COMPLIANCE COMMITTEE

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1 April 2009

Report of the individual review of the greenhouse gas inventories of Latvia submitted in 2007 and 2008

Note by the secretariat

The report of the individual review of the greenhouse gas inventories of Latvia submitted in 2007 and 2008 was published on 30 March 2009. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decision 4/CMP.4), the report is considered received by the secretariat on the same date. This report, FCCC/ARR/2008/LVA, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

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Report of the individual review of the greenhouse gas inventories of Latvia submitted in 2007 and 2008*

* In the symbol for this document, 2008 refers to the year in which the inventory was submitted, and not to the year of publication.

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I. Overview

A. Introduction

1. This report covers the centralized review of the 2007 and 2008 greenhouse gas (GHG) inventory submissions of Latvia, coordinated by the UNFCCC secretariat, in accordance with decision 22/CMP.1. The review took place from 8 to 13 September 2008 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Ms. Hongmin Dong (China) and Ms. Lisa Hanle (United States of America); energy – Mr. Dario Gomez (Argentina) and Mr. Pavel Fott (Czech Republic); industrial processes – Mr. Domenico Gaudioso (Italy) and Mr. Kiyoto Tanabe (Japan); agriculture – Mr. Donald Kamdonyo (Malawi) and Mr. Rob Sturgiss (Australia); land use, land-use change and forestry (LULUCF) – Mr. Harry Vreuls (Netherlands) and Mr. Xiaoquan Zhang (China); and waste – Mr. Seungdo Kim (Republic of Korea) and Mr. Takashi Morimoto (Japan). Mr. Gomez and Mr. Tanabe were the lead reviewers. The review was coordinated by Mr. Javier Hanna and Mr. Tomoyuki Aizawa (UNFCCC secretariat).

2. In accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1), a draft version of this report was communicated to the Government of Latvia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Inventory submission and other sources of information

3. The 2008 inventory submission was submitted on 15 April 2008; it contains a complete set of common reporting format (CRF) tables for the period 1990–2006 and a national inventory report (NIR). This is in line with decision 15/CMP.1. The Party indicated that the 2008 submission is also its voluntary submission under the Kyoto Protocol.[1] In its 2007 submission, submitted on 12 April 2007, Latvia included a complete set of CRF tables for the period 1990–2005 and an NIR. The CRF tables and the NIR for both the 2007 and 2008 inventories were submitted on the same date. During the review, Latvia provided the expert review team (ERT) with additional information. The full list of materials used during the review is provided in the annex to this report.

C. Emission profiles and trends

4. In 2006 (as reported in the 2008 annual inventory submission), the main GHG in Latvia was carbon dioxide (CO_2), accounting for 71.1 per cent of total GHG emissions[2] expressed in CO_2 eq, followed by methane (CH_4) (15.0 per cent), and nitrous oxide (N_2O) (13.6 per cent). Hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF_6) collectively accounted for 0.4 per cent of the overall GHG emissions in the country. The Party reported that perfluorocarbons (PFCs) are not emitted in Latvia (reported as not occurring ("NO") and not applicable ("NA"). The energy sector accounted for 73.5 per cent of the total GHG emissions, followed by the agriculture sector (17.2 per cent), the waste sector (6.6 per cent), the industrial processes sector (2.2 per cent), and the solvent and other product use sector (0.6 per cent). Total GHG emissions amounted to 11,621.45 Gg CO_2 eq in 2006 and decreased by 56.1 per cent between the base year[3] and 2006. Emissions decreased in all sectors except for solvent and other product use, and waste. The largest decreases were observed in the agriculture (66.3 per cent) and

[1] Parties may start reporting information under Article 7, paragraph 1, of the Kyoto Protocol from the year following the submission of the initial report, on a voluntary basis (decision 15/CMP.1).

[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.

