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

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third biennial report of 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”.

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Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
ESD	effort-sharing decision
ERT	expert review team
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
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
NIR	national inventory report
NMVO	non-methane volatile organic compound
NO	not occurring
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N ₂ O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
RES	renewable energy sources
SF ₆	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the BR3¹ of Latvia. The review was organized by the secretariat in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”, particularly “Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of 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 BR3 of Latvia in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR3 was submitted on 29 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were also submitted on 29 December 2017.

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 BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

Summary of completeness and transparency of mandatory information reported by Latvia in its third biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
GHG emissions and trends	Complete	Transparent	

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

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	Issues 1 and 2 in table 3
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1 and 2 in table 5; issue 1 in table 7; issues 3 and 6 in table 11
Provision of support to developing country Parties ^a	NA	NA	NA

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

^a 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.

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

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

1. Technical assessment of the reported information

7. Total GHG emissions² excluding emissions and removals from LULUCF and excluding indirect CO₂ emissions decreased by 56.8 per cent between 1990 and 2015, whereas total GHG emissions including net emissions or removals from LULUCF and excluding indirect CO₂ emissions decreased by 26.9 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Latvia.

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

<i>Sector</i>	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2014</i>	<i>2015</i>	<i>1990–2015</i>	<i>2014–2015</i>	<i>1990</i>	<i>2015</i>
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

² In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2017 annual submission, version v1.

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2014	2015	1990–2015	2014–2015	1990	2015
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
<i>Gas^a</i>									
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 ₂ O	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 CO₂	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 CO₂	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 CO₂.

8. 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).

9. In brief, Latvia's national inventory arrangements were established in accordance with the Cabinet of Ministers regulation on the development and management of the national system for GHG inventory and projections. The regulation establishing the procedures for the national inventory system was updated in 2017 from the previous regulation of 2012. The changes in the arrangements since the BR2 include the incorporation of quality assurance/quality control procedures for the GHG inventory and projections preparation based on the new regulation. In the BR3 and during the review the Party explained that several improvement activities were carried out within the framework of the "National Climate Policy" programme of the European Economic Area Financial

Mechanism in 2014–2017. The implemented activities included improvement of the GHG inventory system and its synergy with air pollution data, development of a unified air pollution, GHG inventory data and projection database, and capacity-building of experts.

2. Assessment of adherence to the reporting guidelines

10. The ERT assessed the information reported in the BR3 of Latvia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

1. Technical assessment of the reported information

11. For Latvia the Convention entered into force on 21 June 1995. 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 EU offered to move to a 30 per cent reduction target on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

12. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ using GWP values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

13. The EU 2020 climate and energy package includes the EU ETS and the ESD (see chapter II.C.1 below). The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

14. Under the ESD, Latvia has a target of limiting its emission growth to 17 per cent above the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Latvia's AEAs change following a linear path from 9,260.06 kt CO₂ eq in 2013 to 9,991.83 kt CO₂ eq in 2020.³

2. Assessment of adherence to the reporting guidelines

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

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

Table 3

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

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation</i>
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	Latvia reported in chapter III of the BR3, in line with the joint EU target, that the gases covered by its target are CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ and that the base year is 1990. In CTF table 2(b), however, the base year for PFCs was reported as “NA”. During the review, Latvia informed the ERT that emissions of PFCs were not occurring in Latvia for the entire time series and such emissions are not projected to occur in the future. The ERT recommends that Latvia provide consistent information in the BR and in CTF table 2(b) by indicating 1990 as the base year for PFCs in line with the joint EU target.
2	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	Latvia reported in chapter III of the BR3, in line with the joint EU target, that the gases covered are CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ and that the GWP values are from the AR4. In CTF table 2(c), however, the reference for the GWP value for PFCs was not indicated. During the review, Latvia informed the ERT that emissions of PFCs were not occurring in Latvia for the entire time series and such emissions are not projected to occur in the future and therefore the reference for the GWP values was not reported in CTF table 2(c). The ERT recommends that Latvia provide consistent information in the BR and in CTF table 2(c) by reporting the reference for the GWP value for PFCs.

