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Framework Convention on Climate Change

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Report of the technical review of the sixth national communication of Latvia

Parties included in Annex I to the Convention are requested, in accordance with decision 9/CP.16, to submit a sixth national communication to the secretariat by 1 January 2014. In accordance with decision 7/CMP.8, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their sixth national communication 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 technical review of the sixth national communication and supplementary information under the Kyoto Protocol of Latvia conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under 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 Convention, Latvia made a commitment to contribute to the joint European Union (EU) economy-wide emission reduction target of 20 per cent of greenhouse gas (GHG) emissions by 2020 compared with the 1990 level. Under the Kyoto Protocol, Latvia committed itself to reducing its GHG emissions by 8 per cent compared with the base year[1] level during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Latvia committed to contribute to the joint EU commitment[2] to reduce GHG emissions by 20 per cent below the base year level.

2. This report covers the centralized technical review of the sixth national communication (NC6) of Latvia, coordinated by the secretariat, in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (decision 23/CP.19) and the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1).

3. The review took place from 5 to 10 May 2014 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Marcelo Rocha (Brazil), Ms. Natalya Parasyuk (Ukraine), Ms. Asia Mohamed (Sudan), Ms. Violeta Hristova (Bulgaria), Mr. Harry Vreuls (Netherlands), Mr. Rostislav Neveceral (Czech Republic), Mr. Hans Halvorson Kolshus (Norway), Mr. Asger Strange Olesen (Denmark), Ms. Lilia Taranu (Republic of Moldova), Mr. Kennedy Amankwa (Ghana), Mr. Hamid Alsadoon (Saudi Arabia) and Mr. Fernando Farias (Chile). Mr. Vreuls and Mr. Amankwa were the lead reviewers. The review was coordinated by Ms. Xuehong Wang and Ms. Suvi Monni (secretariat).

4. During the review, the expert review team (ERT) reviewed each section of the NC6. The ERT also reviewed the supplementary information provided by Latvia as a part of the NC6 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 2013 annual submission and previous submissions under Article 7, paragraph 1, of the Kyoto Protocol.

5. In accordance with decisions 23/CP.9 and 22/CMP.1, a draft version of this report was communicated to the Government of Latvia, which provided no comments.

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for carbon dioxide (CO_2), 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] The target under the Kyoto Protocol for the second commitment period is taken by the EU, its 28 member States and Iceland. A political statement on fulfilling the Kyoto Protocol second commitment period target by the 28 EU member States jointly with Iceland is included in paragraph 45 of the report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its eighth session contained in document FCCC/KP/CMP/2012/13.

B. Summary

6. The ERT conducted a technical review of the information reported in the NC6 of Latvia in accordance 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 on NCs). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[3] is provided in the NC6 (see para. 80 below). The supplementary information on the minimization of adverse impacts referred to in paragraph 4 above is complete and transparent.

7. Latvia considered part of the recommendations provided in the report of the in-depth review of the fifth national communication (NC5) of Latvia.[4] The ERT commended Latvia for its improved reporting. During the review, Latvia provided further relevant information on, for example, linkage of national circumstances and GHG emissions, the national system, policies and measures (PaMs), emission projections, vulnerability assessment and adaptation.

1. Completeness and transparency of reporting

8. Gaps and issues related to the reported information identified by the ERT are presented in table 1 below.

2. Timeliness

9. The NC6 was submitted on 29 December 2013, before the deadline of 1 January 2014 mandated by decision 9/CP.16.

3. Adherence to the reporting guidelines

10. The information reported by Latvia in its NC6 is mostly in adherence with the UNFCCC reporting guidelines on NCs as per decision 4/CP.5 (see table 1).

[3] Decision 15/CMP.1, annex, chapter II.
[4] FCCC/IDR.5/LVA.

Table 1
Assessment of completeness and transparency issues of reported information in the sixth national communication of Latvia[a]

Sections of national communication	*Completeness*	*Transparency*	*Reference to paragraphs*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to paragraphs*
Executive summary	Complete	Transparent		National systems	Mostly complete	Partially transparent	22
National circumstances	Complete	Mostly transparent	4	National registries	Complete	Transparent	
Greenhouse gas inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
Policies and measures (PaMs)	Complete	Transparent		PaMs in accordance with Article 2	Partially complete	Transparent	43, 44
Projections and total effect of PaMs	Mostly complete	Partially transparent	57,67,70	Domestic and regional programmes and/or arrangements and procedures	Complete	Partially transparent	29, 30
Vulnerability assessment, climate change impacts and adaptation measures	Mostly complete	Transparent	67	Information under Article 10[b]	NA	NA	
Financial resources and transfer of technology[c]	NA	NA		Financial resources[c]	NA	NA	
Research and systematic observation	Mostly complete	Transparent	72	Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	
Education, training and public awareness	Complete	Transparent					

Abbreviation: NA = not applicable.

[a] A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in the chapter on conclusions and recommendations

[b] For the purposes of reporting in table 1 this assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7 of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant for developed country Parties and other developed Parties included in Annex II only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, e.g. research and systematic observation.

[c] Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Latvia is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on “new and additional” resources.

II. Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol

A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol

1. Information on relevant national circumstances

11. In its NC6, Latvia has provided a concise description of the national circumstances and elaborated on the framework legislation and key policy documents on climate change. Further information on the review of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B below.

12. The NC6 covered all of the elements required under the UNFCCC reporting guidelines on NCs. However, the information provided by Latvia on how national circumstances affect GHG emissions and removals, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time was not sufficiently transparent.

13. During the review, Latvia provided additional information on the national circumstances, elaborating, for example, on the correlation between GHG emissions and national circumstances as well as on rural and urban population, gross domestic product (GDP) per capita, sectors of the economy, international trade patterns, subsidies, taxes and renewable energy. Latvia also explained that the significant increase in growing stock of forests since the beginning of the twentieth century, that has an impact on removals, was due to an increase in both the area of forest land and in forest management. Latvia further indicated that the relationship between national circumstances and GHG emissions was mentioned in sections 3–5 of the NC6. The ERT commends Latvia for providing the additional information.

14. The ERT recommends that Latvia improve transparency by elaborating in its next NC on how national circumstances affect GHG emissions and removals, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time, in line with the information provided to the ERT during the review.

15. The ERT noted that during the period 1990–2011, Latvia's population decreased by 16.5 per cent and GDP increased by 13.6 per cent, while GHG emissions per GDP and per capita decreased by 61.2 and 47.4 per cent, respectively. Table 2 illustrates the national circumstances of Latvia by providing some indicators relevant to GHG emissions and removals.

Table 2
Indicators relevant to greenhouse gas emissions and removals for Latvia

	1990	*2000*	*2005*	*2010*	*2011*	*Change 1990–2011 (%)*	*Change 2010–2011 (%)*
Population (million)	2.66	2.37	2.30	2.24	2.22	–16.5	–0.9
GDP (2005 USD billion using PPP)	26.92	20.24	30.00	28.99	30.58	13.6	5.5
TPES (Mtoe)	7.85	3.83	4.53	4.64	4.37	–44.3	–5.8
GHG emissions without LULUCF (kt CO_2 eq)	26 312.45	10 104.88	11 157.16	12 097.07	11 545.28	–56.1	–4.6
GHG emissions with LULUCF (kt CO_2 eq)	4 006.39	–9 138.51	–6 835.09	–4 313.72	–5 633.92	–240.6	30.6
GDP per capita (2005 USD thousand using PPP)	10.11	8.53	13.04	12.95	13.77	36.2	6.3
TPES per capita (toe)	2.95	1.61	1.97	2.07	1.97	–33.2	–4.8
GHG emissions per capita (t CO_2 eq)	9.88	4.26	4.85	5.40	5.20	–47.4	–3.7
GHG emissions per GDP unit (kg CO_2 eq per 2005 USD using PPP)	0.98	0.50	0.37	0.42	0.38	–61.2	–9.5

Sources: (1) GHG emissions data: Latvia's 2013 GHG 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.