[3] Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. The base year emissions do not include any possible emissions from deforestation; however, these are taken into account when the assigned amount is calculated.

the energy (55.7 per cent) sectors. In 2005 (as contained in the 2007 inventory submission), total GHG emissions amounted to 10,880.00 Gg CO_2 eq. The shares of gases and sectors in 2006 (2008 annual inventory submission) were similar to those in 2005 (2007 inventory submission). The trends indicated in Latvia's GHG inventory are consistent with the economic circumstances in the country, particularly the transition to a market economy after 1990. Since 1996, the economy has been growing as have GHG emissions. According to the 2008 submission, between 1996 and 2006 emissions increased in the industrial processes sector (by 72.2 per cent), the solvent and other product use sector (by 32.7 per cent), and the waste sector (by 14.7 per cent).

5. Tables 1 and 2 show GHG emissions by gas and by sector, respectively.

D. Key categories

6. Latvia has reported a key category tier 1 analysis, both level and trend assessment, as part of its 2008 submission. Latvia has included the LULUCF sector in its key category analysis, which was performed in accordance with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF). The key category analysis performed by the Party produced similar results to that performed by the secretariat.[4] Latvia's aggregation of forest land remaining forest land (5.A.1) and land converted to forest land (5.A.2) categories into one category were reported in the key category analysis.

7. Latvia identified key categories in the 2007 and 2008 submissions. According to the level assessment, Latvia reported the same key categories in the 2007 and 2008 submissions. For the trend analysis, Latvia reported CH_4 emissions from manure management as a key category in the 2007 submission, but not in the 2008 submission. Also, CO_2 emissions from railways were identified as a key category in the 2008 submission, but not in the 2007 submission.

8. Latvia noted in the NIR that it is important to identify key categories in order to prioritize available resources to generate the most accurate emission estimates for the most important categories. For example, because CH_4 emissions from biomass in stationary combustion and from enteric fermentation are key categories, Latvia plans to implement higher-tiered methods with country-specific emission factors (EFs) for these categories. The ERT encourages Latvia to implement these improvements in its next annual submission.

9. Latvia has not identified key categories using a qualitative approach. The ERT encourages Latvia to use a qualitative assessment for relevant categories with high emission growth rates, such as consumption of halocarbons and SF_6.

[4] The secretariat identified, for each Party, the categories that are key categories in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC good practice guidance for LULUCF. Key categories according to the tier 1 trend assessment were also identified for Parties that provided a full set of CRF tables for 1990. Where the Party performed a key category analysis, the key categories presented in this report follow the Party's analysis. However, they are presented at the level of aggregation corresponding to a tier 1 key category assessment conducted by the secretariat.

Table 1. Greenhouse gas emissions by gas, 1990–2006

Greenhouse gas emissions	Gg CO_2 eq								Change base year–2006 (%)
	Base year[a]	1990	1995	2000	2003	2004	2005	2006	
CO_2	19 157.11	19 157.11	9 106.47	7 031.17	7 635.93	7 641.98	7 782.39	8 259.89	–56.9
CH_4	3 493.28	3 493.28	2 027.74	1 737.86	1 763.08	1 747.85	1 793.89	1 739.64	–50.2
N_2O	3 805.40	3 805.40	1 357.91	1 241.82	1 430.64	1 421.26	1 527.60	1 579.37	–58.5
HFCs	0.29	0.00	0.29	8.59	12.95	16.24	19.06	35.43	12 208.0
PFCs	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA
SF_6	0.25	0.00	0.25	1.28	4.41	5.37	7.53	7.12	2 736.2

Abbreviations: NA = not applicable, NO = not occurring.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. The base year emissions do not include any possible emissions from deforestation; however, if applicable, these are taken into account when the assigned amount is calculated.

Table 2. Greenhouse gas emissions by sector, 1990–2006

Sectors	Gg CO_2 eq								Change base year–2006 (%)
	Base year[a]	1990	1995	2000	2003	2004	2005	2006	
Energy	19 276.42	19 276.42	9 541.89	7 365.56	7 945.91	7 967.19	8 105.97	8 544.22	–55.7
Industrial processes	510.94	510.41	144.55	148.83	198.96	209.07	230.47	249.94	–51.1
Solvent and other product use	55.70	55.70	46.17	49.11	54.07	55.32	54.23	64.03	15.0
Agriculture	5 930.51	5 930.51	2 115.08	1 714.03	1 890.35	1 855.69	1 980.85	1 998.83	–66.3
LULUCF	NA	–20 687.34	–17 669.36	–14 132.66	–13 692.32	–14 692.51	–14 454.72	–17 815.36	NA
Waste	682.76	682.76	644.97	743.19	757.73	745.43	758.94	764.42	12.0
Other	NO	NO	NO	NO	NO	NO	NO	NO	NA
Total (with LULUCF)	NA	5 768.45	–5 176.71	–4 111.94	–2 845.31	–3 859.81	–3 324.25	–6 193.92	NA
Total (without LULUCF)	26 456.33	26 455.79	12 492.65	10 020.72	10 847.01	10 832.70	11 130.46	11 621.45	–56.1

