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Report on the technical review of the seventh national communication of Latvia

Parties included in Annex I to the Convention were requested by decision 9/CP.16 to submit their seventh national communication to the secretariat by 1 January 2018. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the seventh national communication and relevant 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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Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
EMEP/EEA	European Monitoring and Evaluation Programme/European Environment Agency
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NGO	non-governmental organization
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N_2O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol, Part II: Reporting of supplementary information under Article 7, paragraph 2"
RES	renewable energy sources
SF_6	sulfur hexafluoride
UNFCCC reporting guidelines on NCs	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications"
WAM	'with additional measures'
WEM	'with measures'

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the NC7 of Latvia. The review was 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", particularly "Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention" (annex to decision 13/CP.20), and the "Guidelines for review under Article 8 of the Kyoto Protocol" (annex to decision 22/CMP.1 and annex I to decision 4/CMP.11).[1]

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

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

B. Summary

4. The ERT conducted a technical review of the information reported in the NC7 of Latvia in accordance with the UNFCCC reporting guidelines on NCs (decision 4/CP.5) and the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol (annex to decision 15/CMP.1 and annex III to decision 3/CMP.11).

1. Timeliness

5. The NC7 was submitted on 29 December 2017, before the deadline of 1 January 2018 mandated by decision 9/CP.16.

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

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Latvia in its NC7, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

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

Table 1

Assessment of completeness and transparency of mandatory information reported by Latvia in its seventh national communication, including supplementary information under the Kyoto Protocol

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendations*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to description of recommendations*
Executive summary	Complete	Transparent		National system	Complete	Transparent	
National circumstances	Complete	Mostly transparent	Issue 1 in table 4	National registry	Complete	Mostly transparent	Issue 1 in table 6
GHG inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
PaMs	Complete	Partially transparent	Issues 3, 4 and 6 in table 9	PaMs in accordance with Article 2	Mostly complete	Mostly transparent	Issues 10 and 11 in table 9
Projections and the total effect of PaMs	Mostly complete	Mostly transparent	Issues 3, 5 and 10 in table 13; issue 1 in table 15	Domestic and regional programmes and/or arrangements and procedures	Partially complete	Transparent	Issues 1 and 2 in table 7
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Mostly transparent	Issue 1 in table 17	Information under Article 10[a]	NA	NA	NA
Financial resources and transfer of technology[b]	NA	NA	NA	Financial resources[c]	NA	NA	NA
Research and systematic observation	Mostly complete	Transparent	Issue 1 in table 18	Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	
Education, training and public awareness	Complete	Transparent					

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

[a] The 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 to Annex II Parties 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, for example research and systematic observation.

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

[c] Latvia is not an Annex II Party and is therefore not obliged to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

3. Summary of reviewed supplementary information under the Kyoto Protocol

7. The supplementary information under Article 7, paragraph 2, of the Kyoto Protocol is incorporated in different sections of the NC7, and the supplementary information under Article 7, paragraph 1, of the Kyoto Protocol is reported in the NIR of the 2017 annual submission. Table 2 provides references to where the information is reported. The technical assessment of the information reported under Article 7, paragraphs 1 and 2, of the Kyoto Protocol is contained in the relevant sections of this report.

Table 2
Overview of supplementary information under the Kyoto Protocol reported by Latvia

Supplementary information	*Reference to section of the NC7*
National registry	3.3
National system	3.2
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	5.3
PaMs in accordance with Article 2	4.3
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	4.2
Information under Article 10	3.2, 4.2, 6, 8, 9
Financial resources[a]	NA
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Reported in the NIR of the Party's 2017 annual submission

[a] Reporting on financial resources under the Kyoto Protocol is relevant to 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 information reported in the seventh national communication, including the supplementary information under the Kyoto Protocol

A. Information on national circumstances and greenhouse gas emissions and removals

1. National circumstances relevant to greenhouse gas emissions and removals

(a) Technical assessment of the reported information

8. The NC7 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater. From the NC7 it can be concluded that no major changes in national circumstances have taken place since the previous submission; however, Latvia's population continues to decrease, its dependency on imported energy resources is also decreasing and there have been changes in the structure of the energy sources used since 2010.

9. The ERT noted that during the period 1990–2015 Latvia's population decreased by 25.7 per cent and GDP increased by 25.3 per cent, while GHG emissions per GDP unit and GHG emissions per capita decreased by 65.5 and 41.8 per cent, respectively. Table 3 illustrates the national circumstances of Latvia by providing some indicators relevant to emissions and removals.

Table 3
Indicators relevant to greenhouse gas emissions and removals for Latvia for the period 1990–2015

Indicator	*1990*	*2000*	*2010*	*2014*	*2015*	*Change (%)* *1990–2015*	*2014–2015*
GDP per capita (thousands 2011 USD using purchasing power parity)	13.17	10.75	17.59	21.46	22.22	68.8	3.6
GHG emissions without LULUCF per capita (t CO_2 eq)	9.82	4.37	5.82	5.61	5.72	–41.8	1.8
GHG emissions without LULUCF per GDP unit (kg CO_2 eq per 2011 USD using purchasing power parity)	0.75	0.41	0.33	0.26	0.26	–65.5	–1.7

Sources: (1) GHG emission data: Latvia's 2017 GHG inventory submission, version v1; (2) population and GDP: World Bank.

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.

(b) Assessment of adherence to the reporting guidelines

10. The ERT assessed the information reported in the NC7 of Latvia and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 4.

Table 4
Findings on national circumstances relevant to greenhouse gas emissions and removals from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 8 Issue type: transparency Assessment: recommendation	Latvia provided in its NC7 information on its national circumstances. However, information 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 provided in the NC7. During the review, Latvia provided some information on how national circumstances and their changes affect GHG emissions, removals and their trends. The ERT reiterates the recommendation made in the previous review report that Latvia improve the transparency of its NC by providing further information 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, by further developing the examples provided to the ERT during the review.

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

2. Information on greenhouse gas emissions and removals

(a) Technical assessment of the reported information

11. Total GHG emissions[2] excluding emissions and removals from LULUCF and excluding indirect CO_2 emissions decreased by 56.8 per cent between 1990 and 2015,

[2] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2017 annual submission, version v1.

whereas total GHG emissions including net emissions or removals from LULUCF and excluding indirect CO_2 emissions decreased by 26.9 per cent over the same period. Table 5 illustrates the emission trends by sector and by gas for Latvia.

Table 5
Greenhouse gas emissions by sector and by gas for Latvia for the period 1990–2015

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2014*	*2015*	*1990–2015*	*2014–2015*	*1990*	*2015*
Sector									
1. Energy	19 386.62	7 310.01	8 404.69	6 974.24	7 115.05	–63.3	2.0	74.2	63.0
A1. Energy industries	6 264.70	2 503.18	2 274.14	1 694.15	1 772.76	–71.7	4.6	24.0	15.7
A2. Manufacturing industries and construction	3 928.21	1 165.43	1 098.45	725.29	674.73	–82.8	–7.0	15.0	6.0
A3. Transport	3 030.85	2 206.45	3 253.90	2 952.78	3 131.50	3.3	6.1	11.6	27.7
A4. and A5. Other	5 915.26	1 284.30	1 686.59	1 466.70	1 433.25	–75.8	–2.3	22.6	12.7
B. Fugitive emissions from fuels	247.59	150.64	91.61	135.33	102.81	–58.5	–24.0	0.9	0.9
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	705.05	223.37	680.25	823.68	760.54	7.9	–7.7	2.7	6.7
3. Agriculture	5 370.68	2 081.38	2 376.00	2 663.32	2 739.64	–49.0	2.9	20.5	24.2
4. LULUCF	–8 787.09	–6 695.18	2 018.88	4 343.32	1 377.15	–115.7	–68.3	NA	NA
5. Waste	679.09	721.66	741.48	728.77	687.44	1.2	–5.7	2.6	6.1
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Indirect CO_2	43.43	26.40	15.65	20.20	16.72	–61.5	–17.2	NA	NA
Gas[a]									
CO_2	19 780.53	7 072.96	8 529.66	7 151.01	7 239.36	–63.4	1.2	75.7	64.1
CH_4	3 539.14	1 848.12	1 836.19	1 956.93	1 883.88	–46.8	–3.7	13.5	16.7
N_2O	2 821.77	1 404.85	1 674.21	1 867.87	1 942.25	–31.2	4.0	10.8	17.2
HFCs	NO, NA, NE	9.59	155.01	205.63	227.06	NA	10.4	NA	2.0
PFCs	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NA	NA	NA	NA
SF_6	NO, NA	0.88	7.35	8.58	10.12	NA	18.0	NA	0.1
NF_3	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NA	NA	NA	NA
Total GHG emissions without LULUCF	**26 141.43**	**10 336.41**	**12 202.43**	**11 190.02**	**11 302.67**	**–56.8**	**1.0**	**100.0**	**100.0**
Total GHG emissions with LULUCF	**17 354.34**	**3 641.24**	**14 221.31**	**15 533.33**	**12 679.81**	**–26.9**	**–18.4**	**NA**	**NA**
Total GHG emissions without LULUCF, including indirect CO_2	**26 184.86**	**10 362.81**	**12 218.08**	**11 210.22**	**11 319.39**	**–56.8**	**1.0**	**NA**	**NA**
Total GHG emissions with LULUCF, including indirect CO_2	**17 397.77**	**3 667.63**	**14 236.96**	**15 553.53**	**12 696.54**	**–27.0**	**–18.4**	**NA**	**NA**

Source: GHG emission data: Latvia's 2017 annual submission, version v1.
[a] Emissions by gas without LULUCF and without indirect CO_2.

12. The trend in Latvia's GHG emissions is strongly driven by the economic growth pattern of the country. National total GHG emissions sharply decreased from 1990 to 1993

owing to the economic crisis. The transition period to a market economy started in Latvia in 1991. This process caused essential changes in all sectors of the national economy and resulted in a decrease in GHG emissions from 1990 to 2000. Since 2000 GHG emissions have steadily increased (along with the national GDP) mainly as a result of increased fuel consumption. This trend was observed until 2008 when it ceased because of the global economic recession. Since 2008, inter-annual fluctuations in the GHG trend have been observed. Regarding the sectoral contribution to the national GHG trend, the most significant source of emissions is the energy sector (74.2 and 63.0 per cent in 1990 and 2015, respectively), followed by the agriculture sector (20.5 and 24.2 per cent in 1990 and 2015, respectively), the IPPU sector (2.7 and 6.7 per cent in 1990 and 2015, respectively) and the waste sector (2.6 and 6.1 per cent in 1990 and 2015, respectively).