2. Information on the greenhouse gas inventory, emissions and trends

16. Latvia has provided a summary of information on GHG emission trends for the period 1990–2011. This information is fully consistent with the 2013 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq), are provided in section 3 of the NC6. During the review, the ERT took note of the recently submitted 2014 annual submission, in which Latvia reported 10,978.48 kt CO_2 eq of total national GHG emissions excluding land use, land-use change and forestry (LULUCF) for the year 2012.

17. The ERT noted that GHG emissions in Latvia have decreased substantially since 1990. Emissions decreases were driven by the transition from a centrally planned economy to a market economy, which resulted in essential changes in all sectors of the economy. Another main driver for Latvia's emissions trends is the shift to less carbon-intensive fuels: the use of natural gas has increased and the residual fuel oil and the solid fuel consumption have decreased since 1990. The more recent decrease in emissions was driven by the global financial crisis.

18. Total GHG emissions[5] excluding emissions and removals from LULUCF decreased by 56.1 per cent between 1990 and 2011, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 240.6 per cent over the same period. The decrease of emissions without LULUCF was mainly due to CO_2 emissions, which

[5] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

decreased by 57.5 per cent over this period. Emissions of nitrous oxide (N_2O) decreased by 54.5 per cent, and emissions of methane (CH_4) decreased by 52.9 per cent. The contribution of fluorinated gases (F-gases) to total GHG emissions was negligible throughout this period. Trends in total GHG emissions were based on GHG emission trends in the energy sector, driven by energy industries. An analysis of the drivers of GHG emissions trends in each sector is provided in chapter II.B below. Table 3 provides an overview of GHG emissions by sector from 1990 to 2011.

Table 3
Greenhouse gas emissions by sector in Latvia, 1990–2011

	GHG emissions (kt CO_2 eq)				*Change (%)*		*Share[a] by sector (%)*	
Sector	*1990*	*2000*	*2010*	*2011*	*1990–2011*	*2010–2011*	*1990*	*2011*
1. Energy	19 136.30	7 341.10	8 487.08	7 857.03	–58.9	–7.4	72.7	68.1
A1. Energy industries	6 286.62	2 489.94	2 260.64	2 083.78	–66.9	–7.8	23.9	18.0
A2. Manufacturing industries and construction	3 737.65	1 160.60	1 092.92	903.63	–75.8	–17.3	14.2	7.8
A3. Transport	2 999.04	2 168.24	3 259.09	3 141.50	4.8	–3.6	11.4	27.2
A4.–A5. Other	5 789.75	1 301.62	1 733.45	1 632.68	–71.8	–5.8	22.0	14.1
B. Fugitive emissions	323.24	220.69	140.97	95.44	–70.5	–32.3	1.2	0.8
2. Industrial processes	598.87	179.40	605.33	727.69	21.5	20.2	2.3	6.3
3. Solvent and other product use	50.70	44.81	45.25	41.31	–18.5	–8.7	0.2	0.4
4. Agriculture	5 931.27	1 956.33	2 326.80	2 320.62	–60.9	–0.3	22.5	20.1
5. LULUCF	–22 306.06	–19 243.39	–16 410.78	–17 179.20	–23.0	4.7	–84.8	–148.8
6. Waste	595.30	583.24	632.60	598.63	0.6	–5.4	2.3	5.2
GHG total with LULUCF	**4 006.39**	**–9 138.51**	**–4 313.72**	**–5 633.92**	**–240.6**	**30.6**	**NA**	**NA**
GHG total without LULUCF	**26 312.45**	**10 104.88**	**12 097.07**	**11 545.28**	**–56.1**	**–4.6**	**NA**	**NA**

Note: The changes in emissions and the share 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: 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.

3. National system

19. Latvia provided in its NC6 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, of the Kyoto Protocol (decision 19/CMP.1). The description includes most of the elements mandated by annex to decision 15/CMP.1. The NC6 also contains a reference to the description of a national system provided in the national inventory report

(NIR) of the 2013 annual submission. The ERT took note of the review of the changes to the national system as reflected in the report of the individual review of the GHG inventory of Latvia submitted in 2013.

20. The NC6 does not include information required by the annex to decision 15/CMP.1 on the process for collecting activity data, selecting emission factors and methodology, and developing emission estimates; the process for recalculating previously submitted inventory data; and the procedure for the official consideration and approval of the inventory. The ERT also considered that the description of the quality assurance (QA)/quality control (QC) plan and the external review processes was partially transparent.

21. During the review, Latvia provided additional information on the national system, referring to its most recent NIR as well as to a website that has information on legislation related to the national system.

22. The ERT recommends that Latvia improve the completeness of its reporting by including in its next NC information on the process for collecting activity data, selecting emission factors and methodology, and developing emission estimates; the process for recalculating previously submitted inventory data; and the procedure for the official consideration and approval of the inventory. Furthermore, the ERT recommends that Latvia improve transparency by providing more information on the QA/QC plan and external review processes in its next NC.

4. National registry

23. In its NC6, Latvia has provided information on the national registry in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1. The ERT took note of the review of the changes to the national registry as reflected in the report of the individual review of the GHG inventory of Latvia submitted in 2013.

24. Latvia described the changes, specifically due to the centralization of the European Union Emissions Trading System (EU ETS) operations into a single EU registry operated by the European Commission called the Consolidated System of European Union registries (CSEUR). The CSEUR is a consolidated platform which implements the national registries in a consolidated manner and was developed together with the new EU registry.

5. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

25. Latvia has reported in its NC6 (section 4.2) information on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol.

26. The overall responsibility for climate change policymaking lies within the Ministry of Environmental Protection and Regional Development of Latvia, and a number of national institutions are involved in the implementation of this policy.

27. Implementation of the Kyoto Protocol is underpinned by the climate policy of Latvia, which is based on the EU climate change policy. The principles of the national policy are contained in several documents: the “National Development Plan 2014–2020”, the “Sustainable Development Strategy for Latvia until 2030”, the “Strategic Development Plan for Latvia 2010–2013” and the “Environmental Policy Strategy 2009–2015”. Latvia is currently working on a new Environmental Policy Strategy for 2014–2020 and a Climate Change Policy Strategy for 2014–2020. The Latvian National Reform Programme to Implement the Europe 2020 Strategy was approved in 2011. Under the EU climate and energy package, the target of a 20 per cent emission reduction by 2020 compared with the base year level will be met by the EU and its member States through a 21 per cent reduction, from the 2005 level, in GHG emissions from installations under EU ETS and a

10 per cent reduction, compared with 2005, in GHG emissions in non-EU ETS sectors (excluding LULUCF). The Latvian National Reform Programme sets – according to the EU effort-sharing decision (decision 406/2009/EC) – a positive limit for the increase in GHG emissions in sectors outside the EU ETS (up to 17 per cent by 2020, compared with 2005).

28. The Ministry of Environmental Protection and Regional Development is responsible for the coordination of compliance with the requirements of the Convention and its Kyoto Protocol. Issues related to development and implementation of the climate change policy are carried out by the Ministry, as well as by the Ministry of Finance, the Ministry of Economics, the Ministry of Transport, the Ministry of Agriculture and institutions supervised by the relevant ministries. The Ministry of Environmental Protection and Regional Development also coordinates the acquisition of funds for climate change activities.