Abbreviations: LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. The base year emissions do not include any possible emissions from deforestation; however, if applicable, these are taken into account when the assigned amount is calculated.

E. Main findings

10. In terms of completeness, consistency and comparability, the 2008 submission is broadly in conformity with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" (hereinafter referred to as the UNFCCC reporting guidelines), the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines) and the IPCC good practice guidance. The ERT finds that transparency of the NIR could be enhanced by adhering more closely to the reporting structure outlined in the UNFCCC reporting guidelines, and by describing in more detail in the NIR the data and methods used to calculate GHG emissions.

11. Latvia has made considerable improvements in reporting its quality assurance/quality control (QA/QC) system in the 2008 submission since the 2007 submission. Additional information on QA/QC procedures was provided in response to questions posed during the review. The ERT encourages Latvia to continue these efforts in future annual submissions, in particular by describing the institutional arrangements for ensuring the quality of all data used in inventory preparation, providing general and source-specific QA/QC procedures (including a copy of the QC form described in the NIR), illustrating the incorporation of QA/QC into inventory preparation, and reporting on procedures for verification and any issues associated with confidential data.

F. Cross-cutting issues

1. Completeness

12. The inventory is complete in terms of years and geographic coverage, and generally complete for categories and gases. There were no major differences between the 2007 and the 2008 submissions. Latvia has not estimated potential emissions of SF_6, CH_4 from wastewater handling, and emissions from, or removals by, some land-use categories. The NIR indicates that Latvia has noted the recommendations from previous ERTs to include data on potential emissions of SF_6, but the Party found that these data are not available. The ERT identified gaps in all sectors (see paras. 31, 48, 60, 72 and 85). The ERT recommends that Latvia identify potential sources of data that could be used to generate emission estimates for all non-estimated categories in its future annual submissions.

2. Transparency

13. There have been several improvements in the NIR since the 2007 submission that have increased transparency. Specific improvements include the incorporation of annexes to provide additional country-specific information on methods and data for the energy, agriculture and LULUCF sectors, and a new annex that describes Latvia's implementation of recommendations made by previous ERTs. The ERT welcomes these improvements and looks forward to their continued inclusion in future annual submissions.

14. On cross-cutting issues, transparency could be improved by elaborating in the NIR on the QA/QC procedures conducted throughout the inventory development process, including on data provided by external data suppliers, and by documenting the underlying assumptions supporting the uncertainty analysis. The ERT finds that Latvia could improve transparency in the sector-specific chapters of the NIR by fully describing trends shown in the sectoral data (e.g. field burning of agricultural residues and wastewater handling), the selection of EFs (e.g. CO_2 from stationary combustion) and activity data (AD) (e.g. for the LULUCF sector). Also, the ERT notes that transparency of the industrial processes sector and the waste sector could be improved by consistently following the NIR structure outlined in the UNFCCC reporting guidelines. The ERT acknowledges the major improvement in transparency resulting from the inclusion of the annexes and encourages Latvia to continuously strive to improve the transparency of information on methods, data and underlying assumptions reported in the NIR.

Detailed recommendations on how to improve the transparency of country-specific EFs, methodologies and assumptions are provided in the relevant sections of this report.

15. The ERT welcomes Latvia's intention to incorporate data from the European Union Emissions Trading Scheme (EU ETS) as they become available. The use of higher-tier methods and plant-specific data is consistent with the IPCC good practice guidance. The ERT encourages Latvia to transparently document in the NIR how it incorporates EU ETS data into its inventory estimates, and how completeness, accuracy and time-series consistency are maintained for each category.