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

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

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

16. 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.

17. 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.

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

19. 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 CO₂ 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.

20. 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 N₂O emissions from chemical industries, PFC emissions from aluminium production and CO₂ emissions from some industrial processes (since 2013), which were not covered in the earlier phases of EU ETS.

21. 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.

22. 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.

23. 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 4 provides a summary of the reported information on the PaMs of Latvia.

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

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact by 2030 (kt CO₂ eq)</i>
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

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact by 2030 (kt CO₂ eq)</i>
IPPU	Minimization of emissions of F-gases; replacement of F-gases by other substances	NE	NE
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 CO₂ or CO₂ eq avoided in a given year as a result of the implementation of mitigation actions.

(b) Policies and measures in the energy sector

24. **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 CO₂ 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 the 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.

25. **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.

26. **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 CO₂ eq in 2020).

27. **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. 24 above). Most of the PaMs relating to renewable energy (see para. 25 above) and energy efficiency (see para. 26 above) target the residential and commercial sector. 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.

28. **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 used 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 CO₂ emissions from the sector. Through several economic measures, Latvia aims to support the development of electromobility and public transport.

29. **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**

30. **Industrial processes.** The emissions from IPPU include CO₂, CH₄, N₂O and F-gases (HFCs and SF₆). 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-gases 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 GWP).

31. **Agriculture.** Agriculture is the second 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 CH₄ and N₂O emissions from enteric fermentation, manure management and agricultural soils, and CO₂ 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 rabbit. 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 in 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.

32. **LULUCF.** The LULUCF sector in Latvia was a net GHG source of 1,377.15 kt CO₂ eq in 2015. Aggregated net removals of GHGs reduced by 115.7 per cent in 2015 in comparison with 1990, mostly owing 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.

33. **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) Response measures

34. Latvia did not report on the assessment of the economic and social consequences of its response measures.

(e) Assessment of adherence to the reporting guidelines

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

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

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	<p>Reporting requirement specified in paragraph 6</p> <p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>The ERT noted that in CTF table 3 Latvia did not provide any information on the estimated mitigation impact of two mitigation actions, namely the electrification of the railway network in 2020 and the promotion of public understanding of the importance of and possibilities for GHG emission reduction in 2020, 2025 and 2030. In addition, for several PaMs (27 out of 60) the estimated mitigation impact for 2020, 2025 and 2030 was reported as “NE”.</p> <p>During the review, Latvia informed the ERT that a quantitative estimation of mitigation impact was 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 measures such as taxation measures as well as certain regulatory measures is difficult owing to the lack of an adequately elaborated methodology and a long enough time series characterizing the impact of such measures for the Latvian situation.</p> <p>The ERT reiterates the recommendation made in the previous review report that Latvia increase the transparency of the reporting by providing a quantitative estimation of the mitigation effects of its PaMs in the next BR. The ERT also</p>