29. An important part of Latvia's climate change policy is education and access to information about climate change. There are various programmes focused on promoting public understanding of climate change. One of the cross-cutting measures is The Promotion of Public Understanding of the Importance and Possibilities of GHG Emissions Reduction. However, the ERT considers that there is a lack of transparency regarding how legislative arrangements and administrative procedures established pursuant to the implementation of the Kyoto Protocol are made publicly accessible, and recommends that Latvia elaborate on this in its next NC.

30. Latvia provided in its NC6 a description of national legislative arrangements and administrative procedures that are relevant for Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol. The Ministry of Agriculture is responsible for the Rural Development Plan for 2007–2013 and the draft Rural Development Plan for 2014–2020, which include support for afforestation. However, the ERT considers that there is a lack of transparency regarding how the legislative arrangements and administrative procedures 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 contribute to the conservation of biodiversity and sustainable use of natural resources, and recommends that Latvia elaborate on this in its next NC.

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

31. Latvia has provided in its NC6 comprehensive 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.

1. Policies and measures related to implementation of commitments under the Convention

32. In its NC6, Latvia reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention and its Kyoto Protocol. Latvia provided information on PaMs by sector and by gas and a description of the principal PaMs. Latvia has also provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, in accordance with the objective of the Convention. The NC6 contains more information on PaMs and many new PaMs compared with the NC5. This has significantly increased the transparency and completeness of Latvia's reporting.

33. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on PaMs which lead to greater levels of emissions than would otherwise

occur, or indicate which PaMs are innovative or effectively replicable by other Parties. The NC6 also does not include a description of the monitoring of the progress of PaMs to mitigate GHG emissions and information about institutional arrangements for monitoring.

34. In the NC6, Latvia provides information about the costs of the implementation of most of the PaMs in the energy sector, whereas information on such costs for the transport, industry, agriculture and forestry sectors is not provided. For the waste management sector, only information about tax rates for the various types of waste is provided. Objectives in the agriculture, waste, industrial processes (for F-gases) and forestry sectors are not described in quantitative terms. A description of the methods for the quantitative estimation of the impacts of PaMs and information about non-greenhouse gas mitigation benefits of PaMs were also not included in the NC6. Information on how the policy or measure interacts with other PaMs and how policies complement each other in order to enhance overall GHG mitigation are missing in the NC6.

35. During the review, Latvia significantly enhanced the transparency of the information that it reported by elaborating on longer-term policies and providing information on the implementation period (start and end year) for the priority PaMs. For measures the effects of which were indicated in PaMs summary tables as being "IE" (included elsewhere), Latvia specified where these effects were included, which again improved transparency. Latvia also provided additional information on the monitoring and evaluation of the progress of its PaMs to mitigate GHG emissions, and provided additional information on some PaMs (such as preferential feed-in tariffs for renewable energy sources and for combined heat and power). Latvia also improved the completeness of its reporting by indicating the PaMs that have the most significant impact on its GHG emissions.

36. The ERT commends Latvia for presenting information about PaMs in all the sectors. The ERT encourages Latvia to provide further information, in particular on planned PaMs and especially on their mitigation effects, in its next NC. The ERT also encourages Latvia to improve the transparency of its reporting by indicating the implementation period of its PaMs, ensuring that the data in the tables regarding PaMs correspond to the information in the text and indicating the PaMs that are innovative. The ERT also encourages Latvia to estimate and report the impacts of individual PaMs in the industry, agriculture and waste management sectors, to provide more detailed information on PaMs in the forestry sector and supplement them with a table, and to provide a description of the way in which progress with all PaMs to mitigate GHG emissions is monitored and evaluated over time. The ERT also encourages Latvia to report on the institutional arrangements for monitoring GHG mitigation policy. Furthermore, the ERT encourages Latvia to provide in its next NC information on how a policy or measure interacts with other PaMs or complements other PaMs at the national level, a brief description of estimation methods used for the calculation of mitigation effects, and information on non-greenhouse gas mitigation benefits of PaMs (e.g. reduced emissions of other pollutants or health benefits).

37. Some of the recommendations and encouragements made in the previous review report were taken into consideration in order to improve reporting in the NC6, including 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; estimates of the mitigation impact of PaMs, not only for the energy sector but also for other sectors; and information on the costs of PaMs.

2. Policy framework and cross-sectoral measures

38. The climate policy of Latvia is based on the EU climate change policy (as described in paras. 17 and 18 above). In the NC6, Latvia indicated that because of its size there are no subnational or regional policies implemented in the country.

39. Latvia provided a list of PaMs which are most effective in mitigation of climate change in its NC6 and in additional information provided to the ERT during the review. Table 4 provides a summary of the reported information on the PaMs of Latvia.

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

Sectors affected	*List of key policies and measures*	*Estimate of mitigation impact (kt CO_2 eq)*
Policy framework and cross-sectoral measures	European Union Emissions Trading System	
	European Union effort-sharing decision	
Energy		
Renewable energy	Investment support programme in renewable technologies for heat and electricity production to reduce greenhouse gas emissions	195
	Investment support programme to produce energy from biomass of agricultural and forest origins	51
	Latvia's Renewable Energy Action Plan	632
Energy efficiency	Investment support programme for district heating systems (also for renewable energy)	176
Residential and commercial sectors	Investment support programmes to increase energy efficiency in apartment buildings	23
	Financial support (grants) for renewable energy technologies in households	16
	Investment support programmes in public sector energy efficiency	27
Transport	Biofuel mix obligation requirement	125
	Application of differential tax rates for transport vehicles depending on age and engine size or on CO_2 emission factor	41
	New Passenger Cars Labelling on Fuel Economy Rating	205
Industry	Investment support programmes in industrial building energy efficiency to reduce greenhouse gas emissions	20
	Regulations for the reporting of fluorinated gas activities	NE
Agriculture	Implementation of the nitrates directive	NE
	National Development Plan for 2014–2020	NE
Forestry	Support for afforestation	NE
Waste management	Reduction in the disposal of biodegradable wastes	NE
	Promotion of recycling of municipal solid waste	NE

Note: The greenhouse gas reduction estimates given for some measures are reductions in carbon dioxide equivalent for 2020.

Source: Latvia's sixth national communication and information provided during the review.

Abbreviation: NE = not estimated.

3. Policies and measures in the energy sector

40. The energy sector is the most significant source of GHG emissions (68.1 per cent in 2011) in Latvia. Between 1990 and 2011, GHG emissions from the energy sector decreased

by 58.9 per cent (11,279.26 kt CO_2 eq), mainly owing to the country's 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 greatest decrease has been observed in energy industries due to a lower consumption of solid, liquid and gaseous fuels. However, the use of biomass has increased. Between 1990 and 2011, GHG emissions in transport increased by 4.8 per cent; the increase was particularly high during 2000–2007 owing to an increase in road transportation. Between 1990 and 2011 there was a decrease in emissions from energy use in other sectors (71.9 per cent or 4,164.30 kt CO_2 eq).