3. Recalculations and time-series consistency

16. The ERT noted that recalculations reported by Latvia of the time series 1990–2005 have been undertaken to take into account changes in the methodologies used in some sectors, changes in EFs and updated AD. The major changes affecting the recalculations were: changes in the CO_2 EFs for gasoline in road transportation and cement production categories; methodological changes in the iron and steel category; and updated AD for manure management, agricultural soils (cultivation of histosols) and cropland categories. Many of these changes were in response to the recommendations in the previous review report. The rationale for these recalculations is, in general, provided in the NIR, but the discussion could be more transparent. The ERT recommends that Latvia report on the overall impact of recalculations on total GHG emissions, in addition to the discussion on recalculations for each sector.

17. Inconsistencies were identified between the NIR and the CRF regarding recalculations. For instance, the NIR notes a recalculation for CH_4 from manure management, but this is not reflected in CRF tables 8(a) and 8(b). The largest proportion of recalculations is in industrial processes (more than 18 per cent), and within this sector the largest proportion of recalculation is in the cement production category. This is well discussed in the NIR, but no justification is provided in CRF table 8(b). The ERT recommends that Latvia document recalculations consistently in both the NIR and the CRF.

4. Uncertainties

18. Latvia has conducted a tier 1 level and trend quantitative uncertainty analysis and the Party states in the NIR that it uses this information on uncertainty to help prioritize efforts to improve the accuracy of the inventory. In the 2008 submission, Latvia includes, for the first time, an uncertainty estimate for one LULUCF category – forest land remaining forest land. The ERT welcomes the efforts by Latvia to improve the uncertainty analysis by incorporating the LULUCF sector and encourages the Party to expand these efforts to the other LULUCF categories in future inventory submissions. The ERT recommends that Latvia incorporate the uncertainty analysis for LULUCF into the annex on uncertainties in the NIR.

19. According to the UNFCCC reporting guidelines, the data used for the uncertainty analysis should be qualitatively discussed in a transparent manner in the NIR, particularly for key categories. The ERT finds that there is not sufficient information presented in the NIR on the sources of uncertainty in the emission calculations and on the references for the uncertainty values used for AD and EFs (e.g. country-specific studies, IPCC default factors or expert judgement). The ERT recommends that Latvia elaborate the reporting on uncertainties in the NIR for all categories, particularly key categories.

20. There was no change in EF and AD uncertainty values used for the uncertainty analysis between the 2007 and 2008 submissions. However, Latvia has introduced a number of inventory improvements, including the development and use of a country-specific CO_2 EF for gasoline and a plant-specific EF for lime production. The ERT encourages Latvia to review the impacts of these improvements on the uncertainty analysis, and incorporate the results into inventory planning and preparation, as appropriate.

21. The ERT welcomes the reporting of tier 2 uncertainty estimates for selected categories (e.g. cement production) and encourages Latvia to continue carrying out tier 2 estimates, where feasible.

5. Verification and quality assurance/quality control approaches

22. Latvia has greatly improved the reporting on QA/QC procedures between the 2007 and 2008 NIR submissions. A general overview of the QA/QC system is provided in section 1.6 of the NIR and a more elaborated quality improvement plan is included as an annex. The plan transparently details how Latvia responded to previous ERT recommendations. Consistent with the conclusion of the previous review report, the ERT does not find that the documentation contains all of the elements of a QA/QC plan, as described in the IPCC good practice guidance. The ERT encourages Latvia to elaborate further its quality improvement plan, particularly on the institutional arrangements for ensuring the quality of all data used in inventory preparation, to provide information on general and category-specific QA/QC procedures (including a copy of the QC form described in the NIR), to illustrate the incorporation of QA/QC into inventory preparation, and to report on procedures for verification and any issues associated with confidential data. During the review, Latvia provided some supporting documentation that the ERT encourages the Party to include in the plan. The ERT acknowledges that Latvia is currently developing legislation to designate a institution responsible for QA/QC activities. The ERT recommends that Latvia include this information in its next annual submission.

23. Latvia has not implemented QA activities in the inventory development process, although such activities are planned. The ERT welcomes this plan and recommends that Latvia report the QA procedures, as well as the outcome of QA activities, in its next annual submission.

