submission of the NC5.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures

11. In its NC5, Lithuania has provided a description of the national circumstances and has elaborated on the framework legislation and key policy documents on climate change. The NC5 also referred to the description of the national system provided in the national inventory report (NIR) of the Party's 2009 annual submission. Further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B below.

1. National circumstances

12. In its NC5, Lithuania has provided a description of its national circumstances and information on how these national circumstances affect GHG emissions and removals in Lithuania and how changes in national circumstances affect GHG emissions and removals over time. Information is provided on the government structure, population, geography, climate, economy and relevant economic sectors. However, the ERT notes that, while the national circumstances are described in the NC5, how these national circumstances and changes thereof affect GHG emissions and removals in Lithuania could be further elaborated. The ERT notes that, since 1990, GHG emissions in Lithuania have decreased substantially, while the level of removals of GHGs has remained fairly constant. The decrease in GHG emissions occurred mainly in the early 1990s and was driven by the transition from a centrally-planned economy to a market economy and by the respective restructuring in manufacturing industries, energy industries and agriculture. In 2008, Lithuania's gross domestic product (GDP) was more than double that in 1995, while GHG emissions increased only slightly during the same period, representing some level of decarbonization of the economy. The ERT reiterates the recommendation made in the previous review report that Lithuania improve transparency by reporting in detail on how its national circumstances affect GHG emissions and removals in the country, particularly for the period 1990–1995. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

Table 1
Indicators relevant to greenhouse gas emissions and removals for Lithuania

	1990	*1995*	*2000*	*2005*	*2008*	*Change 1990–2000 (%)*	*Change 2000–2008 (%)*	*Change 1990–2008 (%)*
Population (million)	3.7	3.6	3.5	3.4	3.4	–5.4	–4.1	–9.2
GDP (2000 USD billion using PPP)	42.9	24.9	30.6	44.5	53.8	–28.8	76.1	25.4
TPES (Mtoe)	16.1	8.8	7.1	8.6	9.2	–55.7	28.4	–43.1
GDP per capita (2000 USD thousand using PPP)	11.6	6.9	8.7	13.0	16.0	–24.8	83.6	38.1
TPES per capita	4.4	2.4	2.0	2.5	2.7	–53.2	33.8	–37.4

	1990	*1995*	*2000*	*2005*	*2008*	*Change 1990–2000 (%)*	*Change 2000–2008 (%)*	*Change 1990–2008 (%)*
(toe)								
GHG emissions without LULUCF (Tg CO_2 eq)	49.6	21.8	19.2	22.6	24.0	–61.3	25.4	–51.5
GHG emissions with LULUCF (Tg CO_2 eq)	45.2	17.1	15.0	19.3	20.1	–66.7	33.4	–55.6
CO_2 emissions per capita (Mg)	9.9	4.2	3.4	4.2	3.9	–65.2	12.7	–60.7
CO_2 emissions per GDP unit (kg per 2000 USD using PPP)	0.9	0.6	0.4	0.3	0.3	–53.7	–18.9	–62.5
GHG emissions per capita (Mg CO_2 eq)	13.4	6.0	5.5	6.6	7.2	–59.1	30.7	–46.6
GHG emissions per GDP unit (kg CO_2 eq per 2000 USD using PPP)	1.2	0.9	0.6	0.5	0.5	–45.7	–28.8	–61.3

Sources: (1) GHG emissions data: Lithuania's 2011 greenhouse gas inventory submission; (2) Population, GDP and TPES data: International Energy Agency.

Note: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

13. Lithuania is a sovereign democratic republic comprising 10 counties that are further subdivided into 60 municipalities. The overall responsibility for climate change policymaking lies within the Ministry of Environment. The National Committee on Climate Change, consisting of various (government and non-government) stakeholders, coordinates the formulation and implementation of the national policy on climate change, implementation of the provisions of the Convention and compliance with the Kyoto Protocol. Implementation of the Kyoto Protocol is underpinned by the Law on Financial Instruments for Climate Change Management, adopted in July 2009. Further legislative arrangements and administrative procedures, including those for the national system and the national registry, are presented in chapters II.A.2, II.A.3 and II.B below.

14. In the NC5, Lithuania has provided a summary of information on GHG emission trends for the period 1990–2007. This information is consistent with the 2009 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format), are also provided in the NC5. During the review, the ERT assessed emissions data from the Party's recently submitted 2011 annual submission and has reflected the findings in this report.

15. Total GHG emissions excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 56.4 per cent between the base year and 2009, whereas total GHG emissions including net emissions or removals from LULUCF

decreased by 60.5 per cent. The reduction in GHG emissions was mainly attributed to CO_2 emissions, which decreased by 64.4 per cent over the same period. Methane (CH_4) emissions decreased by 44.2 per cent and nitrous oxide (N_2O) emissions decreased by 25.6 per cent between 1990 and 2009. Most of these decreases in emissions occurred between 1990 and 1995 (CO_2 by 58.2 per cent, CH_4 by 40.9 per cent, N_2O by 57.9 per cent and total GHGs by 56.0 per cent). The contribution of fluorinated gases (F-gases) to total GHG emissions is negligible throughout the years, although it shows an increase from about 0.009 per cent of total GHG emissions in 1995 to 0.19 per cent in 2009. Trends in the total GHG emissions were mostly underpinned by GHG emission trends in the energy sector, which were mainly due to the transition to a market economy during the early 1990s, which led to a sharp decline in activities in the energy industry sector. The decrease in emissions during the 2007–2009 period was due mainly to the global economic crisis and its impact on the economy of Lithuania. Analysis of drivers for GHG emission trends in each sector is provided in chapter II.B below. Table 2 provides an overview of GHG emissions by sector from the base year to 2009.

Table 2
Greenhouse gas emissions by sector in Lithuania, 1990–2009

	GHG emissions (Tg CO_2 eq)						*Change (%)*		*Shares[a] by sector (%)*	
Sector	*1990*	*1995*	*2000*	*2005*	*2008*	*2009*	*1990–2009*	*2008–2009*	*1990*	*2009*
1. Energy	33.7	14.3	11.0	13.0	13.1	11.9	–64.8	–9.0	68.0	55.0
A1. Energy industries	14.0	6.6	5.2	5.8	4.9	4.9	–64.8	0.5	28.2	22.8
A2. Manufacturing industries and construction	6.0	1.6	1.0	1.3	1.2	1.0	–83.2	–19.4	12.1	4.6
A3. Transport	7.7	3.9	3.4	4.4	5.4	4.5	–42.0	–17.4	15.5	20.6
A4.–A5. Other	5.9	2.0	1.1	1.3	1.3	1.2	–79.2	–2.7	11.9	5.7
B. Fugitive emissions	0.2	0.2	0.3	0.3	0.3	0.3	79.4	2.7	0.3	1.2
2. Industrial processes	4.1	1.9	2.7	3.6	4.9	3.6	–12.1	–25.6	8.3	16.8
3. Solvent and other product use	0.1	0.1	0.1	0.1	0.1	0.1	–9.8	–0.6	0.2	0.4
4. Agriculture	10.0	4.2	4.0	4.5	4.6	4.6	–53.8	0.3	20.2	21.4
5. LULUCF	–4.3	–4.7	–4.1	–3.3	–4.0	–3.7	–13.4	–5.3	–8.7	–17.4
6. Waste	1.6	1.3	1.4	1.4	1.4	1.4	–14.3	–0.6	3.3	6.4
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	**45.2**	**17.1**	**15.0**	**19.3**	**20.1**	**17.9**	**–60.5**	**–11.0**	**91.3**	**82.6**
GHG total without LULUCF	**49.6**	**21.8**	**19.2**	**22.6**	**24.0**	**21.6**	**–56.4**	**–10.1**	**100.0**	**100.0**

Note: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

Abbreviations: NA= not applicable, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

[a] The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

2. National system

16. In accordance with decision 15/CMP.1, Lithuania has provided in its NC5 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1 (decision 19/CMP.1). Lithuania also provided a reference to its 2009 annual submission, which contains a more detailed description of the national system. The description includes all the elements as required in decision 15/CMP.1.