13. Between 1990 and 2015, GHG emissions from the energy sector decreased by 63.3 per cent, owing mainly to the economic contraction experienced from 1990 to 1993. In those years, the emissions from fuel combustion activities (the most significant contributor to the energy sector) decreased by 36.3 per cent. The contribution of transport emissions to the energy sector increased from 15.6 per cent in 1990 to 44.0 per cent in 2015 owing to an increase in the passenger car fleet and goods transportation. Conversely, the contribution of energy industry emissions to the energy sector decreased from 32.3 per cent in 1990 to 24.9 per cent in 2015 owing to the use of natural gas and biomass to replace residual fuel oil and coal for energy production. In all categories in the energy sector except transport GHG emissions in 2015 were significantly lower than in 1990.

14. Between 1990 and 2015, GHG emissions from the IPPU sector increased by 7.9 per cent (55.49 kt CO_2 eq), owing mainly to the increase in F-gas emissions. The emissions from other categories decreased from 1990 to 2015. Between 1990 and 2015, GHG emissions from the agriculture sector decreased by 49.0 per cent (2,631.04 kt CO_2 eq), owing mainly to the economic contraction that occurred between 1990 and 1993. The LULUCF sector was a net source of 1,377.15 kt CO_2 eq in Latvia in 2015. The sector has evolved from being a net sink of GHG emissions during the period 1990–2009 (–8,787.09 kt CO_2 eq in 1990) to an emission source during the period 2010–2015. The trend was mainly driven by the reduction in net CO_2 removals in living biomass in forest land. Between 1990 and 2015, GHG emissions from the waste sector increased by 1.2 per cent (8.35 kt CO_2 eq), owing mainly to the changes in the economic situation in the last 20 years, increasing consumption and waste generation.

15. CO_2 is the main GHG emitted in the country. In 2015, CO_2 emissions represented 64.1 per cent of Latvia's total GHG emissions. CO_2 emissions have decreased by 63.4 per cent since 1990, driven by the downward trend in fossil fuel combustion emissions. CH_4 emissions decreased by 46.8 per cent in 2015 compared with the 1990 level owing mainly to the decrease in the emissions from enteric fermentation (61.4 per cent reduction in 2015 compared with 1990), the main contributor to CH_4 emissions in the country. N_2O emissions decreased by 31.2 per cent from 1990 to 2015 owing to the decrease in livestock population, crop production and synthetic fertilizer consumption. Regarding F-gases, only HFC and SF_6 emissions occur in the country. The consumption of F-gases started in 1995 and has strongly increased since. The most consumed gas and the most relevant emissions of F-gases are those of HFC-134a, used in refrigeration and air conditioning equipment.

16. The ERT found that the summary information provided on GHG emissions was consistent with the information reported in the 2017 annual inventory submission.

(b) Assessment of adherence to the reporting guidelines

17. The ERT assessed the information reported in the NC7 of Latvia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

18. Latvia provided in the NC7 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC7 also contains a reference to the description of the national system provided in the NIR of the 2017 annual submission. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2016 annual submission of Latvia.

(b) Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the NC7 of Latvia and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

20. In the NC7 Latvia provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2016 annual submission of Latvia.

(b) Assessment of adherence to the reporting guidelines

21. The ERT assessed the information reported in the NC7 of Latvia and identified an issue relating to transparency. The finding is described in table 6.

Table 6
Findings on the national registry from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 32 Issue type: transparency Assessment: recommendation	The name and contact information of the registry administrator designated by the Party to maintain the national registry are not provided in the NC7. Latvia provided the information during the review. The ERT recommends that in the next NC Latvia include the name and contact information of the registry administrator designated by the Party to maintain the national registry.

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

B. Information on policies and measures and institutional arrangements

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

(a) Technical assessment of the reported information

22. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Latvia committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level. Information on the national and EU programmes relevant to the emission reduction targets is provided in the NC7 (chapter 4.2 on national and regional programmes). Latvia reported that, owing to its administrative structure, no subnational or regional programmes are developed or implemented in the country.

23. Implementation of the Kyoto Protocol by Latvia is underpinned by the Environmental Policy Strategy 2014–2020, which establishes Latvia's GHG target, as well as by the Sustainable Development Strategy for Latvia until 2030 and the National Development Plan 2014–2020, which embody the basic principles of the EU climate policy. The Ministry of Environmental Protection and Regional Development is the leading administrative institution in environmental protection and national climate policy and supervises a number of national institutions that are involved in the implementation of the policies. A number of other ministries are involved in the implementation of climate policy, in particular the Ministry of Finance, the Ministry of Economics, the Ministry of Transport, the Ministry of Agriculture and the Ministry of Education and Science.

24. Latvia's climate policy is based on the Convention and its Kyoto Protocol (Doha Amendment), as well as on the common policies of the EU, such as the EU 2020 climate and energy package and the ESD, to be followed by the Paris Agreement and the EU 2030 climate and energy policy framework. Key cross-sectoral policy documents that embody the basic principles of EU climate policy are approved by the Latvian Parliament. Latvia has national legislation in place to ensure the fulfilment of its commitments under the Kyoto Protocol.

(b) Assessment of adherence to the reporting guidelines

25. The ERT assessed the information reported in the NC7 of Latvia and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 7.

Table 7
Findings on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 37 Issue type: completeness Assessment: recommendation	The NC7 does not provide a description of any provisions to make information on the legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol, publicly accessible. During the review, Latvia explained that information on all legislative arrangements is publicly available online in a policy planning document database and on a legislation website. The ERT reiterates the recommendation made in the previous review report that Latvia report, in its next NC, information on any provisions to make information on legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol, publicly accessible by including the information provided to the ERT during the review.
2	Reporting requirement specified in paragraph 38 Issue type:	Information on national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
	completeness	biodiversity and sustainable use of natural resources is not provided in the NC7.
	Assessment: recommendation	During the review, Latvia provided additional information on national legislation established to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and sustainable use of natural resources. The ERT reiterates the recommendation made in the previous review report that Latvia include in its next NC information on any national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and sustainable use of natural resources, in line with the information provided during the review.

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

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

(a) Technical assessment of the reported information

26. Latvia provided information on its package of PaMs implemented, adopted and planned, by sector and by type of instrument, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Latvia reported on its policy context and legal and institutional arrangements put in place to implement its commitments. However, Latvia did not report on legal and institutional arrangements to monitor and evaluate the effectiveness of its PaMs.

27. Latvia provided information on a set of PaMs similar to those previously reported. Latvia did not provide information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target.

28. Latvia gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts. Latvia 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. Latvia reported on the PaMs that have been discontinued since the previous submission. Latvia did not report on how it identifies and periodically updates its policies and practices that encourage activities that lead to greater levels of emissions than would otherwise occur.

29. All PaMs are adopted at the EU and/or the national level. However, significant shares of the PaMs in all sectors are implemented at the local level. Important mitigation actions implemented at the local level are: in the energy sector, the law on energy performance of buildings, energy audits of residential multi-apartment buildings and the investment support programme to increase energy efficiency in municipal buildings; and in the transport sector, the development of the infrastructure of environmentally friendly public transport and green public procurement as a cross-sectoral mitigation action.

30. Under the Convention Latvia committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The key overarching cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package.

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

32. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and it includes binding annual targets for each member State for 2013–2020. Latvia has a target of limiting its emission growth to 17 per cent above the 2005 level by 2020 for non-ETS sectors.

33. Latvia introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported are the investment support programme for district heating systems (2007–2013 EU funds period), the National Renewable Energy Action Plan, promotion of energy efficiency in buildings, the biofuel mix obligation requirement and the increase in land area under organic farming. The mitigation effect of the investment support programme for district heating systems is the most significant. Other policies that have delivered significant emission reductions are the increase in land area under organic farming, the National Renewable Energy Action Plan and the investment support programme for RES in heat and electricity production.

34. Latvia highlighted domestic mitigation actions that are under development, such as the investment support programme for the production of energy from biomass of agricultural origin, the electrification of the railway network, the support programme for evolving precision agricultural technologies in crop-growing farms to reduce nitrogen use and the restoration of malfunctioning forest drainage systems. Table 8 provides a summary of the reported information on the PaMs of Latvia.

Table 8
Summary of information on policies and measures reported by Latvia

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Taxation of CO_2 emissions	NE	NE
	Implementation of the EU ETS	NE	NE
Energy			
Transport	Biofuel mix obligation requirement	81.00	81.00
	New passenger cars labelling on fuel economy rating	56.00	115.00
Renewable energy	National Renewable Energy Action Plan	192.00	240.00
	Investment support programme for RES in heat and electricity production	99.00	65.00
Energy efficiency	Investment support programme for district heating systems (2007–2013 EU funds period)	390.00	150.00
	Investment support programme for public sector energy efficiency	54.00	54.00
IPPU	Minimization of emissions of F-gases; replacement of F-gases by other substances	NE	NE

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Agriculture	Increase in land area under organic farming	213.00	370.00
	Support to use legumes as green manure and fodder in crop rotation	66.00	66.00
LULUCF	Support to afforestation of low-grade abandoned farmlands	48.00	48.00
Waste	Reducing biodegradable waste landfilling	NE	NE
	Increase in municipal waste recycling	NE	NE

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

(b) Policies and measures in the energy sector

35. **Energy supply**. The energy sector, including transport, is the most significant source of GHG emissions, with a 63.0 per cent share of the total emissions in 2015. This reflects the energy consumption for space heating due to a long heating period, as well as energy consumption for transport, which accounted for 44.0 per cent of emissions in the energy sector in 2015. Energy-related CO_2 emissions vary mainly according to the economic growth trend, the primary energy supply structure and climate conditions, including the impact on hydropower production and electricity import. Latvia implemented its most significant PaMs targeting energy supply in the field of renewable energy and energy efficiency. It implemented or planned several investment support programmes to increase energy efficiency and the use of renewable energy for heat and electricity production. Furthermore, fiscal measures, such as the natural resources tax law including fuel taxation, and economic measures such as preferential feed-in tariffs for combined heat and power production have been implemented.

36. **Renewable energy sources**. RES constitute a considerable share of the balance of Latvia's primary energy sources. The main sources are wood and hydropower and, to a lesser extent, biogas, wind power and solar energy. The share of renewable energy in the primary energy supply grew from 31.8 per cent in 2000 to 37.1 per cent in 2015. According to the National Renewable Energy Action Plan, the Party's target is to increase the share of renewables to 40 per cent of gross final energy consumption compared with 32.6 per cent in 2005. A considerable share of Latvia's PaMs target the increased usage of RES; for example, preferential feed-in tariffs for renewables, the investment support programme for RES in heat and electricity production, the investment support programme to produce energy from biomass of agricultural origin, and grants for renewable energy technology deployment in households.

