



**Framework Convention on  
Climate Change**

Distr.: General  
14 September 2011

English only

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**Report of the in-depth review of the fifth national  
communication of Latvia**

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 Latvia conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

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## I. Introduction and summary

### A. Introduction

1. For Latvia the Convention entered into force on 21 June 1995 and the Kyoto Protocol on 16 February 2005. Under the Kyoto Protocol, Latvia committed itself to reducing its greenhouse gas (GHG) emissions by 8 per cent compared with the base year<sup>1</sup> 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 Latvia, 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), Mr. 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 Latvia 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 Latvia 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 Latvia, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

### B. Summary

5. The ERT noted that Latvia'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<sup>2</sup> is provided in the NC5. Latvia considered some recommendations provided in the report of the centralized in-depth review of the fourth national communication of Latvia.<sup>3</sup>

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.

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<sup>1</sup> "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.

<sup>2</sup> Decision 15/CMP.1, annex, chapter II.

<sup>3</sup> FCCC/IDR.4/LVA.

### **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 the minimization of adverse impacts under Article 2, paragraph 3, of the Kyoto Protocol and a description of the 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 Latvia believes its policies and measures (PaMs) are modifying longer-term trends in anthropogenic GHG emissions and removals; emission projections presented relative to actual inventory data for the preceding years; the total estimated and expected effects of PaMs; emission projections related to fuel sold to ships and aircraft engaged in international transport; actions taken to cooperate with developing countries with regard to adaptation; summary information on the Global Climate Observing System (GCOS) activities; and actions taken to support capacity-building on research and systematic observation in developing countries. The ERT recommends that Latvia enhance the completeness of its reporting by providing this information in its next national communication.

### **2. Transparency**

8. The ERT acknowledged that Latvia's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is broadly transparent. 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 identifiable. In the course of the review, the ERT formulated a number of recommendations that could help Latvia to further increase the transparency of its reporting with regard to national circumstances (see para. 11 below), PaMs (see paras. 24, 25, 28, 30, 31, 33, 37, 43 and 49 below), projections and the total effects of PaMs (see paras. 54–56, 60–62, 65, 68 and 69 below), vulnerability, climate change impacts and adaptation (see para. 75 below), research and systematic observation (see para. 79 below), its description of the national system (see paras. 17 and 18 below), information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol (see para. 71 below) and information on the minimization of adverse impacts (see paras. 85 and 86 below).

### **3. Timeliness**

9. The NC5 was submitted on 16 March 2010, after the deadline of 1 January 2010 mandated by decision 10/CP.13. Latvia informed the secretariat about its difficulties with the timeliness of its national communication submission on 9 February 2010, in accordance with paragraph 139 of decision 22/CMP.1. As the national communication was not submitted within six weeks after the due date (by 15 February 2010), the delay was brought to the attention of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and the Compliance Committee and was made public. The ERT noted with great 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

10. In its NC5, Latvia has provided a concise description of its national circumstances and has elaborated on the framework legislation and key policy documents on climate change. The NC5 also refers to the description of the national system provided in the report mandated by decision 13/CMP.1, submitted in 2006.<sup>4</sup> Further technical assessment of the institutional and legislative arrangements for coordination and implementation of PaMs is provided in chapter II.B of this report.

#### 1. National circumstances

11. In its NC5, Latvia has provided a description of its national circumstances and information on how these national circumstances affect GHG emissions and removals and how changes in national circumstances affect GHG emissions and removals over time. Information has been provided on the government structure, population, geography, climate, economy and relevant economic sectors. However, the ERT noted that, while the national circumstances were described in the NC5 and further relevant information was provided by Latvia during the review process, Latvia could further elaborate on how these national circumstances and changes thereto affect the GHG emissions and removals of the country. The ERT encourages Latvia to report in more detail on how its national circumstances affect GHG emissions and removals in the country, in order to improve transparency. Table 1 illustrates the national circumstances of Latvia by providing some indicators relevant to GHG emissions and removals.

12. The ERT noted that GHG emissions in Latvia have decreased substantially since 1990, while net removals have increased. The decrease in GHG emissions that occurred mainly in the early 1990s was driven by the transition from a centrally planned economy to a market economy and by the restructuring of manufacturing industries, energy industries and agriculture. In 2008, Latvia's gross domestic product (GDP) was more than double that in 1995, while GHG emissions decreased by 6 per cent from 1995 to 2008, representing a decarbonization of the economy. Other main drivers for Latvia's emission trends comprise the country's economic growth since 1995 and the shift to less carbon-intensive fuels. Renewable energy sources (RES) contribute 46 per cent of electricity generation in Latvia, with 96 per cent of all electricity from RES being generated by three large hydropower stations. The main driver for Latvia's carbon removal trends is related to the gains in living biomass in forest land remaining forest land. During the review, Latvia provided the following reason for the increase in removals in this sector: in recent inventories, the area of forest land remaining forest land has constantly decreased, owing to deforestation, but it will increase in the reporting for 2010, because of the completion of the 20-year transition period for lands afforested in 1990. Initially the area of forest land remaining forest land increased after 1990, because lands afforested before 1990 were gradually moved from the category land converted to forest land to the category forest land remaining forest land once the 20-year transition period was over.

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<sup>4</sup> Latvia's initial report under the Kyoto Protocol, available at [http://unfccc.int/national\\_reports/initial\\_reports\\_under\\_the\\_kyoto\\_protocol/items/3765.php](http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php).

Table 1  
**Indicators relevant to greenhouse gas emissions and removals for Latvia**

	1990	1995	2000	2005	2008	Change 1990 –2000 (%)	Change 2000 –2008 (%)	Change 1990 –2008 (%)
Population (million)	2.7	2.5	2.4	2.3	2.3	–11.2	–4.5	–15.2
GDP (2000 USD billion using PPP)	25.2	14.4	18.9	28.0	33.0	–24.8	74.6	31.2
TPES (Mtoe)	7.9	4.6	3.7	4.4	4.5	–52.6	20.5	–42.9
GDP per capita (2000 USD thousand using PPP)	9.4	5.7	8.0	12.2	14.6	–15.3	82.7	54.7
TPES per capita (toe)	2.9	1.8	1.6	1.9	2.0	–46.6	26.1	–32.7
GHG emissions without LULUCF (Tg CO <sub>2</sub> eq)	26.6	12.7	10.3	11.4	11.9	–61.2	15.5	–55.2
GHG emissions with LULUCF (Tg CO <sub>2</sub> eq)	11.4	–3.6	–4.0	–5.7	–10.8	–135.0	–171.7	–195.1
CO <sub>2</sub> emissions per capita (Mg)	7.1	3.6	3.0	3.4	3.1	–58.6	4.3	–56.8
CO <sub>2</sub> emissions per GDP unit (kg per 2000 USD using PPP)	0.8	0.6	0.4	0.3	0.3	–51.1	–25.1	–63.4
GHG emissions per capita (Mg CO <sub>2</sub> eq)	9.9	5.0	4.3	5.0	5.3	–56.3	20.9	–47.1
GHG emissions per GDP unit (kg CO <sub>2</sub> eq per 2000 USD using PPP)	1.1	0.9	0.5	0.4	0.4	–48.4	–33.8	–65.8

*Sources:* (1) GHG emissions data: Latvia's 2011 greenhouse gas inventory submission; (2) Population, GDP and TPES data: International Energy Agency and additional information received during the review.