41. ***Energy supply***. Latvia depends on imported energy such as natural gas, oil products, coal and electricity. The main local energy sources are biomass, biogas, hydropower, wind power and peat. Latvia's total primary energy supply (TPES) was 4.37 Mtoe in 2011. Of this, renewable energy and waste contributed 34.6 per cent. The remainder of the primary energy supply was dominated by oil (32.3 per cent) and natural gas (30.2 per cent). Since 1990, the overall energy intensity of the economy improved, as TPES decreased by 44.3 per cent albeit a moderate GDP growth (13.6 per cent). In recent years Latvia's total electricity consumption has decreased moderately. The energy sector is influenced significantly by measures enhancing energy efficiency and increasing the share of renewable energy sources. The use of renewable energy sources (e.g. wind power and biomass) is expected to increase in electricity generation and in space heating. Most of the energy production facilities are included in the EU ETS. From 2013, the total number of allowances for allocation at the EU level decreases linearly at an annual rate of 1.74 per cent.

42. ***Renewable energy sources***. Conventional hydropower installations dominate the renewable energy sources in Latvia, but Latvia has put into place policies designed to increase the share of wind power, biogas and biomass in the total energy mix. According to the national "Energy development guidelines 2007–2016" and "Guidelines on the use of renewable energy sources 2006–2013", at least 36 per cent of the total consumption of primary energy is expected to come from domestic resources. Increase in the use of renewable energy sources is promoted in electricity generation, heat production and transportation. Latvia's Renewable Energy Action Plan assumes an increase in the use of renewable energy sources in the gross final energy consumption from 33 per cent in 2005 to 40 per cent by 2020. The majority of PaMs aim to support the use of renewable energy sources or to enhance energy efficiency. Programmes related to renewable energy sources are, for example, investment support programmes for district heating systems, renewable technologies in heat and electricity production, and energy production from agricultural and forest biomass; financial support for renewable energy technologies in households; and preferential feed-in tariffs for renewable energy sources.

43. ***Energy efficiency***. The "Energy development guidelines 2007–2016" stipulate the increase of efficiency in the energy sector. Starting from 2008, energy efficiency measures should result in a reduction of energy consumption of 1.0 per cent per year compared with 'business-as-usual' levels during this time period. Energy efficiency measures include improving insulation in residential buildings and enhancing the efficiency of heat generation and district heating systems. The Latvian National Reform Programme to Implement the Europe 2020 Strategy also encourages the enhancement of energy efficiency. The investment support programme for district heating systems introduces measures to increase the efficiency of district heating systems.

44. ***Residential and commercial sectors***. In the "Energy development guidelines 2007–2016" there is a target to reduce the mean specific heat consumption in buildings from the current level of 220–250 kWh m^{-2} per year to 195 kWh m^{-2} per year by 2016 and 150 kWh m^{-2} per year by 2020. Energy efficiency will be enhanced 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. The investment support programme in the public sector to increase energy efficiency should help to fulfil the targets.

45. ***Transport sector***. Latvia introduced a series of PaMs to increase the share of renewable energy sources (e.g. the biofuel mix obligation requirement and excise tax) and to reduce fuel consumption and GHG emissions in the transport sector (e.g. the application of differential tax rates for transport vehicles depending on age and engine size or on carbon dioxide emissions factor, fuel economy rating labelling on new passenger cars, and systematic inspection of the technical condition of motor vehicles). To decrease emissions from the transport sector, Latvia also plans to further develop and optimize its public transport network. Latvia aims to increase the proportion of biofuel in transport fuels to 10 per cent by 2020.

46. ***Industrial sector***. Latvia's climate change policy introduces the principle of cleaner production with the aim of increasing energy efficiency in industrial processes. The investment support programme in industrial building energy efficiency to reduce GHG emissions is a measure that includes energy efficiency investments in buildings and equipment, installation of efficient lighting, and a switch from fossil fuels to renewable energy sources for heating.

4. Policies and measures in other sectors

47. Between 1990 and 2011, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste management decreased by 48.6 per cent (3,487.90 kt CO_2 eq), mainly owing to a significant decrease in emissions from the agriculture sector of 60.9 per cent (3,610.66 kt CO_2 eq). Emissions from the waste management sector were largely stable over the period.

48. ***Industrial processes***. Between 1990 and 2011 GHG emissions from the industrial processes sector increased by 21.5 per cent (128.82 kt CO_2 eq). Between 1990 and 2009 the emissions decreased by 43.3 per cent (259.25 kt CO_2 eq), owing to a very rapid contraction in output from this sector between 1990 and 1993, when emissions fell by almost 90 per cent, followed by a steady increase in line with economic growth. As a result of the global financial crisis, emissions from this sector fell by 16.0 per cent between 2007 and 2009. From 2009 to 2011, the emissions doubled due to the sharp increase in industrial production following the crisis. PaMs reported for the industrial processes sector concern F-gases. The EU F-gas regulation (842/2006) aims to prevent leaks from equipment containing F-gases, and restricts use of F-gases in certain applications for which cost-effective alternatives are available. The EU directive on emissions from air-conditioning systems in motor vehicles concerns HFC emissions from such systems (directive 2006/40/EC). The ERT encourages Latvia to consider reporting on other measures targeted to emissions from industrial processes, if applicable.

49. ***Agriculture***. Between 1990 and 2011, GHG emissions from the agriculture sector decreased by 60.9 per cent (3,610.66 kt CO_2 eq), mainly owing to a decline in the cattle population and to a reduction in the mass of nitrogen fertilizer applied to crops. Measures are in place to improve manure storage and to use agricultural resources more sustainably, through payments to farmers who comply with practices aimed, among others, at the mitigation of climate change, and by providing farmers with information and guidance.

50. ***LULUCF***. The LULUCF sector is significant for Latvia, as net removals from this sector in 2011 exceeded emissions in all other sectors. Between 1990 and 2011, removals decreased by 23.0 per cent, from 22,306.06 kt CO_2 eq to 17,179.20 kt CO_2 eq. Afforestation has been supported by Rural Development Plan for 2007–2013 and further afforestation is expected due to the new Rural Development Plan for 2014–2020.

51. ***Waste management***. Between 1990 and 2011, GHG emissions from the waste sector increased by 0.6 per cent (3.33 kt CO_2 eq). The new Waste Management Plan 2013–2020 and corresponding new regulations focus on reduction of the disposal of biodegradable waste and on promotion of the recycling of municipal solid waste.

5. Policies and measures related to implementation of commitments under the Kyoto Protocol

52. Latvia reported on its package of PaMs adopted, implemented and planned in achieving its commitment under the Kyoto Protocol.

53. The NC6 does not include information required in annex to decision 15/CMP.1 on how Latvia promotes and implements the International Civil Aviation Organization (ICAO)/International Maritime Organization (IMO) decisions to limit emissions from aviation and marine bunker fuels. During the review, Latvia provided information on emission projections for international bunkers (international aviation and international maritime transport), but did not elaborate on the PaMs included in the projections. The ERT recommends that Latvia improve the completeness of its reporting by including information on how it promotes and implements ICAO and IMO decisions in its next NC.

54. In its NC6, Latvia did not report 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 2013 (referring to the 2012) annual submission is presented in chapter III.B below. The ERT recommends that Latvia provide information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects in its next NC.

C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

55. In its NC6, Latvia has reported emission projections under a 'with measures' (WM) and 'with additional measures' (WAM) scenario until 2030.

1. Projections overview, methodology and key assumptions

56. The GHG emission projections provided by Latvia in the NC6 and first biennial report include a WM and a WAM scenario until 2030, presented relative to actual inventory data for 1990, 1995, 2000, 2005, 2010 and 2011 following the recommendation made in the previous review report. 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 all GHGs (treating perfluorocarbons and hydrofluorocarbons 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. The ERT noted that Latvia did not provide a clear explanation of the starting point of the projections in the NC6. During the review, Latvia provided the additional information that the projections were developed on the basis of emissions in 2011 – the latest year for which inventory data are available in the NC6. The ERT encourages Latvia to improve the transparency of its reporting by providing this information in its next NC.

57. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, Latvia provided additional information elaborating on these projections. The emission projections were reported separately and not included in the totals. The projections of international bunkers under a WM scenario are 1,240 kt CO_2 eq for 2020 and 1,371 kt CO_2 eq for 2030. The ERT reiterates the recommendation made in the previous review report that Latvia improve the completeness of its reporting by including these reporting elements in its next NC.

58. Latvia did not provide projections for the following indirect GHGs in the NC6: carbon monoxide, nitrogen oxide, non-methane volatile organic compounds and sulphur dioxide. The ERT encourages Latvia to provide this information in its next NC.

59. The WM scenario is defined in the NC6 as including PaMs defined in the policy documents elaborated by the Government of Latvia until 2012. The WAM scenario is defined as including planned additional PaMs, which have not been approved in government documents and legal regulations. During the review, Latvia provided additional information that the most significant planned PaM in terms of estimated GHG reduction impact by 2020 is Latvia's Renewable Energy Action Plan (see para. 32 above). Other key planned PaMs include the National Development Plan for Latvia in the agriculture sector and promotion of the recycling of municipal solid waste. The ERT commends Latvia for reporting, for the first time, the WAM scenario.

60. Latvia reported sufficiently on the methodology used for the calculation of the projections of GHGs for the energy and LULUCF sectors. Energy projections are based on the MARKAL energy model. MARKAL is an optimization model that describes the whole energy cycle – demand system (by stages of primary energy supply), transformation, end-use and energy demand. For the purpose of developing an energy demand scenario, the long-term macroeconomic projection to 2030 developed by the Ministry of Economics was used. This macroeconomic projection has been applied to projecting electricity consumption and heat consumption as well as fuel consumption in individual sectors.

61. The methodology used for calculating the projections of GHG emissions for the transport, industrial processes, agriculture and waste management sectors was not sufficiently reported on in the NC6. During the review, Latvia provided additional information, elaborating on the models used for calculating the projections of GHG emissions for these sectors. The ERT encourages Latvia to improve the transparency of its reporting by including additional information on the methodology used for calculating the projections of GHG emissions in its next NC.

62. Latvia reported on the key underlying assumptions and values of variables such as GDP and population growth in the NC6. The assumptions have changed since the NC5, but this information was not sufficiently presented in the NC6. During the review, Latvia provided the missing information. For the NC5 the projections were prepared in the first half of 2008, when the first signs of economic recession could be seen in the country. The projections for the NC6 were prepared in 2013, when Latvia's economy was recovering from the recession. The following parameters and assumptions have been changed since the NC5: (i) moderate annual GDP increase instead of high annual GDP increase; and (ii) growth of the GDP determined mainly by an increase in productivity and export instead of an increase in productivity and employment. The ERT encourages Latvia to improve transparency by including information on the changes of assumptions and values of variables used in its next NC.

63. In the NC6, Latvia provided the results of sensitivity analyses in the energy sector on the impact of the implementation rate of energy efficiency measures and the impact of assumptions of higher GDP growth. Latvia also provided the results of sensitivity analyses

in the waste management sector (CH_4 emissions from waste disposal), assuming a failure to comply with biowaste disposal restrictions. The ERT encourages Latvia to consider carrying out sensitivity analyses based on additional variables – for example, population, technology, and energy prices – and to provide an analysis of the results, in the next NC.

2. Results of projections

64. Latvia's target under the Kyoto Protocol is, on average, 23,836.43 kt CO_2 eq per annum during the first commitment period (2008–2012), which represents an 8.0 per cent reduction in GHG emissions compared with the base year level. According to the GHG inventory data presented in the NC6, average annual emission during 2008–2011 were around 11,553.44 kt CO_2 eq, indicating that Latvia is on track to overachieve this target by domestic efforts alone. Latvia does not plan to use the market-based mechanisms.

65. For the second commitment period of the Kyoto Protocol (2013–2020), Latvia has committed together with other EU member States and Iceland to achieve the joint target of a GHG emissions reduction of 20 per cent below the base year (1990) level. Latvia reported that according to decision 406/2009/EC, its national target by 2020 for sectors outside the EU ETS is +17 per cent compared with 2005 (a positive limit).

66. Based on the projection results provided in the NC6, the projected reduction in GHG emissions under the WM and WAM scenarios, in 2020 in relation to 1990, are 47.6 and 50.1 per cent, respectively. The projected emission reductions under the WM and WAM scenarios by 2030 are 39.1 and 42.4 per cent, respectively, compared to the 1990 level. The contribution of different gases to Latvia's total emission projections are as follows: for the WM scenario, total GHG emissions of 13,800.16 kt CO_2 eq in 2020, including CO_2, CH_4 and N_2O emissions of 9,651.73, 1,698.08 and 2,311.74 kt CO_2 eq, respectively. The total GHG emissions are expected to be 16,034.43 kt CO_2 eq in 2030, including CO_2, CH_4 and N_2O emissions of 10,389.75, 1,961.32 and 3,471.40 kt CO_2 eq, respectively. This represents an increase in CO_2, CH_4 and N_2O emissions of 19.3, 4.1 and 33.6 per cent, respectively, by 2020 compared with the 2011 levels. The projected emissions of F-gases are negligible. The drivers underlying the projected increase of emissions are (i) the projected long-term development trends of the national economy; (ii) the government statements concerning encouragement of the development and export capacity of various industry branches, including an increase in production in energy intensive sectors such as the wood industry and production of cement, lime and ceramic products; (iii) the increase in the livestock population; and (iv) the planned significant increase in areas for the cultivation of agricultural crops.

67. The ERT noted that data on emissions of CH_4 and N_2O for 2015, 2020 and 2030 in NC6 table 5.12 do not correspond to data presented in common tabular format (CTF) table 6a. During the review, Latvia provided the correct data for NC6 table 5.12. The ERT recommends that Latvia ensure that QC processes are in place to ensure that accurate data on projections, that are consistent with data in the biennial report (including CTF tables), are included in its next NC.

68. Latvia's longer-term target for the sectors not included in the EU ETS (non-emissions trading system (non-EU ETS) sectors) is an emissions increase of no more than 17 per cent by 2020 relative to 2005 levels. The NC6 does not contain separate projections for the non-ETS sector. However, according to the projections presented in the NC6, total emissions in 2020 (without LULUCF) will amount to 13,800.16 kt CO_2 eq in the WM scenario, representing a 23.7 per cent increase compared with the 2005 level. In the WAM scenario, emissions in 2020 (without LULUCF) will amount to 13,133.66 kt CO_2 eq in 2020, representing a 17.7 per cent increase compared with the 2005 level. The ERT noted that reporting of projected emissions for the EU ETS and non-EU ETS sectors separately

could improve the transparency of information and enable an assessment by the ERT of Latvia's progress towards its emission reduction target.

69. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and quantified economy-wide emission reduction target are presented in table 5 and the figure below.

3. Total effect of policies and measures

70. In the NC6, Latvia did not present an estimate of the total effect of its PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs. During the review, Latvia provided estimates of the total effect of its PaMs in the energy, transport and waste management sectors (see table 6 below). These were estimated from the sum of the quantified effects of the implemented and adopted PaMs that Latvia updated during the review. The ERT reiterates the recommendation made in the previous review report that Latvia provide 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_2 eq basis) in its next NC.