37. **Energy efficiency**. Increasing energy efficiency is one of the major targets of the Latvian PaMs. Several energy-related PaMs aim at improving energy efficiency, in particular of heating systems in buildings and electricity consumption. In March 2016 Latvia adopted the new Energy Efficiency Law, which implements the legal provision arising from the EU energy efficiency directive and provides the policy framework for the Latvian mitigation measures related to energy efficiency. Latvia's investment support programme for district heating systems (2007–2013 EU funds period), aiming at both increased energy efficiency and increased use of RES, is the implemented mitigation action with the highest estimated mitigation impact (390.00 kt CO_2 eq in 2020).

38. **Residential and commercial sectors**. Owing to national circumstances, the residential and commercial sectors are among the major energy consumers and GHG emitters in the energy sector (see para. 35 above). Most of the PaMs relating to renewable energy (see para. 36 above) and energy efficiency (see para. 37 above) target the residential and commercial sectors. For example, the National Energy Efficiency Action Plan has specific targets for the residential and commercial sectors. The law on energy performance of buildings and regulations regarding energy certification of buildings also contribute to

energy efficiency improvements in the residential and commercial sectors. Furthermore, legislation on the energy labelling of household appliances contributes to reduced energy use in the residential sector.

39. **Transport sector**. The main types of transport in Latvia are rail, road, air and water transport (sea, inland water). Road transport constitutes the largest share of energy consumption in transport and accounted for 93.1 per cent of the total energy consumption in transport in 2015. Passenger transport (as measured in passenger kilometres) has grown by an average of 2.5 per cent per year since 2000. In 2015 the majority of passenger transport was by road (passenger cars 84.7 per cent and buses 11.7 per cent), while the share of railway transport was smaller (3.6 per cent). 2015 also showed a rapid increase in freight traffic (measured in tonne-kilometres) against 2000 (5.7 per cent/year). This trend was mainly driven by the growth in road transport (205 per cent), which exceeded the increase in rail freight transport (42 per cent). Latvia's mitigation actions are focused on efficiency improvements of vehicles, a modal shift to public transport and increase in the use of RES in the transport sector. With the annual vehicle taxation scheme, Latvia aims at achieving structural changes of the car fleet in order to reduce fuel consumption, while the biofuel mix obligation requirement fosters the growth of the share of RES in the transport sector and thus reduced CO_2 emissions from the sector. Through several economic measures, Latvia aims to support the development of electromobility and public transport.

40. The NC7 did not include information on how Latvia promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels.

41. **Industrial sector**. The manufacturing industry generated 13.2 per cent of the total value added in 2015. In recent years the share of manufacturing industries and construction in the emissions from the energy sector has decreased. In 2015, the share was at its lowest level (9.5 per cent) since the base year. Latvia implemented in 2010 an investment support programme in order to increase energy efficiency in industrial buildings and technologies. In addition, an investment support programme to improve energy efficiency in food processing enterprises for implementation from 2017 onwards was adopted by the Cabinet of Ministers. According to the Latvian Energy Efficiency Law, large electricity-consuming enterprises have to implement energy management systems and implement at least three energy efficiency measures that have the highest energy savings or the highest economical return, by 2022.

(c) Policies and measures in other sectors

42. **Industrial processes**. The emissions from IPPU include CO_2, CH_4, N_2O and F-gases (HFCs and SF_6). The category constituted 6.7 per cent of the total GHG emissions excluding LULUCF in 2015. In 2009–2012 the emissions increased significantly owing to the overall increase in activity in industrial production processes. Emissions from industrial processes are mitigated by the implementation of the best available techniques based on the EU industrial emissions directive, which is implemented in Latvia by the Law on Pollution. The Law on Pollution also stipulates procedures and measures in order to limit emissions of volatile organic compounds from industrial installations in which organic solvents are used. Regulation No. 563 of the Cabinet of Ministers of Latvia on special restrictions and prohibitions regarding activities with ozone-depleting substances and F-gases sets requirements for F-gas operators, implementing the previous EU regulation 842/2006, which has now been replaced by EU regulation 517/2014. The EU F-gas regulation follows a twofold approach: (1) avoiding the usage of F-gases in applications where environmentally superior alternatives are cost-effective and (2) minimization of leakages in equipment containing F-gases, which also entails containment of gases and the proper recovery of gases from equipment. The F-gas regulation requires EU member States also to report on F-gases (i.e. imports, exports and production). In addition, several F-gases are being phased out by the new regulation (e.g. HFCs with high global warming potential).

43. **Agriculture**. Agriculture is the second most significant source of GHG emissions, accounting for 24.2 per cent of Latvia's total GHG emissions excluding LULUCF in 2015. Emissions from agriculture include CH_4 and N_2O emissions from enteric fermentation, manure management and agricultural soils, and CO_2 emissions from liming and urea application. GHG emissions increased by 2.9 per cent from 2014 to 2015 owing to an

increase in the numbers of sheep, goats, poultry and rabbits. The total emissions have decreased by 49.0 per cent since 1990 owing to the transition to a market economy and subsequent decrease in agricultural production. Latvia has introduced a number of PaMs in the agriculture sector, targeting an increase in land area under organic farming and evolving the precision of agricultural technologies. In transposing the EU nitrates directive and the EU water framework directive into its national legislation, Latvia promotes several measures, such as the management of nitrate use in vulnerable territories and the improvement of manure management systems or requirements for manure spreading. In addition, Latvia supports the maintenance of amelioration systems as an economic measure driven by the EU Common Agricultural Policy and promotes the production of biogas.

44. **LULUCF**. The LULUCF sector in Latvia was a net GHG source of 1,377.15 kt CO_2 eq in 2015. Aggregated net removals of GHGs reduced by 115.7 per cent in 2015 in comparison with 1990, owing mostly to the increase in harvest rate in mature forests, the increase in natural mortality because of the ageing of forest stands and the reduction in increment in ageing forests. In the LULUCF sector the most important PaM is the Rural Development Programme 2014–2020, which sets long-term strategic rural development policy goals. The programme includes measures such as development and adaptation of drainage systems in forest land, afforestation and the regeneration of forest stands after forest fires, and the improvement of the ecological value and sustainability of forest ecosystems.

45. **Waste management**. Emissions from the waste sector contributed 6.1 per cent of total GHG emissions excluding LULUCF in 2015. The main PaMs in the waste sector are the reduction in biodegradable waste landfilling and the increase in municipal waste recycling with the Waste Management Plan 2013–2020. The plan is governed by more than 40 laws and regulations, including the Waste Management Law, the Law on Regulators of Public Utilities, the Municipalities Law and the Natural Resources Tax Law.

(d) Minimization of adverse impacts in accordance with Article 2 and Article 3, paragraph 14, of the Kyoto Protocol

46. In the NC7 Latvia reported 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. The Party explained during the review that it takes into account up-to-date knowledge on, and understanding of, the possible impacts of PaMs based on available actual scientific studies and research and development information. The Party further stated that adverse effects are mainly minimized by capacity-building measures, as reported in chapters 7, 8 and 9 of the NC7.

47. Further information on how Latvia strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2017 annual submission. Latvia included information on its activities related to the six areas listed in decision 15/CMP.1, annex, paragraph 24. The Party reported in particular on the minimization of effects on international trade by the phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies. The reporting also included information on cooperation on the development of technologies, assisting developing country Parties that are highly dependent on the export of fossil fuels in diversifying their economies and conducting relevant research.

(e) Assessment of adherence to the reporting guidelines

48. The ERT assessed the information reported in the NC7 of Latvia and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 9.

Table 9
Findings on policies and measures, including those in accordance with Article 2 of the Kyoto Protocol, from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 14 Issue type: transparency Assessment: encouragement	Latvia did not indicate in its NC7 the PaMs that are innovative and/or effectively replicable by other Parties. During the review, Latvia explained that currently no studies have been carried out to evaluate the innovativeness or replicability of PaMs in Latvia. However, Latvia mentioned that in its view such a study could be made by comparing several countries and their barriers to replicating the PaMs. The ERT reiterates the encouragement made in the previous review report that Latvia indicate in its next NC the PaMs that are innovative and/or effectively replicable by other Parties.
2	Reporting requirement[a] specified in paragraph 16 Issue type: completeness Assessment: encouragement	Latvia did not report on action taken to implement commitments under Article 4, paragraph 2(e)(ii), of the Convention, which requires that Parties identify and periodically update their own policies and practices that encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur. During the review, Latvia provided the information that, according to its policy planning document and legislation development procedures, the Ministry of Environmental Protection and Regional Development has to evaluate and comment on policy planning documents and project submissions prepared by other ministries or enterprises in their preparation phase (strategic environmental impact assessment). If there is a risk that certain PaMs could increase GHG emissions, the Ministry indicates the impact of those PaMs on the achievement of the GHG emission reduction targets. The ERT encourages Latvia to improve the completeness of its reporting by reporting on action taken to implement commitments under Article 4, paragraph 2(e)(ii), of the Convention, in line with the information provided during the review
3	Reporting requirement[a] specified in paragraph 17 Issue type: transparency Assessment: recommendation	Latvia presented information on PaMs in its NC7 by sector. Latvia further subdivided its PaMs not by GHG but by the type of instrument (regulatory, economic, fiscal, information and education, voluntary). During the review, Latvia informed the ERT that the presented structure of the description of existing PaMs (by sector and type of instrument) was chosen as it corresponds to the Latvian practice for policy definition and measure planning. During the review, Latvia also provided the tables in section 4.3 of the NC7 supplemented by information on the GHGs affected. The ERT recommends that Latvia improve the transparency of the reporting in its next NC by organizing the reporting of PaMs by sector subdivided by gas.
4	Reporting requirement[a] specified in paragraph 17 Issue type: transparency Assessment: recommendation	In Latvia's reporting on PaMs, the ERT noted some differences for all sectors between the textual description provided in the report and the supplementary tables for the sector; that is, some PaMs described in the text could not be found in the tables, whereas some PaMs mentioned in the tables were not described in the corresponding text for the sector. Some PaMs were allocated differently to sectors and/or types of instrument in the tables and the textual descriptions. During the review, Latvia indicated that the tables in section 4.3 of its NC7 are based on CTF table 3. This leads to a lower number of measures reported in the tables because, for example, some framework laws were included in the text while the tables included more specific measures. The Party also explained some differences in the types of instrument; for example, preferential feed-in tariffs for RES and for combined heat and power production have been established by regulation (as indicated in the textual description) but work as economic instruments (as indicated in NC7 table 4.2). The Party also indicated that for the next submission it plans to further consider the format for the textual description and summary tables to ensure the consistency of the presented information. The ERT recommends that Latvia increase the transparency of the reporting on its PaMs by ensuring consistency between the information provided in the textual part