*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. Latvia is an independent democratic parliamentary republic consisting of nine major cities and 109 municipalities. There are 14 ministries assisting the Cabinet of Ministers to implement State administrative functions. The overall responsibility for climate change policymaking lies within the Ministry of Environment (MoE) of Latvia, and a number of

other national institutions are involved in the implementation of this policy, including the Ministry of Finance, Ministry of Economics, Ministry of Transport and Ministry of Agriculture and institutions supervised by the relevant ministries. During the centralized review, Latvia explained that the national policy on climate change is implemented through national regulations and policy documents, including the Environmental Policy Strategy 2009–2015 and several regulations of the Cabinet of Ministers. 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 of this report.

14. In its NC5, Latvia 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<sub>2</sub> eq) (given in the common reporting format), are included in an annex to the NC5. During the review, the ERT assessed emissions data from the Party's recently submitted 2011 annual submission and it 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 59.7 per cent between the base year and 2009, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 185.8 per cent. This was mainly attributed to carbon dioxide (CO<sub>2</sub>) emissions, which decreased by 63.4 per cent over this period. Emissions of nitrous oxide (N<sub>2</sub>O) decreased by 55.0 per cent, while emissions of methane (CH<sub>4</sub>) also decreased, by 48.3 per cent. A major part of these decreases was experienced between 1990 and 1995 (the trends during this period were the following: CO<sub>2</sub>, –51.6 per cent; CH<sub>4</sub>, –42.3 per cent; N<sub>2</sub>O, –59.6 per cent; and total GHGs excluding LULUCF, –52.2 per cent). The contribution of fluorinated gases to total GHG emissions is negligible throughout the years. Trends in total GHG emissions were mostly underpinned by GHG emission trends in the energy sector, driven by transport and energy industries. An analysis of drivers for GHG emission trends in each sector is provided in chapter II.B of this report. Table 2 provides an overview of GHG emissions by sector from the base year to 2009.

Table 2

**Greenhouse gas emissions by sector in Latvia, 1990–2009**

Sector	GHG emissions (Tg CO <sub>2</sub> eq)						Change (%)		Shares <sup>a</sup> by sector (%)	
	1990	1995	2000	2005	2008	2009	1990–2009	2008–2009	1990	2009
	1. Energy	19.1	9.5	7.3	8.0	8.3	7.2	–62.3	–13.7	71.9
A1. Energy industries	6.3	3.4	2.5	2.1	1.9	1.9	–70.0	–2.3	23.7	17.6
A2. Manufacturing industries and construction	3.8	1.9	1.2	1.2	1.1	0.9	–69.5	–21.3	14.1	8.4
A3. Transport	3.0	2.1	2.2	3.1	3.6	2.8	–7.3	–22.6	11.3	25.9
A4.–A5. Other	5.8	1.9	1.3	1.6	1.6	1.5	–73.6	–2.5	21.8	14.2
B. Fugitive emissions	0.3	0.2	0.2	0.1	0.1	0.1	–61.6	–5.4	1.0	1.0
2. Industrial processes	0.6	0.2	0.2	0.3	0.4	0.4	–39.9	–7.7	2.3	3.4
3. Solvent and other product	0.1	0.0	0.0	0.0	0.0	0.0	–45.6	–37.9	0.2	0.3

Sector	GHG emissions (Tg CO <sub>2</sub> eq)						Change (%)		Shares <sup>a</sup> by sector (%)	
	1990	1995	2000	2005	2008	2009	1990– 2009	2008– 2009	1990	2009
	use									
4. Agriculture	6.0	2.3	2.0	2.2	2.2	2.3	-61.8	1.6	22.4	21.2
5. LULUCF	-15.2	-16.2	-14.3	-17.1	-22.7	-20.5	34.8	-9.9	-57.2	-191.0
6. Waste	0.9	0.7	0.8	0.9	0.9	0.9	-0.4	-4.7	3.3	8.1
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>GHG total with LULUCF</b>	<b>11.4</b>	<b>-3.6</b>	<b>-4.0</b>	<b>-5.7</b>	<b>-10.8</b>	<b>-9.8</b>	<b>-185.8</b>	<b>-9.8</b>	<b>NA</b>	<b>NA</b>
<b>GHG total without LULUCF</b>	<b>26.6</b>	<b>12.7</b>	<b>10.3</b>	<b>11.4</b>	<b>11.9</b>	<b>10.7</b>	<b>-59.7</b>	<b>-10.0</b>	<b>100.0</b>	<b>100.0</b>

*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.

<sup>a</sup> 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, Latvia 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). Latvia also provided a reference to the 2009 annual submission, which contains a more detailed description of the national system. The description includes all elements required by decision 15/CMP.1.

17. No information was provided in the NC5 on 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, Latvia informed the ERT that, in accordance with the Forest Law, the management of forests and forest resources is undertaken in Latvia in a sustainable manner in order to preserve biodiversity and natural resources. In addition, this information is fairly complemented in the 2011 annual submission with the inclusion of information on the planning, preparation and management of the reporting of emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT recommends that Latvia report such information in its next national communication.

18. The ERT took note of the recommendations made in the report of the individual review of the 2010 annual submission of Latvia (2010 ARR). During the review, the ERT learned that the Party made some efforts to improve methods and arrangements for the consistent representation of land area for land-use categories. The ERT reiterates the recommendation made in the 2010 ARR that Latvia provide in its next annual submission further documentation to justify and ensure that all land-use change from and to forest land is attributable to direct human-induced afforestation and reforestation. The ERT concluded

that the national system is performing its required functions as set out in decision 19/CMP.1.

### **3. National registry**

19. In its NC5, Latvia has provided information on the national registry. This information includes 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, Latvia 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 data manipulation; the measures put in place to protect the national registry against security compromises; the test procedures related to the performance of the national registry; and the recording of changes and discrepancies in the national registry. In response to questions raised by the ERT, Latvia provided documents demonstrating how it records changes related to the national registry and how it maintains these records. The ERT noted that updates of databases and applications, implemented security measures, functional testing and changes to the national registry software are documented on a regular basis.

21. The ERT took note of the conclusion of the standard independent assessment report, which concludes that the only significant change to the registry involves the Greta software version (version 5.1.24) that passed the official test with the international transaction log. The ERT also took note that the recommendations made in the 2010 ARR have been addressed and that Latvia provided in the 2011 inventory submission a list of changes in the national registry, and test plans and test results for the upgraded software.

22. The ERT concluded that Latvia'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, Latvia 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 noted that Latvia did not provide the following reporting element required by the UNFCCC reporting guidelines: information on how Latvia believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. During the review, Latvia clarified that it believes that policies driving down the carbon intensity of the Latvian power sector through the increased usage of high-efficiency natural gas power generation technologies and RES are having a long-term impact on GHG emissions. Some of the recommendations made in the previous review report were taken into consideration to improve reporting in the NC5, including reporting estimates of the mitigation impact of PaMs in the energy sector; however, estimates of the mitigation impact of PaMs in other sectors are not reported. The ERT encourages Latvia to include information on the estimated mitigation impact of PaMs

in all sectors and recommends that Latvia report on how these PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention in future national communications.