71. During the review, Latvia reported that the total estimated effect of adopted and implemented PaMs is 879 kt CO_2 eq in 2020 and 982 kt CO_2 eq in 2030. According to the information reported, PaMs implemented in the energy sector will deliver the largest emission reductions, followed by the effect of PaMs implemented in transport sector. The most effective PaMs and drivers behind GHG emission reductions are described in chapter II.B above. Table 6 provides an overview of the total effect of PaMs as reported by Latvia, including additional information provided during the review.

72. The ERT noted that several PaMs have an impact on both emissions included in and not included in the EU ETS. The ERT noted that reporting on the effects of PaMs for the EU ETS and non-EU ETS sectors separately could improve the transparency of information and enable an assessment by the ERT of Latvia's progress towards its emission reduction target.

Table 5
Summary of greenhouse gas emission projections for Latvia

	Greenhouse gas emissions (kt CO_2 eq per year)	*Changes in relation to the base year[a] level (%)*	*Changes in relation to the 1990 level (%)*
Kyoto Protocol base year[b]	25 909.16	NA	–1.5
Kyoto Protocol target for the first commitment period (2008–2012)	23 836.43	–8.0	–9.4
Kyoto Protocol target for the second commitment period (2013–2020)[c]	Not available yet		
Quantified economy-wide emission reduction target under the Convention[d]	Not available yet		
Inventory data 1990[e]	26 312.45	1.6	NA
Inventory data 2011[e]	11 545.28	–55.4	–56.1
Average annual emissions for 2008–2011[e]	11 553.44	–55.4	–56.1
'With measures'	13 800.16	–46.7	–47.6

	Greenhouse gas emissions (kt CO_2 eq per year)	*Changes in relation to the base year[a] level (%)*	*Changes in relation to the 1990 level (%)*
projections for 2020 [f]			
'With additional measures' projections for 2020 [f]	13 133.66	–49.3	–50.1
'With measures' projections for 2030 [f]	16 034.43	–38.1	–39.1
'With additional measures' projections for 2030 [f]	15 144.62	–41.5	–42.4

Abbreviation: NA = not applicable.

[a] "Base year" in this column refers to the base year used for the target under the Kyoto Protocol.

[b] The Kyoto Protocol base year level of emissions is provided in the initial review report contained in document FCCC/IRR/2007/LVA.

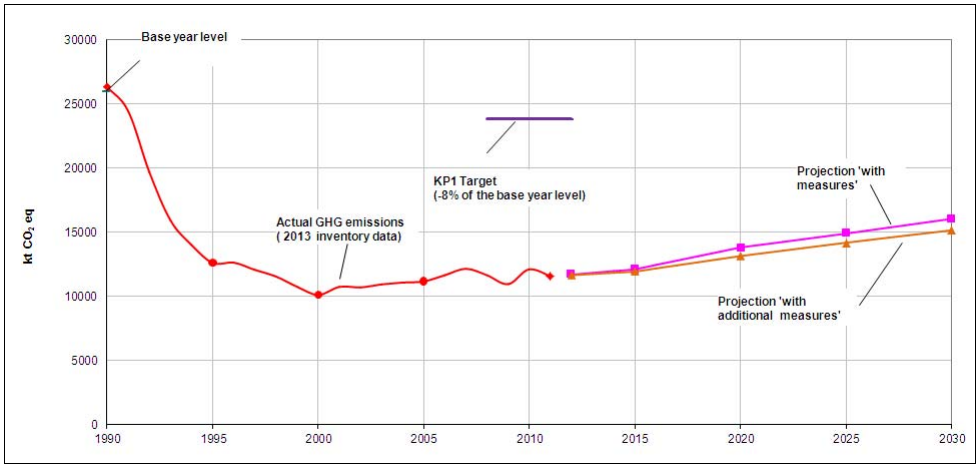
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target for the European Union and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent by 2020 compared with the base year (1990) level. The target for sectors not covered by the European Union Emissions Trading System is an emission increase of up to 17 per cent for Latvia by 2020 compared with 2005 under the European Union effort-sharing decision.

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

[e] Latvia's 2013 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.

[f] Latvia's sixth national communication and first biennial report.

Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2011: Latvia's 2013 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for the years 2012–2030: Latvia's sixth national communication and first biennial report; the emissions are without land use, land-use change and forestry.

Abbreviations: GHG = greenhouse gas, KP1 = first commitment period of the Kyoto Protocol.

Table 6
Projected effects of planned, implemented and adopted policies and measures in 2020 and 2030

Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*
	2020				*2030*			
Energy (without transport)	508	3.1	632	3.9	652	4.0	696	4.3
Transport	371	12.4	NA	NA	330	11.0	NA	NA
Industrial processes	NE	NE	NE	NE	NE	NE	NE	NE
Agriculture	NE	NE	NE	NE	NE	NE	NE	NE
Land-use change and forestry	NE	NE	NE	NE	NE	NE	NE	NE
Waste management	NE	NE	NE	NE	NE	NE	54	9.1
Total	**879**	**3.3**	**632**	**2.4**	**982**	**3.7**	**750**	**2.9**

Source: Latvia's sixth national communication and information provided during the review.

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 implemented and adopted PaMs reported in section 4 of the sixth national communication (NC6) and updated during the review; the total effect of planned PaMs is defined as the sum of a limited set of estimated effects of planned PaMs reported in section 4 of the NC6 and updated during the review.

Abbreviations: NA = not applicable, NE = not estimated.

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

73. Latvia in its NC6 provided 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. The ERT noted that Latvia does not plan to use the market-based mechanisms to meet its Kyoto Protocol target.

74. Latvia reported limited information on the joint implementation (JI) project that it hosted, the Liepaja Regional Solid Waste Management Project, established in 2012. During the review, Latvia informed the ERT that there were currently no other JI projects being undertaken, implemented or planned.

D. Vulnerability assessment, climate change impacts and adaptation measures

75. In its NC6, Latvia has provided the required information on the expected impacts of climate change in the country and on adaptation options. Latvia provided general information on the preparation of the national adaptation strategy and the important research programmes that have contributed to the development of the national adaptation policy. The NC6 of Latvia did not provide information on specific adaptation measures implemented or planned in the identified vulnerable areas, nor did it include information on methods used in vulnerability assessment. Table 7 summarizes the information on vulnerability and adaptation to climate change presented in the NC6.

76. Latvia did not provide adequate information on the actions taken to implement Article 4, paragraph 1(e), of the Convention with regard to adaptation. During the review, Latvia provided additional information. Latvia reported that it is taking part in the Baltic Sea Action Plan to achieve good environmental status in the Baltic Sea by 2021. Latvia is also involved in a cross-border cooperation programme with Lithuania to harmonize water quality and pollution risk management and ensure good chemical quality of surface waters flowing into the sea in the Baltic area. Latvia further reported that the city council of Riga collaborated with Rotterdam (the Netherlands) in the LIFE+ project Integrated Strategy for Riga City to Adapt to the Hydrological Processes Intensified by Climate Change Phenomena.

77. The ERT recommends that Latvia include in its next NC an outline of the action taken to implement Article 4, paragraph 1(e), of the Convention with regard to adaptation. The ERT also encourages Latvia to improve its reporting by including, in its next NC, information on its vulnerability assessment methods and sector-specific adaptation measures.