17. In the NC5, Lithuania does not provide a description of its national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources. During the review, Lithuania informed the ERT that all the forests in the country are managed in a sustainable manner. Further, Lithuania provided the ERT with information on the principles that drive the actions for the preservation of biodiversity and the improvement of forest health. The ERT recommends that Lithuania include such information in its next national communication.

18. The ERT reiterates the conclusion made in the report of the individual review of the annual submission of Lithuania submitted in 2010[4] that Lithuania's national system is not performing its required functions as set out in decision 19/CMP.1. This refers in particular to the national system not being able to ensure that areas of land subject to land use, land use change and forestry activities under the Kyoto Protocol (KP-LULUCF) are identifiable in accordance with paragraph 20 of the annex to decision 16/CMP. The ERT notes that, at the time of the preparation and publication of this report, the question of implementation on the national system of Lithuania identified in the 2010 ARR remained unresolved.

3. National registry

19. In its NC5, Lithuania has provided information on the national registry, including a description of how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and how it complies with the requirements of the technical standards for data exchange between registry systems.

20. During the review, Lithuania provided additional information on the following: the measures put in place to safeguard, maintain and recover registry data; the security measures employed in the registry to prevent unauthorized manipulations; the measures put in place to protect the registry against security compromises; the test procedures related to the performance of the national registry; and the recording of the changes and discrepancies in the national registry. In response to questions raised by the ERT, Lithuania provided documents demonstrating how it records the changes related to the national registry and how it maintains these records. However, the ERT notes that documentation on implemented security measures and changes to the national registry software was not provided during the review. The ERT recommends that Lithuania provide such documentation for future reviews.

21. The ERT took note of the conclusion of the standard independent assessment report (SIAR) that no problems were found with the Party's national registry and that the recommendations made in the previous review report had been fully addressed. The ERT also took note of the recommendations made in the 2010 ARR. The ERT reiterates the

[4] FCCC/ARR/2010/LTU. Available at <http://unfccc.int/resource/docs/2011/arr/ltu.pdf>.

recommendation made in the SIAR that Lithuania specifically reference required public information that is considered confidential and cite the regulation that supports its confidentiality in its next annual submission and on its public website, and that it report this information in its next national communication.

22. The ERT concludes that Lithuania's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

23. As required by the UNFCCC reporting guidelines, Lithuania has provided in its NC5 detailed and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by summary tables on PaMs by sector. The NC5 contains a similar set of PaMs to those in the fourth national communication (NC4).

24. However, the ERT notes that Lithuania did not provide the following reporting element required by the UNFCCC reporting guidelines: information on how Lithuania believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. Some of the recommendations made in the previous review report were taken into consideration to improve reporting in the NC5, including providing information on the status of the implementation of PaMs. The ERT recommends that Lithuania include information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in its next national communication.

25. Lithuania provided detailed information on PaMs at the national level but limited information on how PaMs are designed and/or implemented at the subnational/local levels. During the review, the Party informed the ERT that PaMs are generally designed at the national level, but that implementation may be carried out at the local level in some sectors. The NC5 describes a number of framework PaMs, including the National Strategy for Climate Change Management Policy, the National Strategy for the Implementation of the UNFCCC until 2012, the Law on Financial Instruments for Climate Change Management and the Special Programme for Climate Change. However, there is a lack of detailed information in the NC5 on the relationships and linkages between these strategies and programmes. The ERT encourages Lithuania to provide such information in its next national communication.

26. In the NC5, Lithuania presents detailed information on its use of European Union (EU) structural assistance in the period 2007–2013, but it is not clear what impact this policy has on GHG emissions. During the review, Lithuania informed the ERT that structural assistance has been used to support investments in renewable energy district heating projects, the modernization of the old district heating pipelines and the modernization of public buildings. A Special Programme for Climate Change, financed through the transfer of assigned amount units, the sale of emission allowances at auction and other sources, has been established to generate funds to reduce energy consumption, enhance the efficiency of energy generation, reduce emissions across all sectors, promote renewables and forestation, support education, research and systematic observation, implement adaptation measures and provide support to reduce the financial and economic burden of the commitment to reduce GHG emissions on particular operators and entities.

27. Lithuania's target under the Kyoto Protocol is an 8 per cent reduction of its GHG emissions in relation to the base year level. Owing to its special national circumstances, namely the transition to a market economy during the early 1990s, which led to a sharp decline in economic activities that had a major impact on the energy sector, this target can be achieved without additional policy initiatives or strategies. Post-2012 GHG emission targets are not described in the NC5. During the review, Lithuania informed the ERT that additional milestones are listed within the framework of the EU climate and energy package 2008 (see para. 31 below).

28. The NC5 provides estimates of the effects of PaMs by sector in terms of emission savings. It is not clear how policies overlap and whether synergies between policies have been exploited. There is no clear explanation of how the effectiveness of policies is monitored and evaluated. Further, no information about the costs of implementation of PaMs is provided in the NC5. Lithuania has not reported on policies and practices which encourage activities that lead to higher levels of anthropogenic GHG emissions than would otherwise occur. The ERT encourages Lithuania to provide such information in its next national communication. Table 3 provides a summary of the reported information on the PaMs of Lithuania.

Table 3
Summary of information on policies and measures

Major policies and measures	*Examples/comments*
Policy framework and cross-sectoral measures	
European Union emissions trading scheme (EU ETS)	Promotion of the reduction of CO_2 emissions from installations covered by the EU ETS
Policies and measures by sector	
Energy	
Enhancement of the use of renewable energy sources (RES)	Increase the share of RES (including biofuels) in the national balance of primary energy at least up to 20 per cent by 2025 (978; 1,417)
Increase of energy efficiency	Modernization of multi-apartment and public buildings; energy-efficiency labelling; modernization of existing district heating systems (227; 984)
Promotion of cogeneration (heat and electricity)	Increase the share of cogeneration to 20 per cent of the total energy generation balance in 2010 and increase the share of district heat coming from combined heat and power plants to at least 75 per cent by 2020 (NE; 77)
New nuclear power station	Operationalization of a new nuclear power station by 2020 (NE; 2,300)
Transport	
Stimulation of biofuel production and consumption	Increase of biofuel in petrol and diesel fuel in the transport sector (190; 496)
Industrial processes	
Best available technology	Decrease of greenhouse gas emissions as a result of change of cement production technology (500; 500)
Joint implementation projects[a]	Decrease of N_2O emissions from production of nitrogen fertilizers and chemical products (1,467; 1,467)

Major policies and measures	*Examples/comments*
Agriculture	
Implementation of EU nitrates directive	Minimization of the nitrate pollution of groundwater and associated emission reductions (700; 1,700)
Forestry	
Afforestation of low-fertility soils	Increase of forest area by 3 per cent by 2020 (NE; 1,680)
Waste	
Biodegradable municipal waste handling	Reduction of the amount of biodegradable municipal waste sent to landfill (251; 538)
	Collection and use of CH_4 from all existing and new landfills (940; 1940)

Note: The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions in Gg CO_2 or CO_2 eq for the years 2010 and 2020.