24. Latvia does not report on category-specific tier 1 or tier 2 QA/QC activities, with the exception of a brief discussion in the LULUCF section of the NIR. In response to questions from the ERT, Latvia indicated that it carried out category-specific QA/QC checks in the energy, waste and agriculture sectors, but only the QA/QC checks on the energy sector were described. The ERT encourages Latvia to fully document the category-specific tier 1 QA/QC activities, and any tier 2 QA/QC activities, in its next annual submission.

6. Follow-up to previous reviews

25. The ERT welcomes the transparent documentation of the implementation of recommendations of the previous review report in annex 7 of the NIR. Major improvements since the 2006 submission include the application of country-specific EFs for gasoline and a plant-specific EF for lime production, the development of a new methodology to identify land-use areas for LULUCF estimates, and additional discussion of QA/QC procedures in the NIR. The major pending issues to be implemented in the future include: more consistent and transparent documentation in the NIR of the methods, data and assumptions used to generate emissions estimates; full development and elaboration of the QA/QC plan in line with the IPCC good practice guidance and relevant mandatory functions of national systems; and the demonstration of the capacity of the national system to report activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

G. Areas for further improvement

1. Identified by the Party

26. The 2008 NIR identifies several areas for improvement, including:

(a) The development and implementation of QA procedures;

(b) The enforcement of forthcoming legislation that it is hoped will develop QA/QC procedures for all institutions involved in inventory development;

(c) The use of tier 2 methods for key categories;

(d) The incorporation of plant-specific data from the EU ETS (e.g. cement production and iron and steel production);

(e) The improvement in methods for the LULUCF sector, including the use of a higher-tier method and additional documentation on the identification of land-use areas.

2. Identified by the expert review team

27. The ERT identifies the following cross-cutting issues for improvement and recommends that Latvia:

(a) Conduct a quantitative uncertainty analysis for the remaining land-use categories, and transparently document the sources of uncertainty in the emissions estimates and the references for the AD and EF uncertainty values selected;

(b) Transparently document in the NIR the methods and EFs used and the emission trends;

(c) Ensure that the NIR sufficiently describes the national system, including the roles, responsibilities and minimum capacities of all collaborating entities, as well as the availability of formal agreements for coordination between the different bodies that collaborate on inventory preparation;

(d) Fully develop and implement the QA/QC plan, in particular QA procedures;

(e) Implement proper agreements in the energy sector to ensure a sustainable system for calculating energy sector emissions and ensuring the QA/QC of the data reported.

28. Recommended improvements relating to specific source/sink categories are presented in the relevant sector chapters of this report.

II. Energy

A. Sector overview

29. The energy sector is the main sector in the GHG inventory of Latvia. In 2006, emissions from this sector accounted for 8,544.22 Gg CO_2 eq, or 73.5 per cent of total GHG emissions. Emissions from the sector decreased by 55.7 per cent between 1990 and 2006. Within the sector, 40.4 per cent of emissions were from transport (1.A.3), 24.6 per cent were from energy industries (1.A1), 14.1 per cent were from manufacturing industries and construction (1.A.2), and 19.6 per cent were from other sectors (1.A.4). The remaining 1.2 per cent were from oil and natural gas (1.B.2). The main GHG was CO_2, which accounted for 93.6 per cent of the sectoral emissions; CH_4 accounted for 4.4 per cent and N_2O for 2.0 per cent.

30. Almost all methods and EFs used in the 2008 inventory submission were also used in the 2007 inventory submission. Some changes were made to AD due to either updated statistical information or corrections made to errors in input data. For example, AD for the year 2005 for energy industries, and manufacturing industries and construction are almost the same in both submissions. The largest changes in AD are in other sectors (1.A.4), where the corresponding increase in emissions observed in the 2008 submission results in a 1.1 per cent increase in total GHG emissions estimates. For transport, the 2008 submission reports higher emissions than in the 2007 submission, which is reflected in 1.3 per cent increase in total GHG emissions. In addition, one significant change in the CO_2 EF of gasoline for road transportation was noted in the 2008 submission. This and other relevant recalculations made since 1990 are dealt with in paragraph 41.