25. The ERT found it difficult to link some of the PaMs described in the text with those listed in the summary table for PaMs in the energy section. In particular, it is not clear how the PaMs described under “Policy – Improve efficiency of use of energy resources” relate to those listed under the same heading in the summary table. The ERT encourages Latvia to ensure clarity and consistency between the textual and tabular parts of the section on PaMs in its next national communication.

26. Latvia provided detailed information on PaMs at the national level but limited information on PaMs implemented or delivered at the subnational/regional levels. The key framework climate and energy policy is the Climate Change Mitigation Policy for 2005–2010 (the 2005–2010 Programme), which is the framework through which the requirements of the Convention, Kyoto Protocol and European Union (EU) climate change legislation are delivered. Policy goals at both the national level (e.g. environmental policy guidelines for 2009–2015) and the EU level (e.g. the climate and energy package) go beyond 2010, but it is unclear from the NC5 whether the 2005–2010 Programme will continue or be replaced. During the review, Latvia informed the ERT that its experience in the development of a green investment scheme for the ‘greening’ of assigned amount unit sales has been encouraging.

27. According to the NC5, Latvia has set out some key goals that must be achieved by 2020 within the framework of the 2008 EU climate and energy package, namely that 40 per cent of energy (on a consumption basis) should come from renewable resources, that emissions from sectors not covered by the European Union emissions trading scheme (EU ETS) should increase by no more than 17 per cent compared with 2005 levels and that emissions covered by this scheme should be reduced by 21 per cent compared with 2005 levels. Other targets and milestones are mentioned for the energy sector (both for renewable energy production and energy efficiency improvements) and for the transport sector. The ERT noted that longer-term targets are not reported, which makes it difficult to assess whether the actions set out in the NC5 are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention.

28. For the key policies for the energy sector, the NC5 provides estimates of the effects of PaMs for GHG emission reduction. For other sectors, estimates of delivered GHG emission reductions are not provided, which makes it difficult to assess the effectiveness of these policies in the context of overall emissions. It is not clear from the NC5 how the implementation of PaMs will be monitored and evaluated. During the review, Latvia informed the ERT that the effectiveness of PaMs is monitored via top-down analysis through the annual GHG inventory and through the tracking of specific indicators designed to monitor policy implementation. The ERT encourages Latvia to present a detailed description in its next national communication of how PaMs are monitored and evaluated beyond what is reported in the annual GHG inventory.

29. The ERT commends Latvia for providing more information in the NC5 than in the NC4 on PaMs that promote the reduction of indirect GHG emissions from the energy sector, and encourages Latvia to estimate these reductions for its next national communication.

30. Latvia has provided information on the costs of the implementation of some PaMs in the NC5. The ERT encourages Latvia to provide further information about the costs of PaMs and about other benefits (e.g. on health) of PaMs and a description of how policies interact with and/or complement each other in order to enhance overall GHG mitigation, in its next national communication.

31. Latvia has not reported on policies and practices that encourage activities that lead to higher levels of anthropogenic GHG emissions than would otherwise occur.<sup>5</sup> The ERT encourages Latvia to report on these activities in its next national communication and to provide the rationale for such actions, if applicable. Some PaMs reported in the NC4 are not mentioned in the NC5 and it is unclear whether these PaMs have been discontinued. Examples of such PaMs from the NC4 include “promotion of solar energy use”, “support for energy efficiency in thermal energy generation”, “develop an environmentally friendly transport system” and “promote the inclusion of environmental considerations in consumer decisions”. The ERT encourages Latvia, in its next national communication, to report on PaMs that have been discontinued, make reference to whether or not these PaMs were effective and provide an explanation of the reason for their cessation. Table 3 provides a summary of the reported information on the PaMs of Latvia.

Table 3  
**Summary of information on policies and measures**

<i>Major policies and measures</i>	<i>Examples/comments</i>
<i>Policy framework and cross-sectoral measures</i>	
European Union emissions trading scheme (EU ETS)	Market-based instrument to promote reduction of CO <sub>2</sub> emissions in installations covered by the EU ETS
Permits and taxes	Permits for polluting activities, natural resources tax and excise tax for energy resources
<i>Policies and measures by sector</i>	
<i>Energy</i>	
Renewable energy sources (RES)	Increase the share of RES in line with directive 2011/77/EC, and provide support for energy generation in small hydroelectricity plants (4.5; 4.5; 4.5), for wind electricity production (10.0; 23.2; 29.5) and for cogeneration plants using renewable fuel (99.6; 196.6; 278.7)  Promote RES while at the same time reducing greenhouse gas emissions by applying a suitable waste management process, and provide support for energy production in biogas plants from agricultural waste (14.8; 55.1; 55.1) and for energy production in biogas plants from waste landfills (174.9; 249.9; 249.9)
Energy efficiency and cogeneration	Efficient use of fuel in district heating systems, promotion of cogeneration, reduction of energy loss and emissions, and increase of use of RES in district heating  Support for projects for improvement of energy efficiency of buildings (funded by structural fund – 7.5; 60.9; 92.2 and funded by national budget –3.5; 22.0; 481.5)
Reduction of indirect emissions	Setting of national emission ceilings and control of emissions from large-scale combustion installations
<i>Transport</i>	
Promotion of use of environmentally	Limitation of CO <sub>2</sub> emissions from cars, renewal of

<sup>5</sup> As described in document FCCC/CP/1999/7, paragraph 16.

<i>Major policies and measures</i>	<i>Examples/comments</i>
friendly vehicles	the car fleet and increase of the share of environmentally friendly vehicles in the total car fleet
Renewable fuels	Promotion of the use of biofuel and other renewable fuels in transport
<i>Industrial processes</i>	Promotion of the implementation of the best available techniques, environmentally friendly technologies and cleaner production, including control of fluorinated gases
<i>Agriculture</i>	Development of environmentally friendly agriculture and promotion of good agricultural practice
<i>Forestry</i>	Increase of forest stand productivity and afforestation of unmanaged agricultural land
<i>Waste</i>	
Recycling	Collection of biogas from household waste landfills and processing of biologically degradable waste
Improved waste management	National Waste Management Plan 2003–2012, prevention of waste production, reduction of waste amount and risk, recycling with energy recovery, safe and environmentally friendly storage, and establishment of new municipal dump sites

*Note:* The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions in Gg CO<sub>2</sub> eq for the years 2010, 2015 and 2020.

## 1. Policy framework and cross-sectoral measures

32. The MoE has overall responsibility for Latvia's compliance with the requirements of the Convention and its Kyoto Protocol. The Ministries of Environment, Economics, Agriculture, Transport, Finance and Regional Development, and municipalities have responsibility for the implementation of mitigation policies in various sectors, while the Ministry of Foreign Affairs is responsible for ensuring that international agreements are met through domestic law and the Ministry of Education and Science for developing education and science policy as it relates to climate change. The MoE, the State Environmental Service, the Environment State Bureau and the Latvian Environment, Geology and Meteorology Centre ensure the implementation of climate policy within their areas of responsibility.