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
		<p>recommends that Latvia provide relevant explanations in its next BR should it not be possible to provide a quantitative estimate of all mitigation impacts owing to its national circumstances.</p>
2	<p>Reporting requirement specified in paragraph 7</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>Latvia did not provide in its BR3 information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target.</p> <p>During the review, Latvia provided information on the amendment of the Law on Pollution in 2016 (see finding 4 below) and the regulation on the development and management of the national system for the GHG inventory and projections approved by the Cabinet of Ministers in December 2017, where, inter alia, monitoring, quality assurance/quality control procedures, reporting, archiving of information and evaluation of progress were determined.</p> <p>The ERT reiterates the recommendation made in the previous review report that Latvia in its next BR provide information on the changes in institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target.</p>
3	<p>Reporting requirement specified in paragraph 8</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Latvia did not provide in its BR3 information on the assessment of the economic and social consequences of its response measures.</p> <p>During the review, Latvia informed the ERT that it strives to implement its climate PaMs in such a way that social, environmental and economic impacts on other countries, and on developing countries in particular, do not occur at all or the impacts are minimized and negligible. Latvia explained that it takes into account up-to-date knowledge on and understanding of the possible impacts of PaMs based on available scientific studies and research and development information. Although Latvia has not performed a study by applying comprehensive macroeconomic models to evaluate the economic and social effects of its climate PaMs, it has carried out studies to evaluate particular types of impacts such as employment impacts, export–import balance and energy supply security. The evaluations led to the conclusion that the implementation of the WEM and WAM scenarios in the long term is highly beneficial because under the scenarios dependence on energy imports decreases considerably and energy self-sufficiency increases, thus contributing to an improved national import–export balance. The implementation of RES and energy efficiency policies will increase employment, both directly and indirectly, in the long run with about 15,000–35,000 new jobs. Other important benefits of the energy efficiency policy are improved competitiveness of enterprises and lower energy costs, particularly for household end users.</p> <p>The ERT reiterates the encouragement made in the previous review report that Latvia improve the completeness of its reporting by providing information on the assessment of the economic and social consequences of its response measures in its next BR in line with the information provided during the review.</p>
4	<p>Reporting requirement specified in paragraph 24</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Latvia did not report on its self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science, or on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets.</p> <p>During the review, the Party provided information on the 2016 amendments to the Law on Pollution. According to the amendments, 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 regarding GHG emission reductions and removals of CO₂. The following shall be included in the report:</p>

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
		<p>(a) Evaluation of the fulfilment of the commitments related to the reduction of GHG emissions and removals of CO₂;</p> <p>(b) If necessary, proposals regarding additional measures for the fulfilment of the commitments related to the reduction of GHG emissions and removals of CO₂, 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.</p> <p>The ERT reiterates the encouragement made in the previous review reports that Latvia provide information in its next BR on its self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science, and on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets. The ERT notes that such information could build on the information provided to the ERT during the review.</p>

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

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

(a) Technical assessment of the reported information

36. For 2014 Latvia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 11,210.22 kt CO₂ eq, which is 57.2 per cent below the base-year level. The ERT noted that this value includes indirect CO₂. According to table 2 of the BR3, in 2014 emissions from non-ETS sectors relating to the target under the ESD amounted to 9,018 kt CO₂ eq.

37. For 2015 Latvia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 11,319.39 kt CO₂ eq, which is 56.8 per cent below the base-year level (including indirect CO₂). According to table 2 of the BR3, in 2015 emissions from non-ETS sectors relating to the target under the ESD amounted to 9,005 kt CO₂ eq.

38. Regarding the use of units from LULUCF activities, the cells in CTF tables 4 and 4(a) were left blank because the Party does not use units from LULUCF activities to offset GHG emissions. Latvia reported in CTF tables 4 and 4(b) that it did not use units from market-based mechanisms in 2015 and 2016 towards the achievement of its 2020 target (the notation keys “NA” and “NO” were used). Table 6 illustrates Latvia’s total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6

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

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>Contribution of LULUCF (kt CO₂ eq)^a</i>	<i>Emissions including contribution of LULUCF (kt CO₂ eq)</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)</i>
1990	26 184.86	NA	NA	NA
2010	12 218.08	NA	NA	NA
2011	11 443.23	NA	NA	NA
2012	11 343.80	NA	NA	NA
2013	11 265.27	NA	NA	0.0
2014	11 210.22	NA	NA	0.0
2015	11 319.39	NA	NA	0.0

Sources: Latvia's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b). The values include indirect CO₂.

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

39. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Latvia's emission reduction target is 17 per cent above the 2005 level (see para. 14 above). In 2015 Latvia's emissions from non-ETS sectors were 4.6 per cent (437.42 kt CO₂ eq) below the AEA under the ESD.

40. The ERT noted that Latvia is making progress towards its emission reduction target by implementing and planning mitigation actions that are delivering significant emission reductions. On the basis of the results of the projections (see para. 53 below), the ERT also noted that the Party continues to contribute to the achievement of the EU target under the Convention.