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		of the NC and the associated tables.
5	Reporting requirement[a] specified in paragraph 21 Issue type: completeness Assessment: encouragement	Latvia did not report in its NC7 on the way in which progress with PaMs to mitigate GHG emissions is monitored and evaluated over time. Furthermore, Latvia did not report separately on the institutional arrangements for monitoring GHG mitigation policy. During the review, Latvia explained that the Cabinet of Ministers approved a new regulation on the development and management of the national system for the GHG inventory and projections in December 2017, where, inter alia, monitoring, quality assurance/quality control procedures, reporting, archiving of information and evaluation of the progress were determined. The Party also explained that the Government is informed annually about the progress towards the economy-wide emission reduction target. According to the amendments to the Law on Pollution (in force since June 2016), the Ministry of Environmental Protection and Regional Development shall, in cooperation with the Ministry of Agriculture, the Ministry of Economics, the Ministry of Transport and other sectoral ministries, each year prepare and submit, by 31 December, an information report to the Cabinet on the fulfilment of the commitments of GHG emission reductions and removals of CO_2. The following shall be included in the above-mentioned report: (a) Evaluation of the fulfilment of the commitments related to the reduction of GHG emissions and removals of CO_2; (b) If necessary, proposals regarding additional measures for the fulfilment of the commitments related to reduction of GHG emissions and removals of CO_2, corresponding to the sectoral policy planning documents for the relevant period, which are cost-efficient and have been evaluated from a socioeconomic point of view. The ERT reiterates the encouragement made in the previous review report that Latvia improve the transparency of its NC by providing information on the way in which progress with PaMs to mitigate GHG emissions is monitored and evaluated over time, as well as on the institutional arrangements for monitoring GHG mitigation policy, in line with the information provided during the review.
6	Reporting requirement[a] specified in paragraph 22 Issue type: transparency Assessment: recommendation	Latvia did not include in its presentation of PaMs information on the GHG(s) affected by each PaM. During the review, Latvia referred to CTF table 3 for this information, but also provided the information on the affected GHGs organized by sector and by PaM in tabular format. The ERT recommends that Latvia improve the transparency of its presentation of PaMs by including the information provided during the review in its next NC or by referring to its BR in the NC.
7	Reporting requirement[a] specified in paragraph 23 Issue type: transparency Assessment: encouragement	For several PaMs reported in the NC7 Latvia did not estimate the quantitative impacts for 2020, 2025 and 2030 and reported them as "NE". During the review, Latvia informed the ERT that a quantitative estimation of mitigation impact was only provided for the measures for which the necessary input data to perform the calculation had been received from the responsible ministries. However, the quantitative estimation of the mitigation impact of certain measures is difficult owing to lack of both an adequately elaborated methodology and a sufficiently long time series characterizing the impact of such measures for the Latvian situation. The ERT reiterates the encouragement made in the previous review report that Latvia provide further information, in particular on a quantitative estimation of the mitigation effects of implemented PaMs, in the next NC, as appropriate. The ERT further encourages Latvia to provide relevant explanations in its next NC should it not be possible to provide a quantitative estimate for all mitigation impacts owing to its national circumstances.
8	Reporting requirement[a] specified in	Latvia provided information about the costs of the implementation of its investment support programmes, but information about the costs of the implementation of other

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	paragraph 24	reported PaMs was not provided in the NC.
	Issue type: transparency	During the review, Latvia provided further information on the cost of implementation of some PaMs (in euros/t CO_2 eq reduced) as well as on the methodology of the cost calculation.
	Assessment: encouragement	The ERT encourages Latvia to improve transparency by including in its next NC further information on the costs of PaMs, accompanied by a brief definition of costs.
9	Reporting requirement[a] specified in paragraph 24	The NC7 did not provide information on non-GHG mitigation benefits of PaMs or on how PaMs interacts with other PaMs at the national level.
	Issue type: completeness	During the review, Latvia informed the ERT that PaMs regarding the increased usage of RES and regarding energy efficiency will also lead to a decrease in air pollutant emissions.
	Assessment: encouragement	The ERT reiterates the encouragement made in the previous review report that Latvia improve completeness by including in its next NC information on how PaMs interact with or complement other PaMs at the national level and information on non-GHG mitigation benefits of PaMs (e.g. reduced emissions of air pollutants or health benefits).
10	Reporting requirement[b] specified in paragraph 35	In the NC7 Latvia did not report on the identification of the steps taken to promote and/or implement any decisions by ICAO and IMO to limit or reduce GHG emissions from aviation and marine bunker fuels.
	Issue type: completeness	During the review, Latvia informed the ERT that Latvia jointly with other EU member States is implementing all relevant legal regulations that are adopted under ICAO and IMO.
	Assessment: recommendation	The ERT reiterates the recommendation made in the previous review report that Latvia improve the completeness of its reporting by including information on the identification of the steps taken to promote and/or implement any decisions by ICAO and IMO to limit or reduce GHG emissions from aviation and marine bunker fuels, in line with the information provided during the review, in its next NC.
11	Reporting requirement[b] specified in paragraph 36	In the NC7 Latvia provided 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, effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties, mainly as part of the information on capacity-building activities reported in several chapters of the NC7 (mainly chapters 7, 8 and 9). The ERT considers that this approach limits the transparency of the reporting of this information. However, in its 2017 annual submission (chapter 15 of the NIR) Latvia provided a comprehensive description of its approach to minimizing adverse social, environmental and economic impacts on developing countries, in accordance with the reporting guidelines for supplementary information.
	Issue type: transparency	During the review, Latvia provided further information to the ERT that was reported in the 2017 annual submission.
	Assessment: recommendation	The ERT recommends that Latvia increase the transparency of its reporting by providing coherent information in its NC on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, or, where such information is provided in the NIR, by providing a relevant reference in its next NC.

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

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

[b] Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information.

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

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

49. Latvia reported updated projections for 2020, 2030 and 2035 relative to the inventory data for 2014 under the WEM scenario. The WEM scenario reported by Latvia includes implemented and adopted PaMs until 2016.

50. In addition to the WEM scenario, Latvia reported the WAM scenario. It provided a definition of the scenarios, explaining that its WEM scenario includes PaMs approved by the Parliament and Government up to 2016, while its WAM scenario includes planned PaMs. Latvia explained in its NC7 that the PaMs included in the WAM scenario are mainly those announced in high-level strategic development documents. The implementation of these measures has not been elaborated in detail and legal regulations have not been adopted; nevertheless, these measures are expected to be adopted and implemented in the coming years. The definitions indicate that the scenarios were prepared according to the UNFCCC reporting guidelines on NCs.

51. The ERT noted that Latvia used a 'business as usual' scenario from its climate strategy from 2001 for estimating the total effect of its PaMs. This scenario was not defined along with the WEM and WAM scenarios or provided in tabular format.

52. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions. At the sectoral level, the emission projections are presented in an aggregated manner (in CO_2 eq) with some exceptions, such as N_2O and CH_4 from the agriculture sector. The WEM scenario is provided on a gas-by-gas basis for CO_2, CH_4, N_2O and aggregated F-gases in the NC7 (figure 5.1) for 1990–2035.

53. Latvia did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, NMVOCs or sulfur oxides. However, it included in the description provided of projections in its NC7 brief information on projections for indirect CO_2 emissions stemming from NMVOC emissions from solvent and other product use, estimated following methods from the *EMEP/EEA air pollutant emission inventory guidebook 2016*.[3]

54. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately and were not included in the totals.

55. Latvia reported on factors and activities affecting emissions for each sector.

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

56. The methodology used for the preparation of projections has been updated from that used for the NC6. Latvia provided a summary of the results and methodologies for the projections, including information on the differences between the NC6 and NC7. Latvia noted that there are four reasons for the differences: (1) recalculations of the actual emissions reported in the national GHG inventory; (2) new assumptions about socioeconomic indicators; (3) implementation of different GHG emission reduction measures since the NC6, which have already had an impact on emissions in 2015 and are expected to lead to even greater emission reductions by 2030 than anticipated in the NC6; and (4) PaMs included in the WAM scenario of the NC6 were included in the WEM scenario of the NC7.

57. The methodology and models used for estimating emission projections were described at the sectoral level. Latvia used several models for estimating projections, which

[3] Available at https://www.eea.europa.eu/publications/emep-eea-guidebook-2016.

are complemented by exogenous data and based on the emissions estimated in the GHG inventory. The models used are MARKAL-Latvia, an Excel-based top-down accounting model for F-gases, the Intergovernmental Panel on Climate Change waste model and the Intergovernmental Panel on Climate Change model for agriculture, forestry and other land use. The ERT notes that the transparency of the next NC could be improved by including in the NC a summary table on the models used for the projections, such as the table on page 237 of the BR3, or by providing a reference to such table if reported in the BR.

58. To prepare its GHG emission projections using the above-mentioned models, Latvia relied on macroeconomic indicator projections (such as for population, consumption and sectoral GDP growth) until 2035 prepared by the Ministry of Economics. Key assumptions on the evolution of the different indicators were made at the sectoral level (for instance, final energy consumption and gross primary energy supply in the energy sector) to obtain the GHG emission estimates under the different scenarios.