33. The NC5 did not provide a clear explanation of the role of local governments in designing and delivering climate policy. Latvia clarified during the review that the Latvian Association of Local and Regional Governments is consulted during policy design, and that some grants for climate-relevant projects are allocated at the local level. The ERT encourages Latvia to provide information on the role of local governments (in both policy design and policy delivery) in its next national communication.

34. A multitude of policy frameworks and guidelines exist in the area of environmental legislation and climate policy. These include the 2005–2010 Programme, environmental policy guidelines for 2009–2015, the Law on Pollution, guidelines for energy development

for 2007–2016 and guidelines on the use of renewable energy sources for 2006–2013. It is not clear how these relate to one another, and which are subordinate to which. The ERT noted that, given the complexity of the climate and energy policy landscape, a diagrammatic representation of the ways in which these policies and programmes relate would have been useful.

35. Latvia has taken clear targets for GHG emission limitation and renewable energy deployment from the 2008 EU climate and energy package. Longer-term plans (post-2020) are not reported in the NC5. Significant challenges identified by the ERT in implementing the overall policy programme include the following: difficulties in monitoring, evaluating and, where necessary, taking corrective measures to ensure that targets are met; difficulties in ensuring that sustainable feedstocks are available to meet the demands of bioenergy policy;<sup>6</sup> and the difficulty in increasing the share of RES in total final energy consumption at a time when a 55 per cent increase in electricity consumption is forecast. The ERT noted that additional PaMs will be needed to meet Latvia's climate and energy package goals.

36. As an EU member State, Latvia is bound by EU legislation. A list of EU directives that relate to climate and energy policy (including on product policy, energy efficiency policy and reducing emissions through an increased share of RES and cogeneration), and their status of implementation within national law, is clearly set out in an annex to the NC5. Latvia participates in the EU ETS, which during the period 2005–2007 covered 99 installations emitting approximately 40 per cent of Latvian CO<sub>2</sub> emissions. Until 2012 emission allowances are allocated to installations free of charge, but from 2013 until 2020 allowances will have to be purchased at auction. From 2012 international aviation will be included in the EU ETS.

## 2. Policies and measures in the energy sector

37. In Latvia the energy sector was responsible for 67.1 per cent of total GHG emissions in 2009, the latest available reporting year. GHG emissions from the energy sector decreased by 62.3 per cent (10,515 Gg) between 1990 and 2009, mainly driven by the transition to a market economy between 1990 and 1995. A more recent decline (since 2007) in emissions from this sector was driven by the global financial crisis. The trend in GHG emissions from fuel combustion showed a notable increase for transport between 1990 and 2007 (from 2,894.6 Gg to 3,729.9 Gg), but emissions from this sector fell markedly between 2007 and 2009, and as of 2009 were 7.3 per cent, or 218.2 Gg, below the 1990 level. Between 1995 and 2006 the numbers of registered passenger cars and heavy-duty vehicles increased by 148 per cent and 76 per cent, respectively. Between 1990 and 2009 there was a decrease in emissions from energy use in other sectors (–73.7 per cent or 4,265 Gg). The ERT encourages Latvia, in its next national communication, to report indicators of the underlying factors driving emission trends (such as vehicle ownership numbers) from 1990 to the latest available year. This will enable the ERT to get an accurate picture of emission drivers since the base year.

38. **Energy supply.** Latvia depends heavily on imported primary energy, such as natural gas, oil products, coal and electricity. Its main local energy sources include biomass, hydro-energy and peat. In recent years, more emphasis has been put on increasing the share of RES in the primary energy supply and on improving energy efficiency in the energy supply system. However, between 2004 and 2007 the share of renewable electricity as a percentage of overall consumption fell from 47 per cent to 36 per cent, driven largely by a decrease in hydropower.

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<sup>6</sup> Latvia has confirmed that it believes that its large forest area, currently more than half the land area of the country, will enable it to access sufficient biomass.

39. **Renewable energy sources.** Large hydropower dominates the renewable energy sources sector, contributing 96 per cent of total renewable electricity. Latvia has put into place policies designed to increase the share of wind power, biogas and biomass in the total energy mix, aiming to generate 49 per cent of electricity from RES from 2010 onwards. PaMs support investment in RES by providing subsidies and through setting a premium for the purchase of electricity generated from RES. However, because of the lack of detailed information in the NC5 on policy effects, the effectiveness of these PaMs in meeting the RES target can hardly be assessed.

40. **Energy efficiency.** The guidelines for energy development for 2007–2016 stipulate that, starting from 2008, energy efficiency measures should result in a reduction of energy consumption by 1.0 per cent per year below ‘business as usual’ levels during this time period. However, as the baseline scenario was not defined in the NC5, the quantified target remains unclear to the ERT. Energy efficiency measures supported include improving insulation in residential buildings, product policy and improving the efficiency of heat generation and district heating systems.

41. **Residential and commercial sectors.** A target to reduce the mean specific heat consumption of buildings from the current level of 220–250 kWh/m<sup>2</sup>/year to 195 kWh/m<sup>2</sup>/year by 2016 and 150 kWh/m<sup>2</sup>/year by 2020 has been set. Energy efficiency will be delivered through investment in the insulation of private residential and municipal social residential buildings, as well as investment to improve the efficiency of district heating systems. However, it is not clear if current PaMs in this sector are sufficient to meet this target, and it is not clear how progress towards meeting this target is being monitored and evaluated.

42. **Transport sector.** Latvia recognizes that improvements in the average efficiency of its car fleet are needed to reduce emissions from the transport sector. Latvia is covered by regulations requiring improvements in the average efficiency of new cars sold within the EU by 2012. However, it is not clear how this regulation will be implemented. In line with the EU target, Latvia aims to increase the proportion of biofuel in transport fuels to 10 per cent by 2020, with a particular focus on vehicles used in agriculture. Latvia provides financial support for biofuel production. The mitigation impact of PaMs in the transport sector is not estimated.

43. The NC5 does not report PaMs that effect emissions from international bunker fuels, although it does report that international aviation will enter the EU ETS from 2012 onwards. The ERT recommends that Lithuania identify the steps necessary to promote and/or implement the decisions of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or to reduce the GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels.

### 3. Policies and measures in other sectors

44. Between 1990 and 2009, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 53 per cent (3,947 Gg CO<sub>2</sub> eq), mainly driven by a very significant decrease in emissions from the agriculture sector, by 62 per cent (3,681 Gg). The trend in GHG emissions from industrial processes also showed a decrease (40 per cent or 239 Gg). Emissions from the waste sector were largely stable over the period.

45. **Industrial processes.** The decrease of 40 per cent between 1990 and 2009 in emissions from the industrial processes sector was driven by a very rapid contraction in output from this sector between 1990 and 1993, when emissions fell by over 90 per cent, followed by a steady increase in line with economic growth. As a result of the global economic crisis, emissions from this sector fell by 14 per cent between 2007 and 2009. The

principal PaMs in this sector are to introduce best available techniques in the manufacturing industry (including steel and mineral production) and regulations governing the use of fluorinated gases, focusing on reducing emissions.