(b) Assessment of adherence to the reporting guidelines

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

Table 7

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

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraphs 9 and 10 Issue type: transparency Assessment: recommendation	Latvia did not provide in CTF table 4 any information in the columns on the contribution of LULUCF for 1990 and 2010–2016 and on the use of units from market-based mechanisms for 1990 and 2010–2014. During the review, Latvia provided the ERT with information corresponding to an updated CTF table 4 containing the notation key "NA" for the contribution of LULUCF for 1990 and 2010–2016 and for the quantity of units from market-based mechanisms for 1990 and 2010–2012. For 2013–2016 Latvia reported zero in the updated CTF table 4 for the quantity of units from market-based mechanisms. The ERT recommends that Latvia improve the transparency of its reporting in CTF table 4 of its next BR by including appropriate information on the contribution of LULUCF and the use of market-based mechanisms. The ERT notes that transparency could be improved, for example, by using values and/or notation keys in the columns on the contribution of LULUCF and on the use of units from market-based mechanisms as in the updated CTF table 4 provided during the review.

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

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

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

43. In addition to the WEM scenario, Latvia reported a WAM scenario in the BR3 and CTF table 6(c). 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 BR3 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.

44. A summary of emission projections was presented in the BR3 and detailed in CTF tables 6(a) and 6(c), where information was provided on a gas-by-gas basis for CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs and HFCs collectively in each case) as well as for NF₃ for 1990–2030. PFCs and NF₃ were reported as “NA” and “NO” for the entire time series. The projections are also provided in an aggregated format for each sector as well as for a Party total using GWP values from the AR4.

45. Latvia did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, NMVOCs or sulfur oxides.

46. 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.

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

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

48. The methodology used for the preparation of projections has been updated from that used for the NC6. In the BR3, Latvia referred to the NC7 for further information on projections. Latvia provided a summary of the results and methodologies for 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.

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

50. 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 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. The variables and assumptions were reported in CTF table 5. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections.

51. 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, the 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

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

Table 8
Summary of greenhouse gas emission projections for Latvia

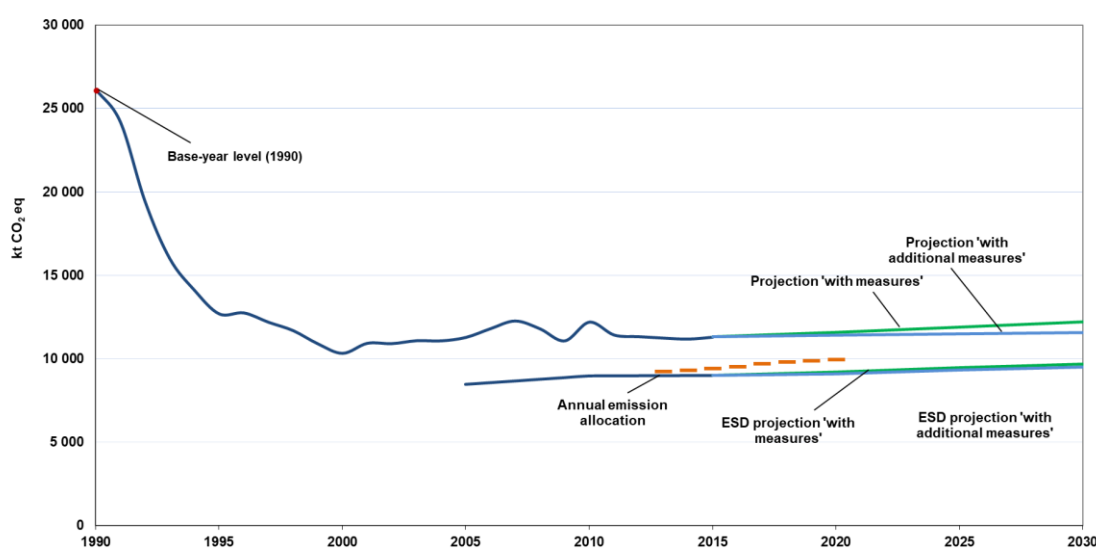
	<i>GHG emissions (kt CO₂ eq per year)</i>	<i>Changes in relation to base-year level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Quantified economy-wide emission reduction target under the Convention ^a	NA	NA	NA
Inventory data 1990 ^b	26 141.43	NA	NA
Inventory data 2015 ^b	11 302.67	-56.8	-56.8
WEM projections for 2020 ^c	11 565.08	-55.8	-55.8
WAM projections for 2020 ^c	11 402.02	-56.4	-56.4
WEM projections for 2030 ^c	12 195.41	-53.3	-53.3
WAM projections for 2030 ^c	11 562.87	-55.8	-55.8

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

^b From Latvia's BR3 CTF tables 1 and 6.