59. Latvia conducted several sensitivity analyses for assumptions related to the WEM scenario at the sectoral level. The sensitivity of the energy and waste sector projections to a different GDP assumption was analysed. For the energy sector, the sensitivity analysis also considered population and amount and price of imported electricity. For the waste sector, sensitivity was analysed on the basis of the assumption of private consumption. Lastly, the sensitivity analysis for the agriculture sector focused on grain and milk prices. The results of the sensitivity analyses by sector are as follows:

(a) For the energy sector, the results showed that in an alternative scenario with lower annual growth rates for GDP and population (3.9 per cent versus 1.9 per cent in the case of GDP), the total GHG emissions in 2030 would be 12.4 per cent lower than under the WEM scenario. In addition, in an alternative sensitivity analysis scenario using lower electricity import, the GHG emissions from energy industry would increase by up to 34 per cent. During the review, Latvia provided further information to the ERT, specifying that in the case of population, the annual growth rate used for the sensitivity analysis was approximately –1.3 per cent (versus –0.08 per cent in the WEM scenario) for 2020 to 2030, and, regarding the assumptions on electricity import, the sensitivity scenario assumed only up to 10 per cent electricity import (versus 30 per cent in the WEM scenario) in 2030;

(b) For the waste sector, the results showed that in an alternative scenario with lower growth rates in GDP for manufacturing industry (4.5 per cent in the WEM scenario versus 3 per cent in the sensitivity analysis) and private consumption (4 per cent versus 3 per cent), GHG emissions would be 16.2 per cent lower in 2030 compared with under the WEM scenario;

(c) For the agriculture sector, the results of two alternative scenarios with increased grain and milk prices showed that GHG emissions for 2030 would be higher by about 3.8 per cent in the case of grain and 5.7 per cent in the case of milk.

(c) Results of projections

60. The projected emission levels under different scenarios and information on the Kyoto Protocol target and the quantified economy-wide emission reduction target are presented in table 10 and the figure below.

Table 10
Summary of greenhouse gas emission projections for Latvia

	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year[a] level (%)*	*Changes in relation to 1990 level (%)*
Kyoto Protocol base year[b]	26 409.08	NA	1.0
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020)[c]	9 579.18	NA	NA
Quantified economy-wide	NA	NA	NA

	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year[a] level (%)*	*Changes in relation to 1990 level (%)*
emission reduction target under the Convention[d]			
Inventory data 1990[e]	26 141.43	NA	NA
Inventory data 2015[e]	11 302.67	–56.8	–56.8
WEM projections for 2020[f]	11 565.08	–55.8	–55.8
WAM projections for 2020[f]	11 402.02	–56.4	–56.4
WEM projections for 2030[f]	12 195.41	–53.3	–53.3
WAM projections for 2030[f]	11 562.87	–55.8	–55.8

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

[b] The Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/LVA.

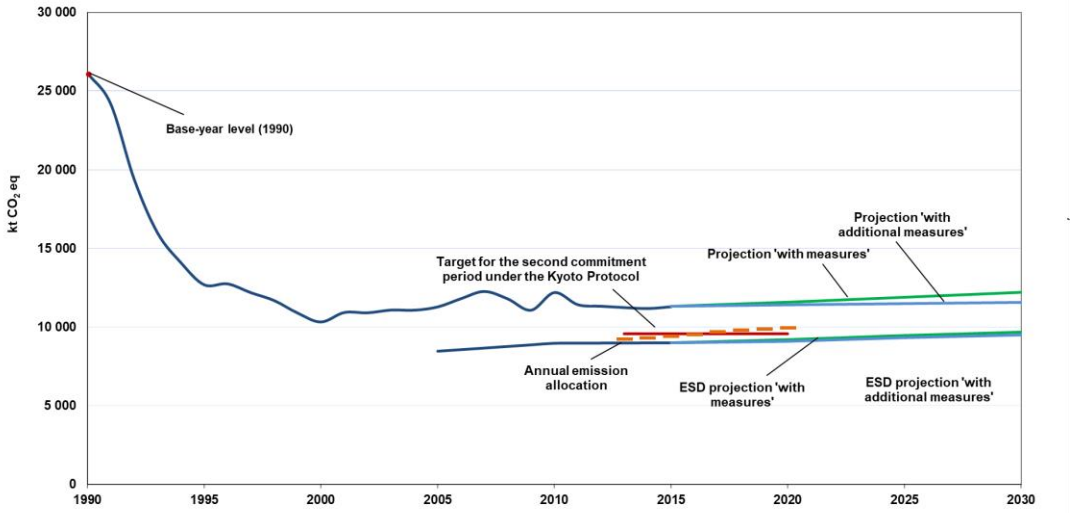
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is 17 per cent for Latvia compared with the 2005 level under the ESD. The value presented in this line is based on annex II to European Commission decision 2013/162/EU and as adjusted by Commission implementing decision 2013/634/EU that established the assigned amount for the EU member States and divided by eight years to calculate the annual emission level.

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

[e] From Latvia's BR3 CTF tables 1 and 6.

[f] From Latvia's NC7 and/or BR3.

Greenhouse gas emission projections reported by Latvia



Sources: (1) data for the years 1990–2015: Latvia's 2017 annual inventory submission, version v1; total GHG emissions excluding LULUCF; (2) data for the years 2015–2030: Latvia's NC7 and BR3; total GHG emissions excluding LULUCF; ESD data provided by the Party during the review.

61. Latvia's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 11,565.08 and 12,195.41 kt CO_2 eq, respectively, under the WEM scenario, which represents a decrease of 55.8 and 53.3 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 56.4 and 55.8 per cent and amount to around 11,402.02 and 11,562.87 kt CO_2 eq,

respectively. The 2020 projections suggest that Latvia will continue contributing to the achievement of the EU target under the Convention (see para. 30 above).

62. Latvia's target for non-ETS sectors is to limit its emission growth to 17 per cent above the 2005 level by 2020 (see para. 32 above). Latvia's AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 9,260.06 kt CO_2 eq in 2013 to 9,991.83 kt CO_2 eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 9,207.60 kt CO_2 eq by 2020. Under the WAM scenario, Latvia's emissions from non-ETS sectors in 2020 are projected to be 9,094.52 kt CO_2 eq. The projected emission levels under the WEM and WAM scenarios are 7.8 and 9.0 per cent, respectively, below the AEAs for 2020. The ERT noted that this suggests that Latvia expects to meet its target under the WEM and WAM scenarios.

63. Latvia presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 11.

Table 11
Summary of greenhouse gas emission projections for Latvia presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	16 355.77	3 975.64	3 920.69	4 064.10	3 535.36	–75.7	–76.0	–75.2	–78.4
Transport	3 030.85	3 040.41	3 028.90	3 265.25	3 265.88	0.3	–0.1	7.7	7.8
Industry/industrial processes	705.05	786.77	786.77	816.25	816.25	11.6	11.6	15.8	15.8
Agriculture	5 370.68	3 098.44	3 001.84	3 385.75	3 281.31	–42.3	–44.1	–37.0	–38.9
LULUCF	–8 787.09	2 666.67	2 465.13	3 373.33	3 349.81	–130.3	–128.1	–138.4	–138.1
Waste	679.09	663.81	663.81	664.08	664.08	–2.3	–2.3	–2.2	–2.2
Other (specify)						NA	NA	NA	NA
Total GHG emissions without LULUCF	**26 141.43**	**11 565.08**	**11 402.02**	**12 195.41**	**11 562.87**	**–55.8**	**–56.4**	**–53.3**	**–55.8**

Source: Latvia's BR CTF tables 1 and 6.

64. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy (excluding transport) and agriculture sectors, amounting to projected reductions of 12,380.13 kt CO_2 eq (75.7 per cent) and 2,272.24 kt CO_2 eq (42.3 per cent) between 1990 and 2020, respectively. The projections reported for 2020 show an upward trend for the national total emissions compared with 2015. At the sectoral level, projected emissions for 2020 compared with 2015 in the LULUCF and agriculture sectors significantly increase by 93.6 and 13.1 per cent, respectively, while the projected changes in emissions from the energy, transport, IPPU and waste sectors are smaller. The pattern of projected emissions reported for 2030 under the WEM scenario remains the same except for the energy and transport sectors, where emissions are projected to increase by 2.2 and 7.4 per cent, respectively, by 2030 compared with 2020. These trends are consistent with the overarching growth of the exogenous indicators used in the projections (mainly GDP and final energy consumption), considering the dampening effect of PaMs on projected emissions.

65. According to the projections reported for 2020 under the WAM scenario, the most significant emission reductions are expected to occur in the energy (excluding transport) and agriculture sectors, amounting to projected reductions of 12,435.08 kt CO_2 eq (76.0 per cent) and 2,368.84 kt CO_2 eq (44.1 per cent) between 1990 and 2020, respectively. The

projected emissions under the WAM scenario for the energy sector (excluding transport) show a sharp decrease in 2030 compared with 2020, while under the WEM scenario there is an increase over the same period. The projected emissions for 2030 for the remaining sectors show increases as for 2020, except for the transport sector, which shows a decreasing trend for 2015–2020, which changes to an upward trend for 2020–2030.

66. Latvia presented the WEM and WAM scenarios by gas in CTF table 6 for 2020 and 2030, as summarized in table 12.

Table 12
Summary of greenhouse gas emission projections for Latvia presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Gas	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2	19 780.53	7 190.19	7 125.89	7 650.78	7 136.47	–63.7	–64.0	–61.3	–63.9
CH_4	3 539.14	2 021.13	1 921.40	2 083.45	1 952.09	–42.9	–45.7	–41.1	–44.8
N_2O	2 821.77	2 148.37	2 149.34	2 320.63	2 333.76	–23.9	–23.8	–17.8	–17.3
HFCs	NO, NA, NE	196.39	196.39	131.72	131.72	NA	NA	NA	NA
PFCs	NO, NA	NA, NO	NA, NO	NA, NO	NA, NO	NA	NA	NA	NA
SF_6	NA, NO	9.00	9.00	8.83	8.83	NA	NA	NA	NA
NF_3	NO, NA	NA, NO	NA, NO	NA, NO	NA, NO	NA	NA	NA	NA
Total GHG emissions without LULUCF	**26 141.43**	**11 565.08**	**11 402.02**	**12 195.41**	**11 562.87**	**–55.8**	**–56.4**	**–53.3**	**–55.8**

Source: Latvia's BR3 CTF table 1 and 6.

67. According to the projections presented by gas in CTF table 6, under the WEM scenario the most significant emission reductions are projected for CO_2 and CH_4: 12,590.34 kt CO_2 eq (63.7 per cent) and 1,518.01 kt CO_2 eq (42.9 per cent) between 1990 and 2020, respectively. Projections without the LULUCF sector for 2020 show an upward trend compared with the last historical year (2015) for CH_4 and N_2O, while for CO_2, HFCs and SF_6 the emissions projected for 2020 reach a lower level than in 2015. For the GHG emission projections without LULUCF for 2030, the trend observed for 2015–2020 changes for CO_2: by 2030 projected emissions increase, even when compared with the last historical year (i.e. 2015–2030). In the case of the emissions projected by gas including the LULUCF sector, CO_2 emissions increase by 15.7 per cent in 2020 (compared with 2015) and by 13.3 per cent in 2030 (compared with 2020).