31. The energy sector reporting is generally complete. Emissions from only two categories, namely solid fuel transformation (1.B.1.b) and distribution of oil products (1.B.2.a.v), are reported as not estimated ("NE"), but these categories are of minor importance and emissions from them are probably negligible. In general terms, the energy sector is reported in the NIR in a transparent manner. However, the ERT notes that there is room for improvement, in particular in the transport categories.

32. AD used for estimates are based mainly on the energy balance elaborated by the Central Statistical Bureau of Latvia (CSB), which is included in annex 4 of the NIR and deals with all individual fuels used by the Party. Almost all fossil fuels in Latvia are imported, mainly natural gas, gas/diesel oil and gasoline, although a relatively small amount of domestic peat is used. The structure of the categories contributing to the final consumption in the energy balance is more aggregated than that required in the CRF. The collection of AD is based on detailed surveys from 1,000 enterprises and organizations. During the review, Latvia informed the ERT that the disaggregated data that the CSB reports to EUROSTAT is used to estimate emissions according to the categories defined in the CRF tables.

33. For the energy sector, the description of the national system in the NIR indicates that cooperation exists between the inventory compiler (the Latvian Environment, Geology and Meteorology Agency, (LEGMA)) and AD providers (the CSB and the Ministry of Transport). However, in the previous review report the ERT recommended that Latvia reinforce these institutional arrangements by putting in place a sustainable system for the estimation of emissions from the energy sector, particularly for the transport categories. The ERT reiterates this recommendation and encourages Latvia to finalize such a system, including improvement in the coordination of QC/QA activities between the inventory compiler and the data providers, and the ERT encourages Latvia to demonstrate the functionality of this system in its next annual submission.

B. Reference and sectoral approaches

1. Comparison of the reference approach with the sectoral approach and international statistics

34. The overall apparent fuel consumption in the CRF is 4.0 per cent higher than that reported by the International Energy Agency (IEA). This is mainly because of the difference in the "stock change" of gas/diesel oil indicated in CRF table 1.A(b). The 2006 Latvian energy balance shows a substantial statistical difference for diesel oil, implying that final consumption is greater than apparent consumption. Latvia incorporates this statistical difference into the "stock change" but the IEA does not. The criterion that Latvia follows lowers the difference between the sectoral approach and the reference approach but is not in line with the Revised 1996 IPCC Guidelines and creates the statistical difference between the reference approach reported in the CRF and the data reported by the IEA. The ERT reiterates the recommendation made during previous reviews that Latvia identify the reasons for this statistical difference and make efforts to reduce it as far as possible. The ERT encourages Latvia to address this issue more thoroughly in its next annual submission.

35. A few less important discrepancies were identified in the reference approach. A carbon content of 25.1 t C/TJ is used for other bituminous coal in the reference approach, although the reported country-specific value in the sectoral approach is 25.7 t C/TJ. Similarly, a carbon content of 28.3 t C/TJ is used for peat in the reference approach, whereas the country-specific value in the sectoral approach is 28.9 t C/TJ. In the period 1990–2001, production of peat briquettes was considered in the reference approach even though it was not a primary fuel. The ERT recommends that Latvia use consistent carbon content values for the sectoral and reference approaches.

36. The fraction of carbon stored for lubricants used in the estimates equals 1, whereas the IPCC default value is 0.33. As fractions of carbon stored used by Latvia equal 1 for all feedstocks, the reference approach used by Latvia does not correspond to the approach recommended in the Revised 1996 IPCC Guidelines. The ERT recommends that Latvia justify its use of this value rather than the approach recommended in the Revised 1996 IPCC Guidelines in its future annual submissions.

2. International bunker fuels

37. The Latvian energy balance only reports fuel consumption for the international component of aviation and navigation. These figures are consistent with international energy statistics. Navigation (both international and domestic) is a more important source of emissions in Latvia than aviation, which is dominated by the international component. The NIR indicates that Latvia has recently conducted a study on fuel consumption in domestic aviation and navigation. However, there is not enough information in the NIR to assess whether or not the approach followed by Latvia is in line with the IPCC good practice guidance. The ERT commends Latvia for undertaking this study and encourages the Party to address this issue more thoroughly in the NIR in its next annual submission. In addition, the explanation given in the NIR of the splitting of diesel fuel consumption between international and national marine navigation is not fully transparent. The ERT strongly recommends that Latvia explain why domestic diesel oil consumption is not included in domestic or international energy statistics and how the study on domestic navigation is streamlined with the energy statistics. The ERT recommends that Latvia estimate and report emissions from domestic diesel oil consumption.