^c 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.

53. Latvia’s total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 11,565.08 and 12,195.41 kt CO₂ 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 CO₂ eq, respectively. The 2020 projections suggest that Latvia will continue contributing to the achievement of the EU target under the Convention (see para. 11 above).

54. 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. 14 above). Latvia’s AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 9,260.06 kt CO₂ eq in 2013 to 9,991.83 kt CO₂ eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 9,207.60 kt CO₂ eq by 2020. Under the WAM scenario, Latvia’s emissions from the non-ETS sectors in 2020 are projected to be 9,094.52 kt CO₂ 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.

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

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

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		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

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
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.

56. 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 CO₂ eq (75.7 per cent) and 2,272.24 kt CO₂ 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.

57. 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 CO₂ eq (76.0 per cent) and 2,368.84 kt CO₂ 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 in 2030 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.

58. Latvia presented the WEM and WAM scenarios by gas in CTF table 6 for 2020 and 2030, as summarized in table 10.

Table 10

Summary of greenhouse gas emission projections for Latvia presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		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 ₂ O	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	26 141.43	11 565.08	11 402.02	12 195.41	11 562.87	–55.8	–56.4	–53.3	–55.8

Gas	GHG emissions and removals (kt CO ₂ eq)						Change (%)			
	1990	2020		2030		1990–2020		1990–2030		
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM	
without LULUCF										

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

59. Under the WEM scenario the most significant emission reductions for 2020 are projected for CO₂ and CH₄: 12,590.34 kt CO₂ eq (63.7 per cent) and 1,518.01 kt CO₂ 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 CH₄ and N₂O, while for CO₂, HFCs and SF₆ the emissions projected for 2020 reach a lower level than 2015. For the GHG emission projections without LULUCF for 2030, the trend observed for 2015–2020 changes for CO₂: 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, CO₂ emissions increase by 15.7 per cent in 2020 (compared with 2015) and by 13.3 per cent in 2030 (compared with 2020).

60. Under the WAM scenario the most significant emission reductions for 2020 are projected for CO₂ and CH₄: 12,654.64 kt CO₂ eq (64.0 per cent) and 1,617.74 kt CO₂ 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 CH₄ and N₂O, while for CO₂, HFCs and SF₆ the emissions projected for 2020 reach a lower level than 2015. For the GHG emission projections without LULUCF for 2030, the trend observed for 2015–2020 changes for CO₂: 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 projections by gas including the LULUCF sector, CO₂ emissions increase by 12.2 per cent in 2020 (compared with 2015) and 10.4 per cent in 2030 (compared with 2020).

61. 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.

(d) Assessment of adherence to the reporting guidelines

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

Table 11

Findings on greenhouse gas emission projections reported in the 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 30 Issue type: transparency Assessment: encouragement	Latvia provided information in its BR3 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. During the review, Latvia provided further information on the sensitivity analyses carried out (see para. 51 above). 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 ^a specified in paragraph 35 Issue type:	In its BR3 Latvia referred to its the NC7 for further information on projections. 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