68. Under the WAM scenario the most significant emission reductions for 2020 are projected for CO_2 and CH_4: 12,654.64 kt CO_2 eq (64.0 per cent) and 1,617.74 kt CO_2 eq (45.7 per cent) between 1990 and 2020, respectively. For the GHG emissions without LULUCF, projections for 2020 show an upward trend compared with the last historical year (2015) for CH_4 and N_2O, while for CO_2, HFCs and SF_6 the emissions projected for 2020 reach a lower level than in 2015. For the GHG emission projections without LULUCF for 2030, the trend observed for 2015–2020 changes for CO_2: by 2030 projected emissions slightly increase compared with 2020. As in the WEM scenario, this evolution is driven by the projected GHG emission trend for the energy sector. In the case of the projections by gas including the LULUCF sector, CO_2 emissions increase by 12.2 per cent in 2020 (compared with 2015) and 10.4 per cent in 2030 (compared with 2020).

69. The comparison between the emission projections reported in the NC7 and the NC6 shows that, overall, the pattern and the intensity of change in the projected GHG emissions are consistent across the reports. The main difference in the results comes from the different historical reference (inventory) used. Nevertheless, the ERT noted that the LULUCF sector

emissions have changed from projected removals in the NC6 (18,333 and 13,526 kt CO_2 eq in 2020 and 2030, respectively, in the WEM scenario) to emissions in the NC7 (2,666.67 and 3,373.33 kt CO_2 eq in 2020 and 2030, respectively, in the WEM scenario). This change is also due to the changes made in the inventory used for the NC7.

(d) Assessment of adherence to the reporting guidelines

70. The ERT assessed the information reported in the NC7 of Latvia and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 13.

Table 13
Findings on greenhouse gas emission projections reported in the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 30	Latvia provided information in its NC7 regarding the sensitivity analyses carried out, but the ERT considered that the information lacked transparency on the variables affected and the results obtained in each sensitivity analysis.
	Issue type: transparency	During the review, Latvia provided further information on the sensitivity analyses carried out (see para. 59 above).
	Assessment: encouragement	The ERT encourages Latvia to enhance the transparency of its reporting of the sensitivity analyses. The ERT notes that clearly describing the assumptions used in the WEM scenario and the corresponding variations introduced in the sensitivity analysis for each assumption or indicator would improve the transparency of the reporting.
2	Reporting requirement specified in paragraph 32	For the WEM and WAM projections, the starting point should generally be the latest year for which inventory data are available in the NC. Latvia describes in its NC that the reference year for projections is 2014, as reported in the national inventory submitted to the secretariat in 2016, while the latest inventory year included in the NC7 is 2015.
	Issue type: transparency	During the review, Latvia informed the ERT that all planned improvements and corrections for the subsequent inventory submission (2017) were also incorporated in the projection estimates. As a result, the emissions for 2015 in the national inventory reported in the NC7 are equal to the emissions for the first projected year (2015).
	Assessment: encouragement	The ERT acknowledges the effort made by Latvia to use the most up-to-date inventory data available and encourages the Party to enhance the description of the reference year used for estimating projections, including the incorporation of the improvements and corrections planned for the next inventory submission.
3	Reporting requirement specified in paragraph 35	GHG emission projections on a gas-by-gas basis for CO_2, CH_4, N_2O and aggregated F-gases were provided by Latvia in figure 5.1 of the NC7 for 1990–2035. Latvia did not report information on F-gases individually for HFCs and SF_6 in the NC7.
	Issue type: completeness	During the review, the Party explained that SF_6 emissions make up only a small share of the F-gas emissions.
	Assessment: recommendation	The ERT recommends that Latvia present the WEM scenario on a gas-by-gas basis in the next NC for all GHGs.
4	Reporting requirement specified in paragraph 35	Latvia included in the NC7 brief information on projections for NMVOC emissions in the context of indirect CO_2 emissions from solvent use. However, Latvia did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides or sulfur oxides. The ERT notes that Latvia compiles projections for indirect emissions and reports them under the Convention on Long-range Transboundary Air Pollution (see http://ceip.at/ms/ceip_home1/ceip_home/status_reporting/2016_submissions/).
	Issue type: completeness	
	Assessment: encouragement	During the review, the Party explained that the indirect CO_2 emissions estimated on the basis of NMVOC emissions were not included in the projections owing to their minor contribution to the total emissions.
		The ERT reiterates the encouragement made in the previous review report that the Party provide projections of the indirect GHGs carbon monoxide, nitrogen oxides and NMVOCs, as well as sulfur oxides, in its next NC.
5	Reporting requirement	Latvia did not report emission projections related to fuel sold to ships and aircraft

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	specified in paragraph 36 Issue type: completeness Assessment: recommendation	engaged in international transport. During the review, the Party explained that because CTF table 6 does not allow reporting of projections related to fuel sold to ships and aircraft engaged in international transport, it decided not to report such projections in the NC7. The Party provided the projections during the review. The ERT reiterates the recommendation made in the previous review report that Latvia, in its next NC, provide emission projections related to fuel sold to ships and aircraft engaged in international transport separately and not included in the totals, to the extent possible, in line with the information provided during the review.
6	Reporting requirement specified in paragraph 37 Issue type: transparency Assessment: encouragement	The results of the 'business as usual' scenario (used to estimate the total effect of PaMs) were not provided in tabular format. During the review, Latvia indicated that the 'business as usual' scenario was created to evaluate the impact of implemented policies, and it was not reported in the same way as the WEM and WAM scenarios because it is not a mandatory element required by the UNFCCC reporting guidelines on NCs. The ERT encourages Latvia to report its 'business as usual' scenario in tabular format.
7	Reporting requirement specified in paragraph 42 Issue type: transparency Assessment: encouragement	No information was provided in the NC7 on the methodology used for estimating the 'business as usual' scenario. During the review, Latvia explained that the 'business as usual' scenario was compiled in 2017. The inventory version used as the basis for the WEM scenario was also used as the basis for the 'business as usual' scenario. The ERT encourages Latvia to enhance the transparency of its reporting by providing sufficient information to allow readers to obtain a basic understanding of the models and/or approaches used for the 'business as usual' scenario, including information on the inventory version used as a basis for the projections.
8	Reporting requirement specified in paragraph 42 Issue type: transparency Assessment: encouragement	Latvia calculated the total effect of its PaMs as the difference between the 'business as usual' and WEM scenario. The Party also presented the total effect of its PaMs as a sum of the estimated impacts of individual PaMs. The ERT noted that the total effect calculated as an aggregation of the individual effect of PaMs is lower than the total effect of PaMs estimated as the difference between scenarios, and that the NC7 did not provide sufficient information to allow readers to understand the reasons for the differences between the two approaches used. The ERT also noted that this difference may arise from the consideration of synergies within the scenario estimates. During the review, Latvia explained that synergies were considered in three ways in the projection models: (1) when there are several PaMs resulting from only one policy, they are aggregated into one PaM; (2) the models used by Latvia allow the Party to follow a harmonized evaluation approach for sectoral PaMs in the energy and agriculture sectors; and (3) the MARKAL-Latvia model already considers synergies between demand-side measures and supply-side measures. The ERT acknowledges the effort made by Latvia to consider the synergies between PaMs and encourages the Party to provide sufficient information to allow readers to obtain a basic understanding of the approaches used to estimate the total effect of the PaMs, in particular by providing information on how the synergies of PaMs are considered in the estimation of the total effect of the PaMs.
9	Reporting requirement specified in paragraph 45 Issue type: transparency Assessment: encouragement	Latvia provided information on the differences in the methodologies, assumptions and results between the NC7 and the NC6. However, the information on differences in assumptions was provided at a rather general level; for example, the Party explained that differences occurred because of new assumptions about the socioeconomic indicators used in the GHG emission calculations (population, GDP and trends regarding value added), but did not provide further information on these differences. During the review, Latvia provided brief information on the comparison between the key variables used in different reports, as well as on the new PaMs incorporated in its NC7. Regarding the comparison between the key variables used in different reports, Latvia explained that human population, primary energy consumption and cattle population are

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		projected to be 1.3 per cent, 42 PJ and 116,000, respectively, lower in 2030 as reported in the NC7 compared with in the NC6. The ERT encourages Latvia to include in its next NC a more detailed description of the assumptions that explain the differences compared with its previous NC. The ERT notes that the provision of, for example, a comparison between the main exogenous indicators (GDP, population, final energy demand, etc.) used in current and previous NCs would enhance the transparency of Latvia's reporting.
10	Reporting requirement specified in paragraph 48 Issue type: transparency Assessment: recommendation	The ERT noted that under the WAM scenario the GHG emissions from the energy sector sharply decrease in 2030 compared with 2020, while the WEM scenario shows an increase in GHG emissions over the same period. In the PaMs section of the NC, only three PaMs are categorized as "planned" for the energy sector: investment support for production of energy from biomass of agriculture origin (2014–2020 EU funds period), investment support in the manufacturing industry sector to promote energy efficiency and RES use (2014–2020 EU funds period) and the energy efficiency obligation scheme. The mitigation impacts presented for those PaMs do not explain the differences between the WEM and WAM scenarios. During the review, Latvia explained that the difference between the two scenarios occurs because of differences in the shares of RES in total final energy consumption; the share is higher under the WAM scenario in 2030. The ERT recommends that Latvia include in its next NC a transparent description of factors that affect the trends in the energy sector under the WEM and WAM scenarios, such as information on the assumptions on the share of RES, and that the Party ensure consistency between the PaMs reported as "planned" in the NC section on PaMs and the assumptions on PaMs used when preparing the WAM scenario.

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

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

71. In its NC7 Latvia presented the estimated and expected total effect of implemented and adopted PaMs and an estimate of the total effect of its PaMs, in accordance with the WEM scenario, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered in the period 2001–2030.

72. For the estimation of the total effect of its PaMs, Latvia used a 'business as usual' scenario of the Latvian climate strategy from 2001 and calculated the total effect by taking the difference between the WEM and 'business as usual' scenarios. The 'business as usual' scenario is defined as a development path without the measures implemented after 2000.

73. Latvia reported that the total estimated effect of its adopted and implemented PaMs, estimated by comparing the WEM and 'business as usual' scenarios, is about 2,675 and 5,010 kt CO_2 eq in 2020 and 2030, respectively. According to the information reported in the NC7 on the impacts of individual PaMs, the implemented and adopted PaMs in the energy, agriculture and transport sector will deliver the largest emission reductions, amounting to 974.80, 318.10 and 178.00 kt CO_2 eq, respectively, for 2020 and 764.30, 475.10 and 237.00 kt CO_2 eq for 2030. The planned PaMs will contribute to smaller total emission reductions: 35.00 kt CO_2 eq in 2020 and 102.00 kt CO_2 eq in 2030. Table 14 provides an overview of the total effect of PaMs.