46. **Agriculture.** The agriculture sector has shown a strong downward trend in emissions since 1990, with emissions largely stable between 1995 and 2007. This trend has been driven by a decline in the cattle population and by a reduction in the mass of applied nitrogen fertilizer. Measures are in place to improve manure storage and to use agricultural resources more sustainably, through payments to farmers who comply with good agricultural practice and by providing information and guidance on practices that reduce emissions.

47. **LULUCF.** LULUCF is a significant sector for Latvia, since net removals from this sector in 2009 exceeded emissions in all other sectors. Removals increased significantly between 1990 and 2009, from 15.2 Tg CO<sub>2</sub> eq to 20.5 Tg CO<sub>2</sub> eq. The trend was mainly driven by increases in forest cover. Measures are in place to increase the productivity of forests, through forest management techniques, and to convert unmanaged agricultural land into forest.

48. **Waste management.** Between 1990 and 2009, GHG emissions from the waste sector decreased by 0.4 per cent (3.6 Gg) only. Policies are in place to promote recycling, utilize methane collected at landfill sites, utilize biologically degradable waste for composting, restore landfill sites that do not meet current environmental requirements and reduce waste production through best practices.

49. In summary, the ERT encourages Latvia to provide in its next national communication quantified estimates of the mitigation impact of PaMs on GHG emissions in the non-energy sectors, detail on how PaMs will be monitored and evaluated, and more detail on how PaMs will be effectively delivered, particularly in the transport sector.

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

50. In its NC5, Latvia did 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 Latvia 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 2011 annual submission, is presented in chapter II.H of this report.

51. During the review, Latvia informed the ERT that it invests in domestic activities and hence adverse effects on developing countries are not identified. The ERT recommends that Latvia make an effort to report on how it strives to implement PaMs in such a way as to minimize adverse effects on other Parties, including developing country Parties, in its next national communication.

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

52. In its NC5, Latvia has reported emission projections under a ‘with measures’ scenario until 2020. No updated emission projections were provided during the review.

## 1. Projections overview, methodology and key assumptions

53. The GHG emission projections provided by Latvia in the NC5 include a 'with measures' scenario until 2020, presented relative to actual inventory data for 2005. Projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section, and on a gas-by-gas basis for the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons (HFCs) and sulphur hexafluoride (treating HFCs collectively in each case). Projections of perfluorocarbons (PFCs) were not reported. Projections are provided in an aggregated format for each sector as well as for a national total, using global warming potential values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately and not included in the totals.

54. The ERT noted that Latvia 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, projections presented on a gas-by-gas basis for PFCs (treating PFCs and HFCs collectively in each case), and emission projections related to fuel sold to ships and aircraft engaged in international transport. The ERT recommends that Latvia improve the completeness of its reporting by including these reporting elements in its next national communication. The ERT further noted that Latvia did not provide projections of the following indirect GHGs in the NC5: carbon monoxide, nitrogen oxide, non-methane volatile organic compounds and sulphur dioxide. The ERT encourages Latvia to provide this information in its next national communication.

55. Also, the ERT encourages Latvia to report projections relative to the most recent inventory data; in the case of the NC5, the latest inventory data would include 2006 and 2007 data. Furthermore, the ERT strongly reiterates the recommendation made in the previous review report that projected emissions from international bunkers should be reported separately and not included in the national totals. The ERT encourages Latvia to use the notation key for not occurring for PFCs in the tables reporting actual and projected GHG emissions from industrial processes.

56. The 'with measures' scenario is defined in the NC5 as including PaMs defined in the policy documents elaborated by the Government of Latvia until 2007. The 'with measures' projections do not include any policies that may have been implemented during 2008 and 2009. The ERT encourages Latvia to include, in its next national communication, any new additional PaMs in the 'with measures' scenario that may have already been implemented at the time of submission of the national communication.

57. Latvia has clearly reported on the methodology used for calculating the projections of GHGs for each sector, except the LULUCF sector. Each sector uses a different methodology. Energy projections are based on the MARKAL energy model. The MARKAL model projects energy demand by optimizing energy inputs by fuel type and technology to meet projected demand for energy service requirements. Key input variables include economic growth, energy efficiency improvements, population and energy prices. Energy prices are based on the International Energy Agency (IEA) *Global Economic Overview 2006*.

58. Projections for the transport sector are based on the statistical correlation between the number of vehicles and per capita income. Latvia had a low rate of vehicle ownership compared with most developed country Parties in 1990 and has had high rates of growth in vehicle ownership. Latvia expects personal use of motor vehicles to continue to increase in the future. Vehicle ownership rates are expected to reach saturation at around 550 vehicles per thousand people. Latvia had no information on current vehicle ownership rates or on when exactly saturation levels for vehicle ownership are expected to be attained. Activity data for transport are converted into emission estimates using the COPERT III model on the basis of assumptions related to fuel, vehicles and driving characteristics.

59. Projected emissions from industrial processes are based on statistical correlations between economic growth and Latvia's international merchandise trade. Emissions from agriculture are projected using long-term macroeconomic projections and linking the macroeconomic data to statistical trends for each subsector in the agriculture sector. Key assumptions effecting the emission projections for agriculture include support for future biofuel production and productivity, expected land availability for agriculture and an expected decline in bovine livestock. Emissions from the waste sector are based on projections of waste activity data statistically correlated to GDP and population, and assumptions for CH<sub>4</sub> recovery from solid municipal waste. Activity data are converted into emission estimates using the methodology used for the GHG inventory for the Latvian waste sector.

60. The NC4 provided a very clear explanation of how removals from LULUCF were projected; however, the NC5 does not provide any information on the methodology. The ERT encourages Latvia to elaborate the methodology used to project emissions and removals from LULUCF in the next national communication to at least the level of detail as reported in the NC4.

61. The ERT noted that the NC4 and the NC5 provide clear tables of information on assumptions underlying the projections. However, the information cannot be used to draw a conclusion on the linkages between the changes in emissions reported in the national communications and the changes in the underlying assumptions. The ERT encourages Latvia to elaborate how changes in assumptions may have influenced emission projections reported in the NC4 and the NC5. The projections were prepared in 2007 and do not include the effects of the recent global financial crisis and higher oil prices. The assumptions appear credible for economic growth at the time of the preparation of the projections (2007), and energy prices were based on the best estimates of the IEA. However, the ERT noted that the projections would have been outdated by the global financial crisis and changes in energy price expectations around 2009. As shown in the projections figure below, the projected GHG emission level is higher than the actual GHG emission level during 2007–2009. The ERT therefore encourages Latvia to use the most recent information available at the time projections are submitted.

62. Latvia has not reported on any expected major developments in any sectors, for example on energy markets and technical developments and how these may affect emission projections. The ERT encourages Latvia to include information on important future major developments that may explain emission projection trends. Latvia provided only one sensitivity scenario, in which economic growth was lower than in the 'with measures' reference scenario. The ERT noted, however, that Latvia has not provided any explanation in the NC5 regarding the rate of economic growth used for scenarios and has not provided a higher economic growth scenario. The ERT encourages Latvia to consider reporting sensitivity analyses based on more variables, for example population, technology and energy prices, and to provide an analysis of the results.