Table 7
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture	*Vulnerability*: yield reduction of traditional crops, fruits and vegetables; insect and disease damage to livestock; crop losses in floods; storm damage to crops; soil erosion impacts on agriculture; heat stress effects on agriculture and livestock; changes in distribution of cold-adapted crops and species *Adaptation*: not reported
Biodiversity	*Vulnerability*: changes in the distribution of cold-adapted species; invasion of new species caused by climatic factors; changes in species distribution patterns from south to north; decrease in river flow could have adverse effects on freshwater ecosystems and water quality, negatively affect crop productivity, and increase the risk of forest fires; significant changes in species composition of site-specific terrestrial and aquatic habitats caused by climatic factors; changes to landscape (including degradation); eutrophication; changes in coastal habitats caused by coastal erosion *Adaptation*: not reported
Energy	*Vulnerability*: storm damage to power supply systems and interruptions in electricity supply; increase in energy demand for cooling in summer; more snow-brake and ice periods leading to damage to power lines and forests; decrease of river flow can lead to a reduction in hydropower resources *Adaptation*: not reported
Fisheries	*Vulnerability*: decrease in fish stocks in the Baltic Sea caused by a reduction in oxygen concentration; reduction of the cod stock in the Baltic Sea and the Gulf of Riga caused by decreasing water salinity; ice blasting damage to fish stocks in inland waters; harm to fish stocks caused by the increasing number of invasive species; mortality of cold water fishes in fish farms and inland waters in the summer *Adaptation*: not reported
Forests	*Vulnerability*: increase in the number of forest fires; storms and drying of new forest plantations; insect damage; damage to spruce stands during the hot summer months; problematic forest cutting due to unstable soil conditions during winter *Adaptation*: not reported
Human health	*Vulnerability*: increase in the heat risks associated with heatwaves, especially in vulnerable groups; increase in the risks associated with extreme cold during winter; health problems caused by the pollution of groundwater, decreasing the quality of bathing water due to eutrophication, food safety hazards throughout the food chain and new invasive species

Vulnerable area	*Examples/comments/adaptation measures reported*
	(mainly insects); respiratory diseases caused by air pollution from forest fires; stress caused by floods, storms and drought
	Adaptation: not reported

78. In the NC6, Latvia focused mainly on the observed patterns of climate change, its expected impacts, Latvia's vulnerability and general information on adaptation. Compared with the NC5, there has not been any significant shift in focus of the information provided. Latvia reported in the NC6 that the expected climate change impacts would directly or indirectly affect agriculture, forestry, water resources, fisheries, energy, transport infrastructure, construction and building, biodiversity, health, food security, economy and the private sector and have social impacts.

E. Research and systematic observation

79. Latvia has provided information on its actions relating to research and systematic observation (RSO) in the NC6, and addressed both domestic and international activities, including the general policy on research, funding of RSO, the World Climate Programme, and the Global Climate Observing System (GCOS). Furthermore, Latvia has provided a summary of information on GCOS activities.

80. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs on action taken to support related capacity-building in developing countries.

81. During the review, Latvia provided additional information elaborating on actions it has taken to provide support to developing countries for RSO. Latvia participated in the European Union Twinning Project, through which it provided support to the environmental sector in Kosovo between 2010 and 2012. The overall objective of the project was to improve air quality and management and control of water resources to meet EU standards.

82. The ERT recommends that Latvia report, in its next NC, on actions taken to support RSO-related capacity-building in developing countries, in line with information provided during the review. To increase the transparency of the reporting, the ERT encourages Latvia to include, in its next NC, tables in accordance with the UNFCCC reporting guidelines on global climate change observing systems on participation in GCOS; on participation in global oceanographic observation systems; and on participation in global terrestrial observation systems.

83. To facilitate RSO activities, Latvia is establishing a national science and technology development policy and is developing a list of priority scientific fields for funding of basic and applied research for the period 2014–2017. Latvia also plans to increase investment in science and development from 0.7 per cent of GDP in 2011 to 1.5 per cent of GDP in 2020. Five priority fields of science were identified by Latvia for the period 2010–2013: energy and environment; innovation materials and technologies; national identity; public health; and sustainable use of local resources. Latvia has developed an environmental monitoring programme consisting of air, water, earth and biodiversity monitoring subprogrammes. In addition to these domestic actions, Latvia is a member of the European Organization for the Exploitation of Meteorological Satellites and shares data with international bodies such as the World Meteorological Organization and the European Environment Agency.

84. Latvia reported in its NC6 actions that can indirectly support technical research capacity-building locally. The actions that Latvia reported are participating in the European Seventh Framework Programme for research and technological development (2009–2013),

preparing for the EU research and innovation framework programme Horizon 2020 (2014–2020), and increasing the funding for research and development. Some of the climate change-related research that Latvia has undertaken are climate change impacts on water and the environment (2006–2009), the EU INTERREG IVC FUTUREforest project, and research and elaboration of modern methods and highly developed technologies in the field of energy.

85. The Latvian Environment, Geology and Meteorology Centre has responsibility for systematic observation according to the Cabinet of Ministers Order No. 448. The centre's activities in the field of climate change include data collection, analysis, storage and sharing with both local and international bodies. Global climate observation systems are operated by the centre in atmospheric and climate observation, oceanographic observation and terrestrial observation.

F. Education, training and public awareness

86. In the NC6, Latvia has provided information on its actions relating to education, training and public awareness at both the domestic and international level. Compared with the NC5, the Party provided well-structured and more extensive information on general policy, public information campaigns, projects, training programmes, resource and information centres, roles of the public and of non-governmental organizations (NGOs), and participation in international programmes.

87. During the review, Latvia provided additional information elaborating on its monitoring and evaluation of public education and awareness raising campaigns. Latvia indicated that it does not have a national level monitoring and evaluation programme in place to determine the effectiveness of its public education or awareness raising campaign activities. The implementers of the initiatives are therefore responsible for monitoring their effectiveness.

88. Latvia reported in its NC6 that environmental education is provided at the primary, secondary and tertiary levels. Universities in Latvia play a significant role in environmental education by offering advanced courses in environmental sciences. The Latvian Ministry of Science and Education is responsible for educational issues at all levels, and it prepares educational policy and coordinates its implementation. Latvia reported in the NC6 that in 2004, the Latvian Council of Environmental Science and Education was established to promote cooperation between institutions in the areas of environmental science and educational development. Latvia also reported the establishment of the Latvian Environmental Protection Fund to provide financial support for the development of environmental education, training and public awareness. Furthermore, Latvia participates in the Baltic Sea project to increase students' awareness of environmental problems in the Baltic region and promote sustainable development.

89. The NC6 of Latvia indicates that the Ministry of Environmental Protection and Regional Development, Climate and Environmental Policy department, Climate Change and Adaptation Policy division, has overall responsibility for the coordination of climate change policy and its implementation. Latvia also reported that two expert groups with members from the ministries and academia have been established for the development of a national adaptation strategy. In the NC6, Latvia reported that a number of NGOs in Latvia are actively involved in national capacity-building on climate change issues through research, lobbying, education, training and publicity. Some of these NGOs are the Latvian Environmental Protection Club, World Wildlife Fund Latvia, Green Liberty and the Baltic Environmental Forum. Latvia provided information on its ongoing activities regarding public awareness campaigns, mentioning, among others, the Communication Initiative of

the Year Award (which is awarded to creative organizers of concerts aiming to raise environmental awareness), European Mobility Week and Car-Free Day (both of which raise public awareness about air pollution from the use of cars). Latvia also reported that information on environmental issues and ongoing activities are shared through dedicated websites, conferences and e-learning tools.

III. Summary of reviewed supplementary information under the Kyoto Protocol

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

90. Supplementary information provided by Latvia under Article 7, paragraph 2, of the Kyoto Protocol in its NC6 is mostly complete and mostly transparent. The supplementary information is located in different sections of the NC6. Table 8 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC6 sections in which this information is provided.