Table 14
Projected effects of Latvia's planned, implemented and adopted policies and measures by 2020 and 2030

	2020		*2030*	
Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Effect of planned measures (kt CO_2 eq)*	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Effect of planned measures (kt CO_2 eq)*
Energy (without transport)	974.80	20.00	764.30	42.00
Transport	178.00		237.00	45.00
Industrial processes	38.00		38.00	
Agriculture	318.10		475.10	
Land-use change and forestry	94.00	15.00	94.00	15.00
Waste management				
Total	1 602.90	35.00	1 608.40	102.00

Source: Party's NC7 and BR3. The ERT calculated the total effect by sector by aggregating the impacts of individual PaMs.

Note: The total effect of implemented and adopted PaMs is defined by the Party as the difference between the 'business as usual' (i.e. without measures) and the WEM scenarios. Therefore, the aggregation of the effects of individual PaMs is not equal to the total effect of PaMs estimated by the Party.

(b) Assessment of adherence to the reporting guidelines

74. The ERT assessed the information reported in the NC7 of Latvia and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 15.

Table 15
Findings on the assessment of the total effect of policies and measures from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 40 Issue type: transparency Assessment: recommendation	In its NC7 Latvia presented the estimated and expected total effect of implemented and adopted PaMs, in accordance with the WEM scenario, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered in the period 2001–2030. The information was not provided by gas (on a CO_2 eq basis). During the review, the Party explained that the estimates were not available by gas. The ERT reiterates the recommendation made in the previous review report that Latvia include information on the total effect of PaMs, in accordance with the WEM scenario, compared with a situation without such PaMs, by gas.

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

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

(a) Technical assessment of the reported information

75. In the NC7 Latvia 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 for 2013–2020. In chapter 5.3 of the NC7 on supplementarity, Latvia referred to 2030 and stated that no

targets are defined yet and therefore also no decisions have been taken with regard to the supplementary use of the Kyoto Protocol mechanisms.

(b) Assessment of adherence to the reporting guidelines

76. The ERT assessed the information reported in the NC7 of Latvia and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

D. Provision of financial and technological support to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

77. Latvia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Latvia provided information in the NC7 on its provision of support to developing country Parties. The ERT commends Latvia for reporting this information and suggests that it continue to do so in future NCs.

78. In the NC7 Latvia provided a brief description of support provided and referred to CTF tables 7 and 9. Latvia reported in CTF table 7 that it provided EUR 10,000 for multilateral financial institutions, including regional development banks, in 2015 and 2016. In CTF table 9 Latvia reported that it provided bilateral capacity-building support to Azerbaijan, Belarus, Georgia, Ukraine and Uzbekistan in multiple areas of expertise, including sustainable environmental engineering and energy efficiency of buildings.

E. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

79. In the NC7 Latvia provided the required information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b), of the Convention with regard to adaptation. Latvia provided a description of climate change vulnerability and impacts on six sectors most vulnerable to climate change and highlighted the planned adaptation strategy. The sectors are construction and infrastructure planning; civil protection and emergency assistance; health and welfare; biodiversity and ecosystem services; agriculture and forestry; and tourism and landscape planning. Table 16 summarizes the information on vulnerability and adaptation to climate change presented in the NC7 of Latvia.

80. Impetus has been given to addressing adaptation matters with the drafting of Latvia's National Climate Change Adaptation Strategy for the period to 2030, which will provide further direction to government agencies on enhancing preparedness for climate change. During the review, Latvia informed the ERT that the draft climate change adaptation strategy is under development and is being communicated to interministerial experts. Nonetheless, the draft climate change adaptation strategy is expected to be adopted by the end of 2018 and will be implemented by 2021 or 2024. Latvia also explained that six research studies on climate change risk and vulnerability assessment including the identification of adaptation measures had been conducted for the six most vulnerable sectors in the country. Together with the climate change risk and vulnerability assessment, a cost–benefit analysis for appropriate adaptation measures for the six sectors was made for the next 50 years. The ERT noted that, in the NC7, Latvia described the economic impact of climate change in the forms of (1) assessment of ex post economic cost of climate change, (2) funds from the State budget for unforeseen events that were allocated to municipalities for 2008–2016 and (3) sectoral estimation of losses due to climate change for civil protection and emergency assistance, tourism and landscape, health and welfare, built environment (due to floods), agriculture, forestry, and biodiversity and ecosystem services.

Table 16
Summary of information on vulnerability and adaptation to climate change reported by Latvia

Vulnerable area	*Examples/comments/adaptation measures reported*
Construction and infrastructure planning	*Vulnerability*: risk of infrastructure damage due to floods and landslides; risk of hydro-energy exhaustion in summer and, at the same time, increased possibility of run-off; increased risk to network capacity; increased risk of damage to electrical transmission network; risk of rail bending; risk of equipment overheating; and risk of embankment instability *Adaptation*: adaptation measures planned for Latvia's draft National Climate Change Adaptation Strategy for the period to 2030; for example, identification of the most sensitive sections of the electricity transmission network for cabling and cleaning of protective belts; integration of rainwater collecting systems into the green infrastructure elements; and adapting construction standards to meet upcoming climate change related impacts
Civil protection and emergency assistance	*Vulnerability*: flood and ice drift risk; flood risk caused by heavy rainfall; storm and storm surge risk; forest and peat fire risk *Adaptation*: adaptation measures planned for Latvia's draft National Climate Change Adaptation Strategy for the period to 2030; for example, implementation and improvement of impact-oriented early warning and forecasting systems to alert the population of extreme weather conditions; and introduction of warnings and safety measures for visitors to the sites prone to landslides and mudflow
Health and welfare	*Vulnerability*: risk of increase in acute intestinal infection diseases; risk of flare-up of chronic diseases (cardiovascular, diabetes, etc.) and death; risk of increase in diseases caused by insect-borne infections; risk of increase in and mortality from respiratory diseases; risk of increase in heat stroke frequency *Adaptation*: adaptation measures planned for Latvia's draft National Climate Change Adaptation Strategy for the period to 2030; for example, installation of cooling systems in public buildings, health care institutions, social care and social rehabilitation institutions, kindergartens and train stations; and provision of additional monitoring of elderly people and people with disabilities during heatwaves
Biodiversity and ecosystem services	*Vulnerability*: risk of water tank contamination/eutrophication; risk of rising water temperatures and decreased dissolved oxygen volume in water; risk of introduction of infectious diseases uncharacteristic for Latvia; risk of introduction and increase of the viability of non-native species including vermin; ecologically sensitive species driven out by ecologically plastic species; flood risk (storm surge at sea coast) *Adaptation*: adaptation measures planned for Latvia's draft National Climate Change Adaptation Strategy for the period to 2030; for example, control of invasive alien species
Agriculture and forestry	*Vulnerability*: risk of spread of tree diseases and insect populations; storm risk; risk of cropping and plantation destruction by black frost; desiccation risk; risk of lack of winter frost, putting barriers on forest exploitation and so on *Adaptation*: adaptation measures planned for Latvia's draft National Climate Change Adaptation Strategy for the period to 2030; for example, diversification of crop species; growing climate-tolerant varieties; interbreeding on the forest stand, array or property level to diversify the climatic risks at the level of forest ownership; and monitoring of forest pests and diseases
Tourism and landscape planning	*Vulnerability*: flood risk (rising water levels in rivers and lakes); risk of change in summer and winter tourism season length and characteristics; risk of flooding and erosion of the Baltic Sea and Riga Bay coastal areas *Adaptation*: adaptation measures planned for Latvia's draft National Climate Change Adaptation Strategy for the period to 2030; for example, conduct of surveys and assessments of landscapes from a climate change perspective and identification of areas that are sensitive to climate change; and adaptation of the tourism infrastructure for the winter season

81. Latvia provided a description of international adaptation activities including the Baltic Sea Region Adaptation Strategy and Action Plan and the active participation of

Latvian research institutions and organizations in EU programmes. The NC7 does not include information on cooperation with developing countries on adaptation.

2. Assessment of adherence to the reporting guidelines

82. The ERT assessed the information reported in the NC7 of Latvia and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 17.

Table 17
Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 49 Issue type: transparency Assessment: recommendation	Latvia reported on adaptation activities at the international and regional level but information on cooperation with developing countries on adaptation in the context of Article 4, paragraph 1(e), of the Convention was not provided in the NC7. During the review, Latvia clarified that in the period from 2013 to 2017 the country did not cooperate with developing countries on adaptation. The ERT recommends that Latvia report in its next NC an outline of the action taken to implement Article 4, paragraph 1(e), of the Convention with regard to adaptation, or provide a relevant explanation should it not be possible to report such information owing to national circumstances.

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

F. Research and systematic observation

1. Technical assessment of the reported information

83. Latvia provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions to the World Climate Programme and the Global Climate Observing System. During the review, Latvia indicated that it has not identified any barriers to the free and open international exchange of data and information.

84. Latvia has implemented international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. The Party reported in the NC7 that national research institutes such as the University of Latvia's Laboratory for Mathematical Modelling of Environmental and Technological Processes, Institute of Physical Energetics, Riga Technical University, Latvia University of Agriculture and Latvian State Forest Research Institute conduct research in the field of climate change. Among the activities in the area of mitigation and adaptation reported in the NC7 are:

(a) The Baltic Sea Region Adaptation Strategy and Action Plan 2013, which analysed scenarios of how climate change affects society and the potential for action;

(b) The identification of effective emission reduction measures for GHG emission mitigation and evaluation of the cost (in 2014), whereby the impacts of a wide range of GHG emission reduction measures in the energy sector were evaluated and an abatement cost curve established;

(c) The development of guidelines for assessing the impact of climate change mitigation PaMs and sector-by-sector cost–benefit analysis.

85. In terms of activities related to systematic observation, Latvia reported on national plans, programmes and support for ground- and space-based climate observing systems,

including satellite and non-satellite climate observation. The Latvian Environment, Geology and Meteorology Centre is responsible for systematic observation in Latvia and also represents the country within the World Meteorological Organization, the European Organisation for the Exploitation of Meteorological Satellites and the European Centre for Medium-Range Weather Forecasts, and is a member of the European Meteorological Services Network and EuroGeoSurveys. Membership allows data exchange for Latvia with international and regional organizations. Apart from its efforts in archiving observation data, Latvia also reported on the challenge related to the maintenance of a consistent and comprehensive observation system. The Party reported that, owing to reduced public funding, modern monitoring of geological processes has not been carried out since 2010.