[a] Emission reduction units generated from joint implementation projects will be transferred to the Party financing these projects.

Abbreviation: NE = not estimated.

1. Policy framework and cross-sectoral measures

29. Lithuania's NC5 describes in some detail the institutional arrangements that define and implement climate change policy in the country. The Ministry of Environment organizes and coordinates the implementation of the strategy for implementation of the UNFCCC, while the Ministries of Environment, Energy, Finance, Transport and Communications, Health, Education and Science, Economy and Agriculture are involved in policy design and delivery. The National Committee on Climate Change, a body made up of 21 representatives of ministries and other organizations, is responsible for coordinating national climate change policy.

30. According to the NC5, in general PaMs are designed at the national level, and some policies, for example the allocation of grants for building refurbishment, are dealt with at the local level. However, it is not clear from the NC5 what role local governments and municipalities play in the design and implementation of climate policy. The ERT encourages Lithuania to report in more detail on the role of subnational and local government in the context of climate change policy in its future national communications.

31. Lithuania has taken clear targets for both GHG emission limitation and the promotion of renewable energy sources from the EU climate and energy package 2008. Longer-term plans (post-2020) are not set out in the NC5. During the review week, Lithuania informed the ERT that, under the EU climate and energy package, Lithuania is bound to ensure that emissions from sectors not covered by the EU emissions trading scheme (ETS) (the non-ETS sector) increase by no more than 15 per cent on the 2005 level by 2020. In addition, 23 per cent of final energy consumed in Lithuania should be produced from renewable sources by 2020. The latter target appears particularly challenging, given that energy projections suggest that demand for primary energy in Lithuania will grow by 30 per cent between 2007 and 2020, which will require a sizeable new capacity of renewable energy sources to be commissioned.

32. Lithuania has implemented, or is in the process of implementing, a number of PaMs coordinated at the EU level, including the EU ETS, EU standards for emissions from vehicles (Euro 5 and Euro 6), EU rules on integrated pollution prevention and control

(IPPC) and the EU regulation on the control of F-gases. The EU ETS covers 103 installations in the sectors of energy industries and manufacturing industries and construction, with GHG emissions covered by the scheme amounting to 19.1 Tg CO_2 eq during the period 2005–2007. In 2008, there was a shortfall of 203,447 t CO_2 eq emission allowances, requiring the purchase of EUR 6.1 million of additional emission allowances. The EU climate and energy package provides for the continuation of the EU ETS, with emissions covered by the scheme required to fall by 21 per cent across the EU as a whole by 2020.

2. Policies and measures in the energy sector

33. Between 1990 and 2009, GHG emissions from the energy sector decreased by 64.8 per cent (21,824 Gg CO_2 eq), driven mainly by the transition to a market economy. Emissions from this sector increased slowly between 2000 and 2007, but experienced a sharp decrease (11 per cent) between 2007 and 2009, owing to the global financial crisis. The trend in GHG emissions from fuel combustion showed notable decreases in the transport sector between 1990 and 2009 (42 per cent or 3,221 Gg CO_2 eq), the commercial/institutional sector (86.5 per cent or 2,527 Gg CO_2 eq) and the residential sector (71.3 per cent or 1,822 Gg CO_2 eq). This trend was driven by an increase in biomass consumption in the residential sector, modernization of residential and commercial buildings, and an increase in electricity consumption (displacing fossil fuel consumption) in the residential and commercial sectors.

34. ***Energy supply***. Electricity supply in Lithuania was dominated by the Ignalina nuclear power plant, which closed at the end of 2009, with a mixture of generation from oil and gas making up the balance. Since the closure of the nuclear power plant, electricity has been provided by the Lithuanian power plant (gas-based combined heat and power (CHP)) and through electricity imports from the Russian Federation. Renewable energy from wind makes a small (less than 1 per cent) contribution to the overall electricity produced in Lithuania, but this sector has seen significant growth since it was established in 2004, with joint implementation (JI) projects contributing to the growth of renewables deployed in this sector. Lithuania is planning to develop a new nuclear power plant. The new plant is scheduled to become operational in 2020, delivering an estimated emission reduction of 2,300 Gt CO_2 eq when fully operational. During the review, Lithuania informed the ERT that the highest safety standards will be applied in the construction and operation of this new nuclear power plant.

35. ***Renewable energy sources***. Clear targets have been set for this sector. According to information provided in the NC5, 10.5 per cent of national energy consumed should be provided by biomass by 2009, with 1.65 per cent of electricity produced from biomass by 2010. About 7 per cent of electricity consumed in the country should be from renewables by 2010, and by 2020 23 per cent of total energy consumed should be from renewable sources. However, details on PaMs to promote renewable energy are not provided in the NC5. During the review, Lithuania informed the ERT that feed-in tariffs are the primary measure for promoting renewable energy.

36. ***Energy efficiency***. Significant efforts have been made to improve the energy efficiency of residential and public buildings. Voluntary agreements with energy companies are mentioned but not described in detail in the NC5. A 9 per cent final energy saving across the whole economy should be achieved in the nine years starting from 2008, measured against a 2005 baseline level. However, there is a lack of information on how the different polices contribute towards ensuring that this target is met.

37. ***Residential and commercial sectors***. About 70 per cent of multi-apartment buildings are due to be modernized by 2020, leading to a reduction in thermal demand per unit of used dwelling area of up to 30 per cent. With a target of ensuring that 35 per cent of

electricity generation comes from CHP plants by 2025, generation of heat from CHP will also lead to reduced emissions from this sector.

38. ***Transport sector***. The focus of PaMs in this sector is to increase the use of biofuel in transport. The targets are for biofuel to make up 5.75 per cent of fuel by 2010 and 15 per cent of fuel by 2020. Fiscal incentives, and subsidies to support the purchase of the raw materials used to generate biofuel, are described in the NC5. The upstream impacts of biofuel production and transport (including the impacts of biofuel production on LULUCF and emissions of CH_4 and N_2O) have not been estimated. Other measures include fiscal incentives and the development of infrastructure intended to increase the take-up of liquefied natural gas in Lithuania, improved traffic infrastructure and management, and the improvement of the efficiency of vehicles, in part through procurement policies.