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
	completeness Assessment: encouragement	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/). 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 encourages Latvia to provide projections of the indirect GHGs carbon monoxide, nitrogen oxides and NMVOCs, as well as sulfur oxides, in its next BR.
3	Reporting requirement ^a specified in paragraph 36 Issue type: completeness Assessment: recommendation	Latvia did not report emission projections related to fuel sold to ships and aircraft 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. The Party provided the projections during the review. The ERT reiterates the recommendation made in the previous review report that Latvia, in its next BR, 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.
4	Reporting requirement ^a specified in paragraph 37 Issue type: transparency Assessment: encouragement	In its BR3 Latvia referred to its NC7 for further information on projections. 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.
5	Reporting requirement ^a specified in paragraph 42 Issue type: transparency Assessment: encouragement	In its BR3 Latvia referred to its NC7 for further information on projections. 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.
6	Reporting requirement ^a 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 CTF table 3, 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 in the WAM scenario in 2030. The ERT recommends that Latvia include in its next BR 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 CTF table 3 and the assumptions on PaMs used when preparing the WAM scenario.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
7	<p>Reporting requirement^b specified in paragraph 12</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>In the BR3 Latvia provided information on the differences in the methodologies, assumptions and results between the BR3 and BR2 and referred to the NC7, which provides further information on changes since the NC6. 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.</p> <p>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 BR3. Regarding the comparison between the key variables used in different reports, Latvia explained that human population, primary energy consumption and cattle population are projected to be 1.3 per cent, 42 PJ and 116,000, respectively, lower in 2030 as reported in the BR3 compared with in the NC6.</p> <p>The ERT encourages Latvia to include in its next BR 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 the current BR and previous NC would enhance the transparency of Latvia's reporting.</p>

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

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

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

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

63. 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 BR3 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 BRs.

64. In the BR3 Latvia provided a brief description of support provided to developing country Parties. 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.

III. Conclusions and recommendations

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

66. 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 CO₂ emissions 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.

67. Under the Convention, Latvia committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

68. Under the ESD, Latvia has a target of limiting its emission growth to 17 per cent above the 2005 level by 2020. The 2015–2020 linear progression in Latvia's AEAs (its national emission target for non-ETS sectors) is 9,442.42–9,991.83 kt CO₂ eq.

69. 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.

70. For 2015 Latvia reported in CTF table 4 total GHG emissions excluding LULUCF of 11,319.39 kt CO₂ eq. The reported value includes indirect CO₂. In 2015 Latvia's emissions from non-ETS sectors were 4.6 per cent below the AEA under the ESD. Latvia does not plan to use the market-based mechanisms to meet its target.

71. The GHG emission projections provided by Latvia correspond to the WEM and WAM scenarios. Under the two scenarios, emissions (excluding LULUCF and indirect CO₂ 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.

72. The ERT noted that Latvia is making progress towards its emission reduction target by implementing mitigation actions that deliver significant emission reductions.

73. 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 BR3 on its provision of support to developing country Parties. Latvia reported on financial support provided to multilateral financial institutions, including regional development banks, and on bilateral capacity-building support provided to Azerbaijan, Georgia and Uzbekistan, which covered multiple areas of expertise, including sustainable environmental engineering.

74. In the course of the review, the ERT formulated the following recommendations for Latvia to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:⁴

- (a) To improve the completeness of its reporting by:
 - (i) Providing information on the changes in institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target (see issue 2 in table 5);
 - (ii) 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 3 in table 11);

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

- (b) To improve the transparency of its reporting by:
 - (i) Providing consistent information in the BR and CTF table 2(b) by indicating 1990 as the base year for PFCs (see issue 1 in table 3);
 - (ii) Providing consistent information in the BR and CTF table 2(c) by reporting the AR4 as the reference for the GWP value for PFCs (see issue 2 in table 3);
 - (iii) Providing quantitative estimates of the mitigation effects of its PaMs, or a relevant explanation should it not be possible to provide quantitative estimates of all mitigation impacts owing to national circumstances (see issue 1 in table 5);
 - (iv) Including appropriate information on the contribution of LULUCF and use of market-based mechanisms in CTF table 4 (see issue 1 in table 7);
 - (v) 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 CTF table 3 and the assumptions on PaMs used when preparing the WAM scenario (see issue 6 in table 11).

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 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 of the technical review of the second biennial report of Latvia. FCCC/TRR.2/LVA. Available at <http://unfccc.int/resource/docs/2016/trr/lva.pdf>.

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

B. Additional information provided by the Party

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