86. The NC7 reflects actions taken to support international and bilateral cooperation on research-related capacity-building in Belarus, the Russian Federation, Ukraine and Uzbekistan. For example, the development cooperation project for sustainable environmental engineering education promotion between Urgench State University (Uzbekistan) and Riga Technical University was carried out in 2014 to strengthen capacity in the field of sustainable environmental engineering. During the review, Latvia informed the ERT that it did not take action with respect to capacity-building relating to systematic observation in developing countries during the period from 2013 to 2017.

2. Assessment of adherence to the reporting guidelines

87. The ERT assessed the information reported in the NC7 of Latvia and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 18.

Table 18
Findings on research and systematic observation from the review of the seventh national communication of Latvia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 58 Issue type: completeness Assessment: recommendation	The NC7 does not include information on action taken to support capacity-building relating to systematic observation in developing countries. During the review, the Party informed the ERT that no actions were taken on capacity-building relating to systematic observation in developing countries during the period from 2013 to 2017. The ERT reiterates the recommendation made in the previous review report that Latvia report, in its next NC, action taken to support systematic observation related to capacity-building, particularly in developing countries, or provide a relevant explanation should it not be possible to report such information owing to national circumstances.
2	Reporting requirement specified in paragraph 62 Issue type: completeness Assessment: encouragement	The NC7 does not reflect any identified barriers to the free and open international exchange of data and information. During the review, Latvia indicated that no barriers have been identified on this matter. The ERT encourages the Party to report in its next NC on whether or not it has identified opportunities and barriers to the free and open international exchange of data and, if so, to report on action taken to overcome such barriers.

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

G. Education, training and public awareness

1. Technical assessment of the reported information

88. In the NC7 Latvia provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided

information on the general policy on education, training and public awareness, primary, secondary and higher education, public information campaigns, training programmes, education materials, resource or information centres, the involvement of the public and NGOs and its participation in international activities.

89. Latvia reported in its NC7 that regulations have been formulated to facilitate the integration of education for sustainable development and environmental education into the general and professional educational curricula. Several school programmes such as "Klimata valoda" (the language of the climate) and "Eco-schools" were implemented to raise students' awareness of environment and sustainable development issues. Meanwhile, under the small grants scheme the programme "Capacity-building for Research and Measures for Improving the Knowledge of Society on Climate Change and its Consequences" was implemented to raise awareness of climate change by developing education programme modules at the higher education level.

90. In the NC7 Latvia reported on actions taken to raise public awareness on the environment and climate change through newspapers and magazines, radio and television programmes and Internet portals. Annual public campaigns such as European Mobility Week, International Earth Day, Earth Hour, Nature Concert Hall and My Sea are organized to raise awareness of the environment, sustainable development and climate change issues in Latvia. In addition, it was reported in the NC7 that since 2010 large-scale public information and training programmes on climate issues have been implemented in Latvia. In the NC7 Latvia provided comprehensive information on the role and involvement of NGOs in the field of the environment and climate change. It was reported that as at September 2017 a total of 133 public benefit organizations were operating in the field of environmental protection. Programmes have been implemented for promoting and strengthening cooperation between NGOs and the State environmental authorities.

2. Assessment of adherence to the reporting guidelines

91. The ERT assessed the information reported in the NC7 of Latvia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

92. The ERT conducted a technical review of the information reported in the NC7 of Latvia in accordance with the UNFCCC reporting guidelines on NCs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC7 provides an overview of the national climate policy of Latvia.

93. The information provided in the NC7 includes most of the elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of some information on PaMs in accordance with Article 2 of the Kyoto Protocol and domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures. 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 was provided by Latvia in its 2017 annual submission.

94. Latvia's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 56.8 per cent below its 1990 level, whereas total GHG emissions including LULUCF and excluding indirect CO_2 were 26.9 per cent below its 1990 level, in 2015. Emission decreases were driven by the transition to a market economy in the early 1990s, the economic growth since 2000 and the increased use of natural gas and biomass to replace residual fuel oil and coal for energy production.

95. Latvia's main policy framework relating to energy and climate change consists of the National Development Plan 2014–2020 and the Sustainable Development Strategy of Latvia until 2030. The key policy document supporting Latvia's climate change goals is

Latvia's Environmental Policy Strategy 2014–2020. The mitigation actions with the most significant mitigation impact are the investment support programme for district heating systems (2007–2013 EU funds period), Latvia's National Renewable Energy Action Plan and the increase in land area under organic farming.

96. The GHG emission projections provided by Latvia include those under the WEM and WAM scenarios. In the two scenarios, emissions (excluding LULUCF and indirect CO_2 emissions) are projected to be 55.8 and 56.4 per cent, respectively, below the 1990 level in 2020. The projected emission levels for non-ETS sectors under the WEM and WAM scenarios are 7.8 and 9.0 per cent, respectively, below the AEAs for 2020. The ERT noted that this suggests that Latvia expects to meet its target for non-ETS sectors.

97. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Latvia committed to contributing to the joint EU economy-wide quantified emission reduction target to reduce GHG emissions by 20 per cent compared with the base-year level by 2020. Latvia's national target for 2020 for non-ETS sectors is +17 per cent compared with the 2005 level (a positive limit). Latvia's projections indicate that the Party is on course to meet its 2020 target for non-ETS sectors.

98. In the NC7 Latvia 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 make use of the Kyoto Protocol market-based mechanisms to meet its Kyoto Protocol target for 2013–2020.

99. Latvia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Latvia provided information in the NC7 on its provision of support to developing country Parties. Latvia provided support to multilateral financial institutions, including regional development banks.

100. Latvia reported on the expected climate change impacts on and vulnerability of six key sectors: construction and infrastructure planning; civil protection and emergency assistance; health and welfare; biodiversity and ecosystem services; agriculture and forestry; and tourism and landscape planning. The NC7 provides comprehensive information on Latvia's draft National Climate Change Adaptation Strategy for the period to 2030. Latvia provided information in its NC7 on its actions regarding cooperation with other countries on adaptation, including the Baltic Sea Region Adaptation Strategy and Action Plan and the active participation of Latvian research institutions and organizations in EU programmes.

101. Latvia reported in the NC7 that national research institutions such as the University of Latvia's Laboratory for Mathematical Modelling of Environmental and Technological Processes, Latvia University of Agriculture and Latvian State Forest Research Institute conduct research in the field of climate change. The Latvian Environment, Geology and Meteorology Centre is responsible for systematic observation in Latvia and also represents the country within the World Meteorological Organization and is a member of the European Meteorological Services Network and EuroGeoSurveys. Latvia also reported actions taken to support international and bilateral cooperation on research-related capacity-building in developing countries, including a development cooperation project on sustainable environmental engineering in Uzbekistan.

102. In the NC7 Latvia explained that education on climate change has been introduced at the primary, secondary and tertiary educational levels. NGOs and other organizations in Latvia organize a number of annual public awareness campaigns. Programmes have been implemented for promoting and strengthening the cooperation between NGOs and the State environmental authorities.

103. In the course of the review, the ERT formulated the following recommendations for Latvia to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:[4]

(a) To improve the completeness of its reporting by:

(i) Including information on any provisions to make information on legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol, publicly accessible (see issue 1 in table 7);

(ii) Including information on any national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and sustainable use of natural resources (see issue 2 in table 7);

(iii) Reporting information on the identification of the steps taken to promote and/or implement any decisions by ICAO and IMO to limit or reduce GHG emissions from aviation and marine bunker fuels (see issue 10 in table 9);

(iv) Presenting the WEM scenario on a gas-by-gas basis (see issue 3 in table 13);

(v) Providing emission projections related to fuel sold to ships and aircraft engaged in international transport separately and not included in the totals, to the extent possible (see issue 5 in table 13);

(vi) Reporting on action taken to support systematic observation related to capacity-building, particularly in developing countries, or providing a relevant explanation should it not be possible to report such information owing to national circumstances (see issue 1 in table 18);

(b) To improve the transparency of its reporting by:

(i) Providing further information 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 (see issue 1 in table 4);

(ii) Including the name and contact information of the registry administrator designated by the Party to maintain the national registry (see issue 1 in table 6);

(iii) Organizing the reporting of PaMs by sector, subdivided by gas (see issue 3 in table 9);

(iv) Ensuring the consistency of the reporting on PaMs between the information provided in the textual part of the NC and the associated tables (see issue 4 in table 9);

(v) Including in the presentation of PaMs information on the GHGs affected by each PaM (see issue 6 in table 9);

(vi) Providing coherent information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, or, where such information is provided in the NIR, by providing a relevant reference (see issue 11 in table 9);

(vii) Providing a transparent description of factors that affect the trends in the energy sector under the WEM and WAM scenarios, such as information on the assumptions on the share of RES, and ensuring consistency between the PaMs reported as "planned" in the NC section on PaMs and the assumptions on PaMs used when preparing the WAM scenario (see issue 10 in table 13);

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

(viii) Including information on the total effect of PaMs, in accordance with the WEM scenario, compared to a situation without such PaMs, by gas (see issue 1 in table 15);

(ix) Reporting an outline of the action taken to implement Article 4, paragraph 1(e), of the Convention with regard to adaptation, or providing a relevant explanation should it not be possible to report such information owing to national circumstances (see issue 1 in table 17).

IV. Questions of implementation

104. During the review the ERT assessed the NC7, including the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, and reviewed the 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 UNFCCC reporting guidelines on NCs. No questions of implementation were raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

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

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

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

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part 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 the information required under Article 7 of the Kyoto Protocol". Annex to decision 15/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex III to decision 3/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"Guidelines for review under Article 8 of the Kyoto Protocol". Annex to decision 22/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf.

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

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

Report on the individual review of the annual submission of Latvia submitted in 2016. FCCC/ARR/2016/LVA. Available at http://unfccc.int/resource/docs/2017/arr/lva.pdf.

Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of Latvia. FCCC/IRR/2016/LVA. Available at http://unfccc.int/resource/docs/2017/irr/lva.pdf.

Report of the technical review of the sixth national communication of Latvia. FCCC/IDR.6/LVA. Available at http://unfccc.int/resource/docs/2014/idr/lva06.pdf.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to decision 4/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Kristīne Zommere-Rotčenkova (Latvian Ministry of Environmental Protection and Regional Development), including additional material.