39. The ERT notes that achieving a level of 15 per cent biofuel in transport fuels may pose problems in terms of cost, technical problems such as whether vehicles will be able to run effectively on this proportion of biofuel, and problems in relation to the sustainability of the development of biofuel in terms of the accessibility of sufficient sustainable biofuel. The ERT also notes that no information on PaMs seeking to reduce emissions from international shipping and aviation bunkers is reported in the NC5, except that Lithuania's emissions from international aviation will be covered under the EU ETS from 2012. The ERT recommends that Lithuania identify the steps necessary to promote and/or implement any decisions of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or reduce the GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels.

40. ***Industrial sector***. EU legislation on IPPC creates an incentive for operators to use the best available technologies. One specific area in which Lithuania is making efforts to reduce emissions is in the production of cement, for which moving a single cement production facility from the 'wet' to the 'dry' process is estimated to generate emission savings of 500 Gg CO_2 eq per year. A project to achieve this outcome is currently in progress. Voluntary agreements between government and industry have been set up to increase the efficient use of energy, particularly focusing on electricity and heat production. The ERT encourages Lithuania to report on these agreements in more detail in its next national communication, with a particular focus on whether these agreements have delivered results.

3. Policies and measures in other sectors

41. Between 1990 and 2009, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 38.6 per cent (6,127 Gg CO_2 eq), driven mainly by a significant decrease in agricultural activity between 1990 and 2000. The trend in GHG emissions from industrial processes showed a notable decrease (12.1 per cent or 500 Gg CO_2 eq) during the same period. Emissions from the waste sector decreased by 14.3 per cent (or 230 Gg CO_2 eq) between 1990 and 2009.

42. ***Industrial processes***. Between 1990 and 2009, GHG emissions from the industrial processes sector decreased by 12.1 per cent (500 Gg CO_2 eq), driven mainly by a combination of the transition to a market economy during the early 1990s and more recently the global financial crisis. Emissions fell between 1990 and 1993 and then increased up to 2007, when emissions were 34 per cent or 1,413 Gg CO_2 eq higher than the base year level. Emissions fell steeply between 2007 and 2009, driven by the global financial crisis.

43. PaMs are in place to reduce emissions of F-gases and reduce emissions of volatile organic compounds. The GHG mitigation impacts of these policies are not quantified in the

NC5 and the ERT encourages Lithuania to describe these policies in more detail, and provide quantified emission savings, in its future national communications.

44. ***Agriculture***. Between 1990 and 2009, GHG emissions from the agriculture sector decreased by 53.8 per cent (5,387 Gg CO_2 eq), driven mainly by a significant decline in agricultural activity between 1990 and 1995. Regulations to reduce grass and stubble burning are in place, as well as measures to prevent ploughing of natural meadows and to increase the carbon content of agricultural soils. However, the impact of these measures on GHG emissions is not quantified in the NC5. Ecological farming measures are predicted to reduce N_2O emissions through less usage, and more careful application, of fertilizer. However, it is not clear how the Rural Development Strategy will lead to increases in ecological farming, which has declined in Lithuania since 2005. The ERT encourages Lithuania to provide information on the estimated impact on GHG emissions of different PaMs in the agriculture sector, and on how the effectiveness of these PaMs will be monitored and evaluated, in its future national communications.

45. ***LULUCF***. The LULUCF sector generated net removals of 3.75 Tg CO_2 eq in Lithuania in 2009, with net GHG removals decreasing by 13.4 per cent since 1990. This trend was driven mainly by a reduction in removals per unit of living biomass area, presumably reflecting a change in the age profile of forests in Lithuania. PaMs in place in Lithuania include the conversion of low-fertility agricultural lands to forest, the implementation of forest management practices to limit felling and to restore forests damaged by natural calamities, the provision of payments to owners of forests to ensure their protection, and the application of strict environmental rules to designated areas ("Naturu 2000" zones).

46. ***Waste management***. Between 1990 and 2009, GHG emissions from the waste sector decreased by 14.3 per cent (230 Gg CO_2 eq), driven mainly by a decline in emissions from wastewater. PaMs in this sector include the closing of small landfills (and the removal of waste from these sites to larger, managed sites), the minimization of the quantities of biodegradable waste going to landfill and biogas collection at larger landfills. The wastewater system is being improved and expanded to cover 95 per cent of the total population. Recovery of sewage sludge for use in composting and/or anaerobic digestion will be promoted.

4. Minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol

47. In its NC5, Lithuania does not report information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. Further information on how Lithuania strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, as reported in the Party's 2011 annual submission, is presented in chapter II.I below. The ERT recommends that Lithuania provide this information in its next national communication.

C. Projections and the total effect of policies and measures, and supplementarity relating to the Kyoto Protocol mechanisms

48. In its NC5, Lithuania has reported on three GHG emission projection scenarios, 'without measures', 'with measures' and 'with additional measures', until 2020. Updated emission projections were provided during the review for the 'without measures' and the

'with measures' scenarios. The updated projections were developed in 2011 and include the effects of the global financial crisis.

1. Projections overview, methodology and key assumptions

49. The GHG emission projections provided by Lithuania in the NC5 include a 'with measures', a 'with additional measures' and a 'without measures' scenario until 2020, presented relative to actual inventory data for 2007. Projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section of the NC5, and on a gas-by-gas basis for all the GHGs: CO_2, CH_4, N_2O, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential values.

50. However, the ERT notes that Lithuania did not provide the following reporting elements required by the UNFCCC reporting guidelines: emission projections presented relative to actual inventory data for the preceding years, and emission projections related to fuel sold to ships and aircraft engaged in international transport. The ERT recommends that Lithuania provide this information in its next national communication.

51. The 'with measures' projections include measures under implementation or just approved and reported in the NC5. However, the NC5 does not report on the time frame for the implemented or approved PaMs included in the 'with measures' projections. The ERT encourages Lithuania to report the years for which policies have been implemented for the 'with measures' projections in its next national communication. The 'with additional measures' projections reported in the NC5 included a proposed additional nuclear power plant. This is the only planned PaM reported in the NC5 that was included in the 'with additional measures' scenario.

52. Lithuania has reported only limited information on the methodology used to make projections for the energy sector, and there is no information provided on the methodology used to make projections for the non-energy sectors. There is no information provided to explain the basic nature of the modelling, such as the basic characteristics of the models used for the non-energy sectors, the original purpose of the model, the key assumptions and drivers of the emission projections, and the relationship between energy prices and fuel switching. During the review, Lithuania explained that there had been no external peer reviews of the methodology used for making the projections. The ERT encourages Lithuania, for its future national communications, to improve the transparency of the methodology used to make projections for each sector by elaborating the characteristics of the model used to project activity, the original purpose of the model, the key drivers and sources of information on key drivers, the methodology used to convert activity level projections to emission projections, and whether the conversion of activity data to emissions data is consistent with the approach used for the national inventory. The methodological description should also explain any strengths and limitations, the model's coverage of emissions and how the model accounts for PaMs.

53. The ERT notes that Lithuania has not reported the assumptions used for variables such as GDP, population, oil prices and other energy prices, energy efficiency improvements and exchange rates. The ERT encourages Lithuania to report the values used for these variables in its future national communications. Lithuania has not reported on the sensitivity of its projections to assumptions (e.g. of GDP). The ERT encourages Lithuania to conduct sensitivity analyses on assumptions and to report the results in its future national communications.