## 2. Results of projections

63. Latvia's target under the Kyoto Protocol is, on average, 23.8 Tg CO<sub>2</sub> eq per annum over the Kyoto Protocol first commitment period (2008–2012), which represents an 8 per cent reduction in GHG emissions compared with the base year level. According to the projections presented in the NC5, Latvia is on track to overachieve this target by domestic efforts alone. GHG emissions under the 'with measures' scenario, which are projected to be 14.0 Tg CO<sub>2</sub> eq in 2010, will be around 41.2 per cent below the Kyoto Protocol target.

64. The contribution of different gases to Latvia's total emission projections are as follows: according to the 'with measures' projections, total GHG emissions are expected to amount to 14.0 Tg CO<sub>2</sub> eq in 2010, including CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions of 10.6, 1.8 and

1.6 Tg CO<sub>2</sub> eq, respectively. GHG emissions are expected to total 17.7 Tg CO<sub>2</sub> eq in 2020, including CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions projected to be around 14.4, 1.7 and 1.6 Tg CO<sub>2</sub> eq, respectively. This represents an increase of 35.8 per cent in CO<sub>2</sub> emissions and a decrease of 5.6 per cent in CH<sub>4</sub> emissions by 2020 compared with the 2010 levels. Projected N<sub>2</sub>O emissions remain relatively constant between 2010 and 2020. The projected emissions of fluorinated gases are negligible and remain constant over the same period. The key results of the emission projections are shown in table 4 and the trends are illustrated in the figure below.

Table 4  
**Summary of greenhouse gas emission projections for Latvia**

	Greenhouse gas emissions (Tg CO <sub>2</sub> eq per year)	Changes in relation to base year level (%)	Changes in relation to 1990 level (%)
Inventory data 1990 <sup>a</sup>	26.6	2.6	NA
Inventory data 2009 <sup>a</sup>	10.7	-58.7	-59.7
Kyoto Protocol base year <sup>b</sup>	25.9	NA	-2.6
Kyoto Protocol target <sup>b</sup>	23.8	-8.0	-10.5
‘With measures’ projections for 2010 <sup>c</sup>	14.0	-46.1	-47.4
‘With measures’ projections for 2020 <sup>c</sup>	17.7	-31.7	-33.5

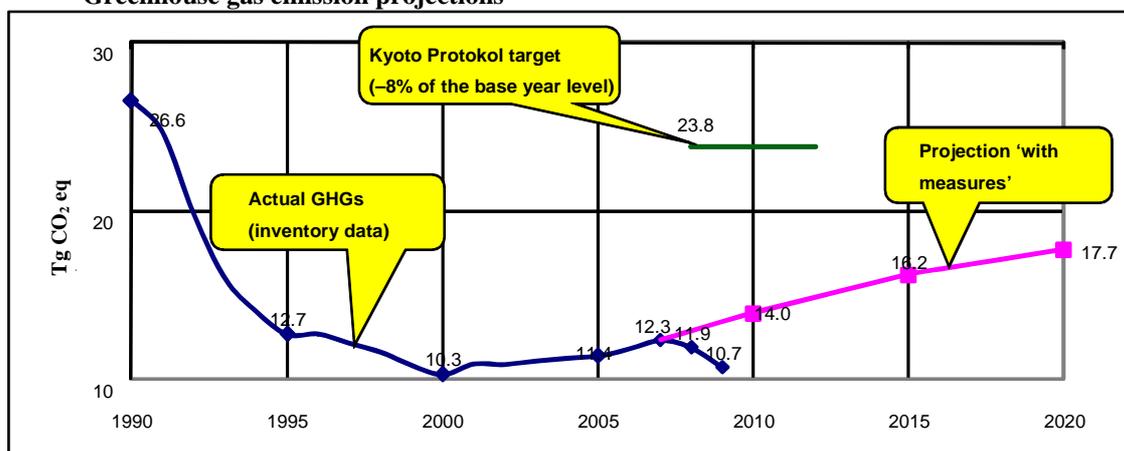
<sup>a</sup> Data source: Latvia’s 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.

<sup>b</sup> Data source: Based on the initial review report contained in document FCCC/IRR/2007/LVA.

<sup>c</sup> Data source: Latvia’s fifth national communication.

Abbreviation: NA = not applicable.

**Greenhouse gas emission projections**



Sources: (1) Data for the years 1990–2009: Latvia’s 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for the years 2009–2020: Latvia’s fifth national communication; the emissions are without land use, land-use change and forestry.

65. Latvia’s longer-term target for the sectors not covered by the EU ETS (non-ETS sector) is to have emissions increase by no more than 17 per cent by 2020 relative to 2005 levels. According to the projections presented in the NC5, emissions in 2020 (without

LULUCF activities) will amount to 17.7 Tg CO<sub>2</sub> eq in the ‘with measures’ scenario, representing a 55 per cent increase compared with the 2005 levels. This implies that it will be difficult for Latvia to achieve its longer-term national target for the non-ETS sector with existing PaMs, and that the use of additional measures is critically important. The ERT encourages Latvia 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

66. The ERT noted that Latvia did not provide the following reporting elements required by the UNFCCC reporting guidelines: an estimate of the total effect of its PaMs, in accordance with the ‘with measures’ definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO<sub>2</sub> eq basis) in 1995 and 2000, and relevant information on factors and activities for each sector for 1990 to 2020.

67. During the review, Latvia provided estimates of the effect of its PaMs in the energy sector (see table 5). These were estimated from the sum of the effects of the quantified policies reported in table 4.1 of the NC5 and summarized in table 3 above. The two key policies contributing more than half of the reduction in emissions are support for improving energy efficiency in buildings and support for cogeneration. Other substantive measures include support for collecting biogas from landfill waste and increased use of renewable energy in cogeneration plants. PaMs in the energy sector are estimated to result in an emission reduction of around 0.49 Tg CO<sub>2</sub> eq by 2010, which accounts for 1.8 per cent of the emissions in 1990. The effects of PaMs in the energy sector are projected to increase to 1.59 Tg CO<sub>2</sub> eq by 2020.

68. In response to the request made by the ERT, Latvia suggested a simple extrapolation approach based on the estimates of effects of PaMs in the energy sector to derive the total effects of PaMs. The ERT acknowledges the efforts the Party has made in estimating the total effects of PaMs, but considers that the suggested approach needs to be better justified. The drivers of emissions in the energy sector and the policy settings are different from those of other sectors, and the results for the energy sector cannot simply be extrapolated to other sectors (especially agriculture). It is not clear, for example, how Latvia accounts for double counting of the effects of PaMs and overlap between PaMs in estimating the total effects of PaMs. The ERT strongly recommends that Latvia report the estimated sectoral effects of PaMs in the non-energy sectors, including the transport sector (separately from energy), in its next national communication.