91. Latvia 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 by ICAO and IMO in order to limit or to reduce GHG emissions not included in 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, on other Parties; and some elements of description related to the national system. The technical assessment of the information reported under Article 7, paragraph 2, of the Kyoto Protocol is contained in the relevant sections of this report. The ERT recommends that Latvia include these reporting elements in its next NC.

Table 8
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference to the sixth national communication*
National registry	Section 3.3
National system	Section 3.2
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Section 5.4
Policies and measures in accordance with Article 2	Section 4.3
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Section 4.2
Information under Article 10	Sections 3.2, 4.2, 6, 8 and 9
Financial resources	Not applicable

Note: Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Latvia is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

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

92. 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 2012 annual submission. In its 2013 annual submission, the Party reported that no changes had occurred since the previous submission. The ERT considers the reported information to be complete and transparent.

93. The 2012 NIR presented two initiatives of Latvia aimed at minimizing adverse impacts: (1) 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; and (2) removing subsidies associated with the use of environmentally unsound and unsafe technologies. Latvia also affirmed that its development policy supports capacity-building in developing countries, taking into account their needs with regard to the action of "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 NC as part of the information on what efforts Latvia is making to implement PaMs in such a way as to minimize adverse effects, on other Parties.

IV. Conclusions and recommendations

94. The ERT conducted a technical review of the information reported in the NC6 of Latvia according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a good overview of the national climate policy of Latvia. The information provided in the NC6 includes all elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of some information on the national system (elements of description (c), (e) and (g) listed in para. 30 of annex to decision 15/CMP.1) and on implementation of ICAO and IMO decisions. Information on the minimization of adverse impacts was provided in the NIR but not in the NC6. During the review, Latvia provided additional information on, for example, the national system, PaMs, emission projections, vulnerability assessment and adaptation, and RSO.

95. Latvia's emissions for 2011 were estimated to be 56.1 per cent below its 1990 level excluding LULUCF and 240.6 per cent below including LULUCF. Emission decreases excluding LULUCF were driven by the transition from a centrally planned economy to a market economy and, more recently, the global financial crisis.

96. In the NC6, Latvia presents GHG projections for the period from 1990 to 2030. Two scenarios are included: WM and WAM. The projected reductions in GHG emissions under the WM and WAM scenarios, in 2020 in relation to 1990, are 47.6 and 50.1 per cent, respectively. The projected emission reductions under the WM and WAM scenarios by 2030 are 39.1 and 42.4 per cent, respectively, compared to the 1990 level. Based on the comparison with the target (amounting to 23,836.43 kt CO_2 eq) and the average annual emissions for 2008–2011 (amounting to 11,553.44 kt CO_2 eq), Latvia is in a position to meet its Kyoto Protocol target for the first commitment period (8.0 per cent reduction). For the second commitment period of the Kyoto Protocol (2013–2020), Latvia has committed together with other EU member States and Iceland to achieve the joint target of a GHG emissions reduction of 20 per cent by 2020 below the base year level. According to EU decision 406/2009/EC, Latvia's national target by 2020 for sectors outside the EU ETS is +17 per cent compared with 2005 (a positive limit). The ERT noted that reporting of

projected emissions for the EU ETS and non-EU ETS sectors separately could enable an assessment by the ERT of Latvia's progress towards its 2020 target for the non-ETS sector.

97. The NC6 contains information on how Latvia's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although Latvia did not elaborate on supplementarity as such. Latvia is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target.

98. Latvia reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention and its Kyoto Protocol. The implemented and adopted PaMs with the highest mitigation effect are in the energy sector and include investment support programmes for heat and electricity production, which aim to increase the use of renewable energy and improve energy efficiency. In the transport sector, key PaMs include the biofuel mix obligation and the labelling of new passenger cars. The most significant planned PaM is Latvia's Renewable Energy Action Plan, which assumes an increase in the use of renewable energy sources in the gross final energy consumption from 33 per cent in 2005 to 40 per cent by 2020. Other key planned PaMs include the National Development Plan for Latvia in the agriculture sector and the promotion of the recycling of municipal solid waste.

99. The description of climate change impacts, vulnerability and adaptation in the NC6 focused mainly on the impacts of climate change, the sectors vulnerable to climate change and the general action being taken to adapt to climate change. Latvia indicated that the key sectors vulnerable to climate change are energy, forestry, health and biodiversity. The NC6 does not provide in detail the sector-specific adaptation measures being implemented or planned. Latvia did not provide in the NC6 its actions regarding cooperation with other countries on adaptation, but during the review, some information was provided.

100. Latvia provided comprehensive information on its education, training and public awareness activities in the NC6. Education on climate change in Latvia is undertaken at the primary, secondary and tertiary levels. Latvia is also involved in a number of public awareness campaigns.

101. The NC6 provides information on Latvia's RSO activities and programmes at both the domestic and the international level. Latvia is strengthening its scientific institutions and increasing funding for research. Latvia did not report in the NC6 on action taken regarding support to developing countries in the area of RSO but during the review, information on this was provided.

102. 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 is provided by Latvia in its 2013 (with reference to 2012) annual submission.

103. In the course of the review, 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[6] are that Latvia:

(a) Improve the completeness of reporting by including in the next NC the following information:

(i) A complete description of the national system;

(ii) Estimates of the total effects of its implemented and adopted PaMs;

(iii) Implementation of ICAO and IMO decisions;

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

(iv) Emission projections regarding fuel sold to ships and aircraft engaged in international transport reported separately from the total emissions;

(v) Outline of action taken to implement Article 4, paragraph 1(e), of the Convention regarding cooperation related to adaptation;

(vi) Actions taken to support RSO-related capacity-building in developing countries;

(vii) How it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects;

(b) Improve the transparency of reporting by including in the next NC the following information:

(i) How national circumstances affect GHG emissions and removals, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time;

(ii) More information on the national system regarding QA/QC and external review processes;

(iii) More information on any provisions to make information on legislative arrangements related to implementation of the Kyoto Protocol publicly accessible;

(iv) More information on any 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 contribute to the conservation of biodiversity and sustainable use of natural resources;

(c) Ensure that accurate data on projections, that are consistent with data in the biennial report (including CTF tables), are included in the next NC.

V. Questions of implementation

104. During the review, the ERT assessed the NC6, 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, transparency and adherence to the reporting guidelines on NCs. 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>.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 23/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=20>.

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/ARR/2013/LVA. Report of the individual review of the annual submission of Latvia submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/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.5/LVA. Report of the in-depth review of the fifth national communication of Latvia. Available at <http://unfccc.int/resource/docs/2011/idr/lva05.pdf>.

Sixth national communication of Latvia. Available at <http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/lv_nc6_1br_2013_final%5B1%5D.pdf>.

2013 GHG inventory submission of Latvia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php>.

2014 GHG inventory submission of Latvia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Agita Gancone (Ministry of Environmental Protection and Regional Development), including additional material on policies and measures, greenhouse gas projections and recent climate policy developments in Latvia. The following documents[1] were also provided by Latvia:

Latvia. 2013. *Report Pursuant to Article 3(2) of Decision 280/2004/EC. Policies and Measures and Greenhouse Gas Projections.*

Latvian Cabinet of Ministers. 2014. *Par Vides Politikas Pamatnostādnēm 2014.–2020. Gadam* (Environmental policy strategy 2014-2020).

[1] Reproduced as received from the Party.