54. The ERT notes that Lithuania does not provide the projections in tabular format on a gas-by-gas basis for each sector for the years 2005, 2010, 2015 and 2020. The ERT further

notes that Lithuania does not provide projections of the following indirect GHGs in the NC5: carbon monoxide (CO), nitrogen oxide (NO_X), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO_2). The ERT encourages Lithuania to provide this information in its future national communications.

55. In its previous two national communications, Lithuania was able to report 'with measures' and 'without measures' projections for the energy sector only. The ERT commends Lithuania for reporting projections for all sectors in the NC5. However, the ERT notes that the main differences in the assumptions used, methods employed and results between the projections in the NC5 and those in previous national communications have not been reported. The ERT encourages Lithuania to report such information in its next national communication.

2. Results of projections

56. Key results of Lithuania's GHG emission projections are provided in table 4 and the emission trends are illustrated in the figure below. Lithuania's base year emissions were fixed at 49.4 Mt CO_2 eq during the initial in-country review in 2007. Under the Kyoto Protocol, Lithuania committed itself to reducing its GHG emissions by 8 per cent compared with the base year level. This yields a target of 45.5 Mt CO_2 eq annual emissions for the first commitment period of the Kyoto Protocol (2008–2012). According to the projections presented in the NC5, Lithuania is on track to overachieve this target by domestic efforts alone. The 'with measures' projections indicate that Lithuania's GHG emissions will be 28.1 per cent below its Kyoto Protocol target in 2010.

57. The contributions of the different gases to Lithuania's total projected emissions are as follows: the projected emissions under the 'with measures' scenario in the NC5 show an increasing trend in overall GHG emissions from 2010 to 2020. Total emissions are expected to amount to 32.7 Tg CO_2 eq in 2010, of which CO_2, CH_4 and N_2O emissions are expected to account for 23.6, 3.4 and 5.7 Tg CO_2 eq, respectively. Total GHG emissions are expected to amount to 40.4 Tg CO_2 eq in 2020, of which CO_2, CH_4 and N_2O emissions are projected to account for around 29.4, 3.2 and 7.8 Tg CO_2 eq, respectively. This represents changes of +24.7, –6.3 and +34.8 per cent, respectively, compared with the 2010 levels. The level of emissions of F-gases is expected to stay constant.

Table 4
Summary of greenhouse gas emission projections for Lithuania

	Greenhouse gas emissions (Tg CO_2 eq per year)	*Changes in relation to base year level (%)*	*Changes in relation to 1990 level (%)*
Inventory data 1990[a]	49.6	0.3	NA
Inventory data 2009[a]	21.6	–56.3	–56.4
Kyoto Protocol base year[b]	49.4	NA	–0.3
Kyoto Protocol target[b]	45.5	–8.0	–8.3
Projections in the NC5			
'Without measures' projections for 2010[c]	38.0	–23.1	–23.3
'With measures' projections for 2010[c]	32.7	–33.7	–33.9
'With additional measures' projections for 2010[c]	32.7	–33.7	–33.9
'Without measures' projections for 2020[c]	49.5	0.1	–0.2
'With measures' projections for 2020[c]	40.4	–18.3	–18.6
'With additional measures' projections for 2020[c]	38.1[d]	–23.0	–23.2
Updated projections 2011			
'Without measures' projections for 2010[e]	26.0	–47.4	–47.5
'With measures' projections for 2010[e]	23.9	–51.6	–51.8
'Without measures' projections for 2020[e]	33.8	–31.6	–31.8
'With measures' projections for 2020[e]	26.4	–46.6	–46.8

Abbreviations: NA = not applicable, NC5 = Lithuania's fifth national communication.

[a] *Data source*: Lithuania's 2011 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF).

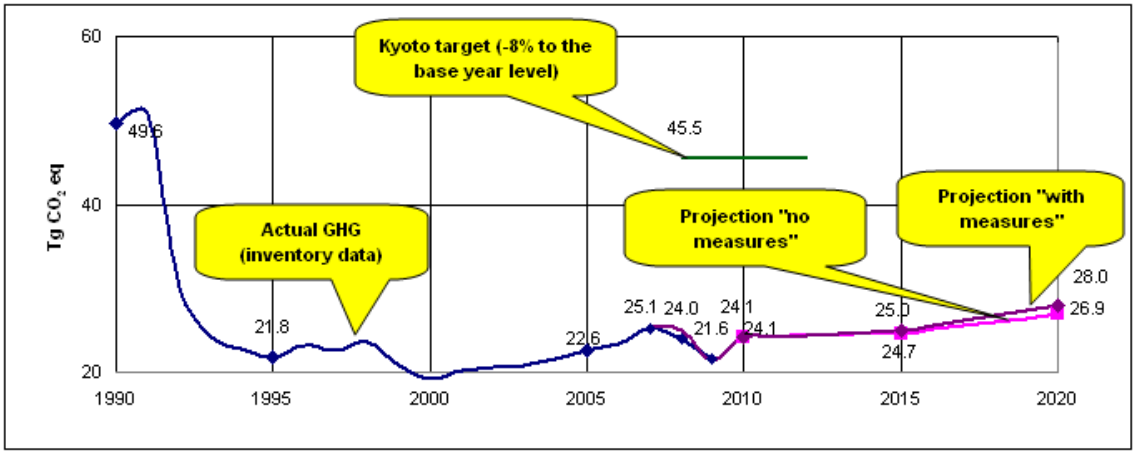
[b] *Data source*: Based on the initial report review contained in document FCCC/IRR/2007/LTU.

[c] *Data source*: Lithuania's fifth national communication.

[d] The row total in table 39 of Lithuania's NC5 was incorrectly reported as 40.4 Tg CO_2 eq; the total for the 'with additional measures' scenario was calculated by the expert review team as 38.1 Tg CO_2 eq for 2020.

[e] Updated projections provided by Lithuania during the in-depth review; the projections are for GHG emissions without LULUCF.

Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2009: Lithuania's 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry (LULUCF); (2) Data for the years 2009–2020: Lithuania's NC5; the emissions are without LULUCF; updated projections provided by the Party during the in-depth review.

Abbreviations: GHG = greenhouse gas, NC5 = Lithuania's fifth national communication.

58. During the review, Lithuania provided the ERT with its most recent projections, which were published in early 2011. The ERT notes that the updated projections provided by Lithuania during the review for both 2010 and 2020 are much lower than those reported in the NC5. Average annual emissions in 2010 under the 'with measures' scenario are expected to amount to 23.9 Tg CO_2 eq, which is lower than reported in the NC5 by 8.8 Tg CO_2 eq. By 2020, emissions under the 'with measures' scenario are projected to be 26.4 Tg CO_2 eq, which is lower than reported in the NC5 by 14.0 Tg CO_2 eq. Lithuania attributes the lower GHG emission projections to the effects of the global financial crisis.