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

<i>Sector</i>	<i>Effect of implemented and adopted measures (Tg CO<sub>2</sub> eq)</i>	<i>Relative value (% of 1990 emissions)</i>	
		<i>2010</i>	<i>2020</i>
Energy (including transport)	0.49	1.8	6.0
Transport – CO <sub>2</sub>	NE	NE	NE
Industrial processes	NE	NE	NE

<i>Sector</i>	<i>Effect of implemented and adopted measures (Tg CO2 eq)</i>	<i>Relative value (% of 1990 emissions)</i>	<i>Effect of implemented and adopted measures (Tg CO2 eq)</i>	<i>Relative value (% of 1990 emissions)</i>
Agriculture	NE	NE	NE	NE
Land-use change and forestry	NE	NE	NE	NE
Waste management	NE	NE	NE	NE
Total	0.49	1.8	1.59	6.0

*Source:* Latvia's fifth national communication (NC5).

*Note:* The total effect of implemented and adopted policies and measures (PaMs) is defined as the sum of a limited set of estimated effects of PaMs reported in chapter 4.3 of the NC5.

*Abbreviation:* NE = not estimated.

69. In summary, the ERT strongly recommends that Latvia provide an estimate of the total effect of PaMs in its next national communication, and encourages Latvia to present information relative to the most recent inventory data. The ERT encourages Latvia to present information relative to unadjusted inventory data and to explain the nature of any adjustments. The ERT recommends that Latvia report emission projections related to fuel sold to ships and aircraft engaged in international transport separately and not included in the totals. The ERT encourages Latvia to provide information on the methodology used to estimate removals from LULUCF, as had been provided in the NC4, and to explain the changes in the projections between the national communications relative to changes in assumptions and methodologies.

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

70. Latvia in its NC5 provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. In the NC5, Latvia stated that it would reach the emission reduction target by domestic action alone, and is therefore not planning to use the Kyoto Protocol mechanisms to meet its targets.

71. Latvia has reported very limited information on joint implementation (JI) projects that are being hosted or planned. During the review, Latvia informed the ERT that it expects to possibly host between one and three JI projects before the end of the Kyoto Protocol first commitment period. The ERT encourages Latvia to report in more detail on the JI projects that it is hosting; for example, basic description of the activities, the gases affected and the total number and scope of JI projects approved or planned for 2008–2012.

#### **D. Vulnerability assessment, climate change impacts and adaptation measures**

72. In its NC5, Latvia has provided information on the expected impacts of climate change in the country and on adaptation measures and options. These PaMs include a list of government policies and plans on the environment, development and institutional arrangements. In the NC5, Latvia has not reported on actions taken to cooperate with developing countries with regard to 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**

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Coastal zones	<i>Vulnerability:</i> The changes in water level due to storms and the shortage of ice will cause even greater erosion of the coast. There will be an increase in sea levels and intensification of the frequency and strength of storms
Forests	<i>Vulnerability:</i> Forests are vulnerable owing to the high level of excess dryness and strong winds, which increases the frequency of forest fires <i>Adaptation:</i> Latvia has a National Civil Defence Plan to deal with issues of natural disaster, including forest fires
Water resources	<i>Adaptation:</i> Latvia has its Flood Risks Evaluation and Management National Programme for 2008–2015 to holistically deal with this matter
Fisheries	<i>Vulnerability:</i> The change in river flows in Latvia is affecting the development of fisheries. Salmon are migrating to the sea at an early age

73. In the NC5, Latvia has focused strongly on the impacts of climatic change and climate variability, with a lesser focus on the associated vulnerabilities and adaptation measures and options. The NC5 reports the impacts of climate change on forestry, water resources and coastal zones and suggests that the population, the economy and agriculture are affected as a result of climate change. However, the ERT noted that assessments of adaptation options and details of vulnerability assessments have not been provided.

74. Latvia has taken some steps forward on climate change adaptation; these include preparation of the National Environmental Policy, the National Development Plan and the Flood Risks Evaluation and Management National Programme. A report entitled *On Adaptation to Climate Change* was adopted by the Cabinet of Ministers in Latvia in 2008 and the European Commission's *White Paper on Adaptation to Climate Change* was launched in 2010. Furthermore, Latvia participates in international activities on adaptation, including the following: the expert working group of the European Commission and the EU Presidency on adaptation to climate change and science for climate change; the European initiative on the establishment of Global Monitoring for Environment and Security; and the European Organisation for the Exploitation of Meteorological Satellites.

75. The NC5 lists a range of projected impacts of climate change due to changes in the frequency of storms, floods, wind speed, etc. The ERT recommends that Latvia provide further details on the sectoral impacts of these projected changes and their associated adaptation options. The ERT further recommends that Latvia report an outline of the actions taken to cooperate with developing countries with regard to adaptation, as required by the UNFCCC reporting guidelines.

## **E. Research and systematic observation**

76. In the NC5, Latvia has provided information on its actions relating to research and systematic observation, and addressed both domestic and international activities. However, the ERT noted that Latvia did not provide a summary of information on its GCOS activities and action taken to support capacity-building in developing countries.

77. Latvia has moved from a weak coordination of scientific work in the past to a more comprehensive funding system to support research and science in the country. It has identified the following key priorities in the climate change arena: agrobiotechnology; biomedicine and pharmacy; energy; informatics; material science; forest science; medical science; and environmental science. In addition, Latvia collaborates with neighbouring countries to address climate change issues in the Baltic Sea region.

78. Latvia has an elaborate system of meteorological observation stations and has had a permanent meteorological observation network since the end of the nineteenth century. From 2003, Latvia has published meteorological and hydrological data on the Internet. Latvia maintains 15 databases and registers on, inter alia, meteorology, terrestrial and marine hydrology, and environmental quality.

79. The ERT recommends that Latvia provide summary information on GCOS activities and action taken to support capacity-building in developing countries in future national communications.

## **F. Education, training and public awareness**

80. In its NC5, Latvia has provided information on its actions relating to education, training and public awareness at both the domestic and the international levels. Latvia has provided information on the following: the policy framework; the education system; education and public-awareness programmes; education, information and consulting centres; funding; and international activities. By order of the Minister of Environment, the Latvian Council of Environmental Science and Education has been established to coordinate and consult on environmental science and education. The Latvian science community is represented at international conferences and works closely with neighbouring regions.

81. Latvia reports an increase in the number of students studying natural sciences and environmental sciences but does not provide any information on the number of additional students studying in these fields compared with when the NC4 was published. The Environmental Protection Law (2006) sets out the environmental science, environmental education and sustainable education procedures. As a consequence of the financial crisis, priority is given to implementing environmental issues concerning mainly the air, water, soil, nature and climate. Latvia does not report training of national experts from developing countries. The ERT encourages Latvia to report the changes in the number of students studying natural sciences and environmental sciences between national communication submissions.

82. Non-governmental organizations are involved in the development of policies around the use of new technologies. For example, the World Wildlife Fund (Latvia Division) is helping members of the public understand their contribution to emissions from transport and household energy. The World Wildlife Fund also promoted the Earth Hour action on 28 March 2009 across the cities and towns of Latvia. Green Freedom helps to communicate to members of the public how their way of life affects climate change and works within the Baltic region to improve cooperation between neighbouring countries. Latvia has not reported on the monitoring of awareness campaigns and of the effectiveness of stakeholder management. The ERT encourages Latvia to report on any monitoring of public-awareness campaigns and stakeholder engagement in future national communications.