59. The updated projections confirm that Lithuania can meet its Kyoto Protocol target (which is an 8 per cent reduction in emissions compared with the base year level) under the 'with measures' scenario with the domestic policies currently in place. Lithuania's longer-term target for the non-ETS sector is to have an emission increase of no more than 15 per cent by 2020 relative to the 2005 level. According to the updated projections, emissions in 2020 (without LULUCF activities) will amount to 26.4 Tg CO_2 eq under the 'with measures' scenario, representing a 16.8 per cent increase compared with the 2005 level. This means that it might not be easy for Lithuania to achieve its longer-term national target for the non-ETS sector with its existing PaMs, and that the use of additional measures is critically important. The ERT encourages the Party to provide more detailed information on these planned measures and to specify the long-term policy mix to reach its longer-term national target in its next national communication.

3. Total effect of policies and measures

60. In the NC5, Lithuania presents the estimated and expected total effect of implemented and adopted PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 1995 and 2000. It also presents relevant information on factors and activities for each sector for the years 1990 to 2020.

61. Lithuania reported that the total estimated effect of adopted and implemented PaMs is 10.8 Tg CO_2 eq in 2020 including LULUCF. According to the information reported in

the NC5, PaMs implemented in the energy (excluding transport) sector and the waste sector will each deliver the largest emission reductions (2.5 Tg CO_2 eq each for both sectors), followed by PaMs implemented in the industrial processes and agriculture sectors. PaMs in the LULUCF sector are expected to increase removals by 1.7 Tg CO_2 eq in 2020. The most effective PaMs and drivers behind GHG emission reductions are described in chapters II.B.1 and II.B.2 above.

62. Along with providing updated projections to the ERT, Lithuania also updated the estimated total effect of its PaMs. According to these updates, the PaMs implemented in the energy sector (excluding transport) will deliver the largest emission reductions in 2020, of 3.8 Tg CO_2 eq, followed by PaMs implemented in the industrial processes, waste and agriculture sectors. The updated estimate of the effect of Lithuania's PaMs has no impact on removals from LULUCF in 2020. Table 5 provides an overview of the total effect of PaMs as reported by Lithuania.

Table 5
Projected effects of planned, implemented and adopted policies and measures in 2010 and 2020

	2010				*2020*			
Sector	*Effect of implemented and adopted measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures[b] (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*
Updated 2011 projections								
Energy (without CO_2 from transport)	0.0	0.0	0.0	0.0	3.8	14.7	0.0	0.0
Transport – CO_2	0.0	0.0	0.0	0.0	0.4	5.5	0.0	0.0
Industrial processes	2.0	46.5	0.0	0.0	2.0	46.5	0.0	0.0
Agriculture	0.1	1.0	0.0	0.0	0.5	5.0	0.0	0.0
Waste management	0.0[a]	2.5	0.0	0.0	0.7	42.1	0.0	0.0
Land-use change and forestry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**2.1**	**4.3**	**0.0**	**0.0**	**7.4**	**16.3**	**0.0**	**0.0**
Projections in the NC5								
Energy (without CO_2 from transport)	1.2	4.6	0.0	0.0	2.5	9.5	2.3	8.8
Transport – CO_2	0.2	2.5	0.0	0.0	0.5	6.5	0.0	0.0
Industrial processes	2.0	46.5	0.0	0.0	2.0	46.5	0.0	0.0
Agriculture	0.7	7.0	0.0	0.0	1.7	17.0	0.0	0.0

Sector	2010				2020			
	Effect of implemented and adopted measures (Tg CO_2 eq)	*Relative value (% of 1990 emissions)*	*Effect of planned measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures[b] (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*
Waste management	1.2	73.9	0.0	0.0	2.5	153.7	0.0	0.0
Land-use change and forestry	0.0	0.0	0.0	0.0	1.7	38.8	0.0	0.0
Total	**5.3**	**10.6**	**0.0**	**0.0**	**10.8**	**18.4**	**2.3**	**5.1**

Source: Lithuania's fifth national communication.

Note: The total effect of implemented and adopted policies and measures is defined as the difference between the 'without measures' and the 'with measures' scenarios; the total effect of planned policies and measures is defined as the difference between the 'with measures' and the 'with additional measures' scenarios.

Abbreviation: NC5 = Lithuania's fifth national communication.

[a] The effect of implemented and adopted measures is 41 Gg.

63. The ERT notes that the updated projections appear more robust than those reported in the NC5, especially for the waste management sector. The projected emissions from the waste sector in the NC5 appeared to be outliers when compared with the emission trends for this sector reported by other Parties included in Annex I to the Convention (Annex I Parties). In the NC5, the emission projections for the waste sector nearly double (198 per cent increase) between 2008 and 2010 under the 'without measures' scenario, contrary to the trends in emissions from the waste sector generally observed in most Annex I Parties. This also contributed to the large estimated effect of PaMs in the waste sector reported in the NC5, where the effect of PaMs is calculated as the difference between the 'without measures' and the 'with measures' scenarios. The ERT encourages Lithuania to ensure that quality control processes are in place when reporting emission projections in its future national communications.

4. Supplementarity relating to mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

64. Lithuania, in its NC5, includes some information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. In the NC5, Lithuania shows that it will reach its emission reduction targets by domestic action alone, and that it is therefore not planning to use the Kyoto Protocol mechanisms to meet its targets.

65. At the time of submission of the NC5, Lithuania was hosting 20 JI projects. The JI projects were mostly for wind power generation, biofuel production and landfill gas, and there were two projects to reduce N_2O emissions at chemical plants. Assuming all JI projects are fully implemented, there will be an emission reduction of 10.4 Mt CO_2 eq in the first commitment period of the Kyoto Protocol (2008–2012). At the time of submission of the NC5, the government and private companies in Lithuania were not participating in the clean development mechanism, although the government was putting in place procedures for participation in it.

D. Vulnerability assessment, climate change impacts and adaptation measures

66. In its NC5, Lithuania has provided information on the expected impacts of climate change in the country and on adaptation options. However, the ERT notes that Lithuania does not provide an outline of the actions taken to cooperate with developing countries on adaptation. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

Table 6
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	*Vulnerability*: Changes in temperature and precipitation will have an impact on crops *Adaptation*: Modification of technologies for crop production
Biodiversity and natural ecosystems	*Vulnerability*: Changes in flora and fauna species have been observed and biodiversity will decrease *Adaptation*: Draft legislation on protected areas was adopted
Forests	*Vulnerability*: Pests will have an impact on tree species
Human health	*Vulnerability*: There will be a spread of infectious diseases – through water and food – affecting in particular children and elderly people. More heatwaves and cold waves and ultraviolet radiation will be the direct cause of increases in illness and death
Infrastructure and economy	*Vulnerability*: The changing weather will have a negative impact on infrastructure, beaches and summer resorts. Climate change has increased the spread of insect-spread diseases, which will have major impacts on tourism in beach and summer resorts

67. Lithuania has outlined information on climate change impacts on agriculture, forest ecosystems, biological diversity, groundwater regime, geological structures, tourism, energy, fisheries and public health. Extreme climate events will have a greater impact on the sustainability of the agriculture sector owing to decreased productivity. Forest ecosystems will be greatly affected and climate change will damage the 126 tree species found in the forests of Lithuania. Tourism as an economic sector will be affected owing to an increase in insects carrying diseases, and irregular snow cover in winter will have a negative impact on winter sports.

68. The National Strategy for the Implementation of the UNFCCC until 2012 sets the broader framework for climate change adaptation in the country. Lithuania has a detailed Coastal Zone Management Programme 2008–2013, fully endorsed by the government. In the NC5, Lithuania has listed a number of initiatives, such as the assessment of the vulnerability of the landscape, ecosystems and biodiversity, the planning of adaptation options and the adoption of measures to reduce the impact of climate change on human health and on the energy, industry, transport, agriculture and forestry sectors. The adaptation measures include legislation, policies and projects such as the draft legislation on protected areas, projects on nature management and recommendations for farmers on extreme weather events. In addition, scientific studies have been carried out to assess potential changes in the river discharge pattern. However, details of these measures are not reported in the NC5.

69. The ERT notes that information regarding the use of the relevant Intergovernmental Panel on Climate Change (IPCC) and United Nations Environment Programme (UNEP)

guidelines is not provided in the NC5. During the review, Lithuania explained that the *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations* and the UNEP *Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies* were not used in the preparation of the NC5. According to the NC5, the research study conducted jointly by the Ministry of Environment and the Institute of Ecology of Vilnius University remains the key source to investigate the impact of climate change in Lithuania.

70. In the NC5, Lithuania has not reported on actions taken to cooperate with developing countries on adaptation. The ERT recommends that details of adaptation measures and options be provided by the Party in its future national communications. The ERT further recommends that Lithuania provide an outline of the actions taken to cooperate with developing countries on adaptation as required by the UNFCCC reporting guidelines. The ERT encourages Lithuania to use the IPCC and UNEP guidelines on impact assessment and adaptation in the preparation of its next national communication.

E. Research and systematic observation

71. Lithuania has provided information on its actions relating to research and systematic observation and has included information on its domestic and international activities. However, the ERT notes that Lithuania does not provide the following reporting elements required by the UNFCCC reporting guidelines: information on action taken to support related capacity-building in developing countries and summary information on GCOS activities. The ERT encourages the Party to provide such information in its future national communications.

72. Lithuania's priorities for research and systematic observation are outlined in the National Sustainable Development Strategy, and major funding for scientific research is allocated through the State budget. New priorities for research and development were adopted in 2007, which focused on ensuring quality of life, improving the knowledge of society and the development of nanotechnology, high technology, international competitiveness and high-technology programmes.

73. Lithuania has an elaborate programme of research undertaken by universities and research centres in the areas of forestry, energy, agriculture, health, geology and ecology. It also has an extensive system of systematic observation, which includes observation through environmental monitoring, wildlife monitoring and ecosystem monitoring, as well as marine and climate observation. Lithuania is a member of the World Meteorological Organization and collaborates with international organizations including the European Organisation for the Exploitation of Meteorological Satellites and the European Centre for Medium-Range Weather Forecasts.

74. Lithuania has not provided information on assistance provided to developing countries enabling them to participate in research and development. The ERT recommends that Lithuania provide summary information on GCOS activities and on action taken to support capacity-building in developing countries in its future national communications.

F. Education, training and public awareness

75. In the NC5, Lithuania has provided information on its actions relating to education, training and public awareness at the domestic level. Compared with the NC4, the Party provided less extensive information in the NC5 on working with regional governments and organizations to raise public awareness. The NC5 also has less elaborate information on the extent of the literature on climate change and environmental issues printed and circulated.

76. The ERT notes that Lithuania has not reported on the roles and involvement of the public and non-governmental organizations (NGOs) in framing climate change policy. Further, Lithuania has not reported on specific international collaboration efforts in the NC5, and specifically there is no information on Lithuania's efforts in training experts from developing countries. The ERT encourages Lithuania to provide such information in its future national communications and to report examples of consultations with the public and NGOs to demonstrate how they are involved in climate policy development.

77. According to the National Sustainable Development Education Program for the period 2007–2015, environmental education is incorporated into the educational programmes of primary and secondary schools. Climate change education was incorporated into a number of international projects, such as the ECO-Life project. To carry out public awareness campaigns, the Ministry of Environment provides information on climate change on its website. In addition, the Ministry of Environment has organized events, such as days without cars, and an engineering prize for the EU ETS installation in Lithuania that achieved the greatest GHG emission reduction.

78. It is unclear to the ERT whether there has been any monitoring or evaluation of the success of the public awareness campaigns and the level of public awareness of climate change. Under the EU structural assistance programme, 31.0 million litai (approximately EUR 9 million) has been set aside for the 2007–2013 period for public awareness campaigns. The ERT encourages Lithuania to report on the evaluation of the public awareness campaigns between 2007 and 2013 and to report on any post-2013 plans in relation to public awareness in its future national communications.

G. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

79. Lithuania has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. The supplementary information is placed in different sections of the NC5. Table 7 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided.

80. Lithuania has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: identification of steps taken to promote and/or implement any decisions of ICAO and IMO in order to limit or to reduce the GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels; information on what efforts Lithuania is making to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention; and a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources. The technical assessment of the information reported under Article 7, paragraph 2, is contained in the relevant chapters of this report. The ERT recommends that Lithuania include these reporting elements in its next national communication.

Table 7
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference*
National registry	NC5 chapter 3.4
National system	NC5 chapter 3.3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NC5 chapter 5.3
Policies and measures in accordance with Article 2	NC5 chapter 4
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	NC5 chapter 4.2
Information under Article 10	NC5 chapters 3.2, 4 and 6.3
Financial resources[a]	NA

[a] As Lithuania is not a Party included in Annex II to the Convention, it does not have to report on the implementation of Article 11 of the Kyoto Protocol, including on the provision of new and additional resources.

Abbreviations: NA = not applicable, NC5 = Lithuania's fifth national communication.

H. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

81. Lithuania reported the information requested in section H, "Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the annex to decision 15/CMP.1", as a part of its 2011 annual submission. During the review, Lithuania provided additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be broadly transparent. The ERT encourages Lithuania to continue exploring and reporting on the adverse impacts of response measures on developing countries.

82. The Party's 2011 NIR and the additional information provided during the review presented two initiatives of Lithuania aiming to minimize adverse impacts: (a) Lithuania has committed funds to be transferred to a programme developed by the EU and its member States over the period 2010–2012 with the aim of promoting the implementation of climate change measures in developing countries; and (b) A Special Programme for Climate Change was established under the Law on Financial Instruments for Climate Change Management. The aim of this programme is to raise additional funding for climate change management measures, including the implementation of adaptation and mitigation measures in third countries.

III. Conclusions and recommendations

83. The ERT concludes that in general the NC5 provides a good overview of the national climate policy of Lithuania. The information provided in the NC5 includes most of the mandatory information required by the UNFCCC reporting guidelines and some elements of the supplementary information required under Article 7 of the Kyoto Protocol,

with the exception of information on PaMs in accordance with Article 2 of the Kyoto Protocol and a description of national legislative arrangements and administrative procedures. During the review, Lithuania provided additional information on the above elements. The ERT also concludes that the information provided in the NC5 is broadly transparent. However, the ERT notes with concern the delay in the submission of the NC5.