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

83. Latvia 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 chapters 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.

84. Latvia has not reported on 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 decisions taken by ICAO and IMO in order to limit or to reduce GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels; information on what efforts Latvia 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 sections of this report. The ERT recommends that Latvia include these reporting elements in its next national communication.

Table 7

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

<i>Supplementary information</i>	<i>Reference</i>
National registry	Chapter 3.7
National system	Chapter 3.2
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 5.3
Policies and measures in accordance with Article 2	Chapter 4.3
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4.2
Information under Article 10	Chapters 4.2, 3.2, 6.3, 7 and 8
Financial resources <sup>a</sup>	Not applicable

<sup>a</sup> As Latvia 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.

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

85. Latvia 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, Latvia 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 Latvia to continue exploring and reporting on the adverse impacts on developing countries.

86. The 2011 national inventory report presented several initiatives by Latvia aimed at minimizing adverse impacts, including: (a) progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all GHG-emitting sectors, taking into account the need for energy price reforms to reflect market prices and externalities; (b) removing subsidies associated with the use of environmentally unsound and unsafe technologies; and (c) strengthening the capacity of developing country Parties identified in Article 4, paragraphs 8 and 9, of the Convention to improve efficiency in upstream and downstream activities relating to fossil fuels. The ERT encourages Latvia to include examples of such activities in its next national communication.

### III. Conclusions and recommendations

87. The ERT concludes that in general the NC5 provides a good overview of the national climate policy of Latvia. The information provided in the NC5 includes most of the mandatory information required by the UNFCCC reporting guidelines and most elements of the supplementary information required under Article 7 of the Kyoto Protocol, with the exception of information on how Latvia believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, the total effect of implemented and adopted PaMs, etc. (see para. 7 above). During the review, Latvia provided additional information on the above elements. The ERT also concludes that information provided in the NC5 is broadly transparent. However, the ERT noted with great concern the delay in the submission of the NC5.

88. Latvia's emissions for 2009 were estimated to be 59.7 per cent below its base year level excluding LULUCF and 185.8 per cent below its base year level including LULUCF. Emission decreases were driven by a decrease mainly in the early 1990s, during the transition from a centrally planned economy to a market economy, and, more recently, owing to the global financial crisis.

89. In the NC5, Latvia presents GHG projections for the years 2010, 2015 and 2020, using 2005 as the starting point for the projections. A 'with measures' scenario was provided in the NC5 that includes PaMs defined in the policy documents produced by the Government of Latvia until 2007. The projected GHG emissions under the 'with measures' scenario are below the annual average Kyoto Protocol target (23.84 Tg CO<sub>2</sub> eq) by 41.2 per cent in 2010. Thus, the projections indicate that Latvia can meet its Kyoto Protocol target (which is an 8 per cent reduction compared with the base year level) under the 'with measures' scenario with the domestic policies currently in place. However, in the longer term, Latvia will have difficulties in meeting its national target of an emission increase by no more than 17 per cent for the non-ETS sector by 2020. Latvia may need additional PaMs to be put in place in order to achieve this longer-term national target.

90. The NC5 contains information on how the use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Latvia is not planning to make use of the Kyoto Protocol mechanisms to meet its first commitment period target.

91. Latvia has implemented a wide range of PaMs to reduce GHG emissions in all sectors. Of particular significance is participation in the EU ETS, deployment of RES in order to increase its share in the overall energy mix and implementation of a number of projects and programmes to improve energy efficiency in residential and commercial buildings. In the longer term, Latvia aims to generate 49 per cent of electricity from RES

from 2010 onwards compared with 36 per cent in 2007, and to reduce energy consumption by 1.0 per cent per year below 'business as usual' levels.

92. In the NC5, Latvia has focused strongly on the impacts of climatic change and climate variability, with a lesser focus on the associated vulnerabilities and adaptation measures and options. A series of PaMs has been initiated on climate change adaptation, which includes the National Environmental Policy, the National Development Plan and the Flood Risks Evaluation and Management National Programme.

93. The ERT noted the progress Latvia has made in education, training and public awareness in relation to climate change. The Latvian Council of Environmental Science and Education has been established to coordinate and consult on environmental science and education, and the number of students studying natural sciences and environmental sciences has been increasing. The NC5 has provided extensive information on domestic and international activities on research and systematic observation. Latvia has moved from a weak coordination of scientific work in the past to a more comprehensive funding system to support research and science.

94. The ERT concludes that Latvia's national system continues to perform its required functions as set out in decision 19/CMP.1 and that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 15/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the CMP. The ERT noted that updates of databases and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible persons.

95. 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 Latvia in its 2011 annual submission is complete and broadly transparent. The ERT encourages Latvia to further enhance reporting on Article 3, paragraph 14, including by indicating the prioritization of the action taken in implementing its commitments under Article 3.

96. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of Latvia's reporting under the Convention and its Kyoto Protocol. The key recommendations<sup>7</sup> are that Latvia:

- (a) Improve the completeness of reporting by including in the next national communication information on the following:
  - (i) 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) The total estimated and expected effects of PaMs;
  - (iv) Emission projections related to fuel sold to ships and aircraft engaged in international transport;
  - (v) Actions taken to cooperate with developing countries with regard to adaptation;
  - (vi) GCOS activities;

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<sup>7</sup> The recommendations are given in full in the relevant chapters of this report.

(vii) Actions taken to support capacity-building on research and systematic observation in developing countries;

(b) Improve the transparency of reporting by elaborating on how it gives priority to the actions taken to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol.

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

(a) Communicate how the effectiveness of PaMs will be monitored and evaluated;

(b) Provide estimates of GHG mitigation effects for implemented PaMs in the non-energy sectors, especially for the agriculture, waste and industrial processes sectors;

(c) Elaborate on the methods used to estimate the mitigation effects of individual PaMs and on how PaMs interact with one another;

(d) Provide the documentation of the methodology used to estimate removals from LULUCF, as had been provided in the NC4, and explain the changes in projections between national communications relative to changes in assumptions and methodologies;

(e) Present projection information relative to unadjusted inventory data and explain the nature of the adjustments, if any.

#### **IV. Questions of implementation**

98. 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 question of implementation was raised by the ERT during the review.

## 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/2009/LVA. Report of the individual review of the annual submission of Latvia submitted in 2009. Available at <<http://unfccc.int/resource/docs/2010/arr/lva.pdf>>.

FCCC/IRR/2007/LVA. Report of the review of the initial report of Latvia. Available at <<http://unfccc.int/resource/docs/2007/irr/lva.pdf>>.

FCCC/IDR.4/LVA. Report of the centralized in-depth review of the fourth national communication of Latvia. Available at <<http://unfccc.int/resource/docs/2007/idr/lva04.pdf>>.

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

2009 greenhouse gas inventory submission of Latvia. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/4771.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php)>.

2011 greenhouse gas inventory submission of Latvia. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/5888.php](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. Kristīne Zommere-Rotčenkova (Ministry of Environmental Protection and Regional Development of the Republic of Latvia), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Latvia. The following documents<sup>1</sup> were also provided by Latvia:

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<sup>1</sup> Reproduced as received from the Party.