84. Lithuania's emissions in 2009 were estimated to be 56.4 per cent below its base year level excluding LULUCF and 60.5 per cent below including LULUCF. Emission decreases were defined mainly by the emission decrease in the early 1990s during the transition from a centrally-planned economy to a market economy and more recently by the global financial crisis.

85. In the NC5, Lithuania presents GHG emission projections for the years 2010, 2015 and 2020, using 2007 as the starting point for the projections. Three scenarios are included in the NC5: a baseline ('without measures') scenario, a 'with measures' scenario and a 'with additional measures' scenario. During the review, Lithuania provided updated projections that were prepared in 2011 for the 'without measures' and 'with measures' scenarios. The ERT notes that according to the updated projections, GHG emissions under the 'with measures' scenario are expected to be below the annual average Kyoto Protocol target (45.5 Tg CO_2 eq) by 51.6 per cent in 2010 and by 46.6 per cent in 2020. For 2020, the updated 'with measures' projection is 33.3 per cent lower than the 'with measures' projection reported in the NC5. Lithuania attributes the difference in the projected emissions for 2020 to the effects of the global financial crisis. Thus, the updated projections confirm the findings reported in the NC5 that Lithuania can meet its Kyoto Protocol target (which is an 8 per cent reduction in emissions compared with the base year level) under the 'with measures' scenario with the domestic policies currently in place. However, in the longer term, Lithuania may have difficulties meeting its national target of an emission increase of no more than 15 per cent in the non-ETS sector by 2020. Lithuania may need additional PaMs to achieve this longer-term national target.

86. The NC5 contains some information on how the Party's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it does not elaborate on supplementarity as such. Lithuania is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target for the first commitment period as it expects to meet this target with domestic PaMs alone.

87. Lithuania has implemented a broad set of PaMs to reduce GHG emissions in all sectors. Of particular significance are efforts to increase the use of renewable energy resources and improve energy efficiency, particularly through the upgrading of buildings. Within the EU framework, Lithuania has clear targets for both GHG emission limitation and renewable energy deployment by 2020. However, owing to a lack of information on the effectiveness of the PaMs being implemented, it is not clear to the ERT whether these long-term targets can be achieved.

88. In the NC5, Lithuania has provided information on the expected impacts of climate change in the country and on adaptation options. Extreme climate events will have a greater impact on the sustainability of the agriculture sector owing to decreased productivity. The National Strategy for the Implementation of the UNFCCC until 2012 sets the broader framework for climate change adaptation in the country.

89. In the NC5, Lithuania has provided information on its actions relating to research and systematic observation and has included information on domestic and international activities. Lithuania has an extensive system of systematic observation, which includes observation through environmental monitoring, wildlife monitoring and ecosystem monitoring, as well as marine and climate observation. Environmental education is incorporated into the educational programmes of primary and secondary schools. Climate

change education is incorporated into a number of international projects. However, no information is provided on the roles and involvement of the public and NGOs in framing climate change policy.

90. The ERT reiterates the conclusion made in the 2010 ARR that Lithuania's national system is not performing its required functions as set out in decision 19/CMP.1. The ERT concludes that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol. However, the ERT notes that documentation on implemented security measures and changes to the national registry software was not provided during the review.

91. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol provided by the Party in its 2011 annual submission is complete and broadly transparent. The ERT encourages Lithuania to further enhance the reporting on Article 3, paragraph 14, including by indicating the prioritization of the action taken in implementing its commitments under Article 3.

92. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of Lithuania's reporting under the Convention and its Kyoto Protocol. The key recommendations[5] are that Lithuania:

(a) Improve the completeness of its reporting by including in its next national communication:

(i) Information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals;

(ii) Emission projections presented relative to actual inventory data for the preceding years;

(iii) Emission projections related to fuel sold to ships and aircraft engaged in international transport;

(iv) Information on actions taken to cooperate with developing countries on adaptation;

(v) A summary of GCOS activities;

(vi) Information on actions taken to support capacity-building in relation to research and systematic observation in developing countries;

(vii) Information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol;

(viii) A description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources;

(b) Improve the transparency of its reporting by:

(i) Reporting on how national circumstances affect GHG emissions and removals in the country, particularly for the period 1990–1995;

[5] The recommendations are given in full in the relevant sections of this report.

(ii) Elaborating more on the modelling methodology and assumptions used for making projections of GHG emissions from the non-energy sectors;

(iii) Providing an explanation of the changes in the projections between the NC4 and the NC5 by elaborating the changes in the projected emissions by sector against the changes in assumptions and methodologies;

(iv) Providing more details on adaptation measures and options.

93. The ERT encourages Lithuania to undertake a number of improvements regarding the transparency and completeness of its reporting; the most important of these are that the Party:

(a) Provide more detail on the methods used to estimate the mitigation effects of individual PaMs and explain how PaMs interact with one another;

(b) Report on PaMs that were included in previous national communications but that are no longer in place;

(c) Provide information on measures to monitor and evaluate the effectiveness of PaMs;

(d) Report projections of the following indirect GHGs: CO, NO_X, NMVOCs and SO_2;

(e) Provide examples of consultations with the public and NGOs to demonstrate how they are involved in climate policy development.

IV. Questions of implementation

94. During the review, the ERT assessed the NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness and transparency. No questions of implementation were identified by the ERT during the review. The ERT notes that at the time of the preparation and publication of this report, the question of implementation on the national system of Lithuania identified in the 2010 ARR remained unresolved.

Annex

Documents and information used during the review

A. Reference documents

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

"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 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>.

FCCC/SBI/2011/INF.1. Compilation and synthesis of fifth national communications. Executive summary. Note by the secretariat. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a02.pdf>.

FCCC/SBI/2011/INF.2. Compilation and synthesis of supplementary information incorporated in fifth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Note by the secretariat. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf02.pdf>.

FCCC/ARR/2010/LTU. Report of the individual review of the annual submission of Lithuania submitted in 2010. Available at <http://unfccc.int/resource/docs/2011/arr/ltu.pdf>.

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FCCC/IRR/2007/LTU. Report of the review of the initial report of Lithuania.
Available at <http://unfccc.int/resource/docs/2007/irr/ltu.pdf>.

FCCC/IDR.4/LTU. Report of the centralized in-depth review of the third and fourth national communication of Lithuania.
Available at <http://unfccc.int/resource/docs/2006/idr/ltu04.pdf>.

Fourth national communication of Lithuania.
Available at <http://unfccc.int/resource/docs/natc/lvanc4.pdf>.

2009 greenhouse gas (GHG) inventory submission of Lithuania. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php>.

2010 GHG inventory submission of Lithuania. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Jolanta Merkeliene (Ministry of Environment of the Republic of Lithuania), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Lithuania. The following documents[1] were also provided by Lithuania:

Ministry of Environment of the Republic of Lithuania (2011), *Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania* - Report pursuant to Article 3(2) of the European Parliament and Council Decision No 280/2004/EC concerning a mechanism for monitoring Community GHG emissions and for implementing the Kyoto Protocol, Vilnius.

[1] Reproduced as received from the Party.