3. Feedstocks and non-energy use of fuels

38. Latvia has reported the non-energy use of bitumen, lubricants, paraffin wax, white spirit and coke. None are thought to produce emissions in the energy sector. In the chapter on energy, the NIR does not explain if and in which sector these fuels may be converted to CO_2. For example, part of used lubricants may be burned in boilers or in the waste sector. The industrial processes chapter of the NIR indicates that coke is used as a reductant in iron and steel production. However, the corresponding formula indicating how Latvia estimates CO_2 emissions from steel production does not contain an input for coke. The ERT recommends that Latvia address this issue in its next annual submission.

C. Key categories

1. Stationary combustion: all fuels – CO_2

39. The NIR indicates the use of country-specific CO_2 EFs for all fossil fuels (table 3.3.2); these are taken from a study undertaken in 2004 and are included in annex 4 of the NIR. However, only the country-specific carbon contents for coal (probably other bituminous coal), coke and shale oil are different from the IPCC default values. In all other cases, the carbon contents reported in the NIR are the same (or practically the same) as the IPCC default values presented in the Revised 1996 IPCC Guidelines. To improve transparency in the inventory, the ERT recommends that Latvia specify which EFs were actually measured in the 2004 study and recommends that it provide more information on sampling, and the analytical methods used, in the NIR of its next annual submission.

2. Road transportation: liquid fuels – CO_2

40. Emissions from road transportation, including CO_2 emissions, were calculated using the COPERT III model, which is based on transport statistics, such as mileage data for the national vehicle fleet. This approach is suitable for emissions of non-CO_2 gases, but for CO_2 is good practice to calculate emissions from AD based on energy statistics (involving, inter alia, amounts of gasoline sold and diesel fuels sold) or for a combination of energy and transport statistics. The ERT recommends that Latvia explain in more detail the approach used to calculate CO_2 emissions, and which QA/QC measures were applied, in the NIR of its next annual submission.

41. As a follow-up to the previous review, Latvia recalculated CO_2 emissions by substituting the CO_2 EF from COPERT (72 t/TJ) with the EF presented in the table 3.3.2 of the NIR (68.6 t/TJ). Given the information provided in paragraph 39 above, the ERT recommends that Latvia demonstrate the source of this EF in the NIR in its next annual submission.

D. Non-key categories

Road transportation: liquid fuels – N_2O

42. The N_2O implied emission factor (IEF) reported in the CRF tables for gasoline increased by 750.0 per cent (from 0.8 to 6.8 kg/TJ) from 1990 to 2006 and the N_2O IEF for diesel oil fluctuates considerably. The ERT encourages Latvia to explain these changes in the next NIR of its next annual submission in order to improve transparency in this category.

III. Industrial processes and solvent and other product use

A. Sector overview

43. In 2006, emissions from the industrial processes sector amounted to 249.94 Gg CO_2 eq, or 2.2 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 64.03 Gg CO_2 eq, or 0.6 per cent of total GHG emissions. Between 1990 and 2006, emissions from the industrial processes sector decreased by 51.1 per cent and emissions from the solvent and other product use sector increased by 15.0 per cent. Between 2005 and 2006, emissions from industrial processes increased by 8.4 per cent and emissions from solvent and other product use increased by 18.1 per cent. The largest decreases in emissions from the industrial processes sector took place, for all subsectors, between 1990 and 1993, as a consequence of the economic crisis and the decline of economic activities in all sectors. In particular, emissions from mineral products declined by 92.1 per cent, and those from metal production declined by 45.4 per cent. Since then, emissions have shown a constant increasing trend. Emissions from solvent and other product use have followed the same trend.

44. In 2006, 77.9 per cent of GHG emissions within the industrial processes sector were from mineral products (2.A), 17.0 per cent were from consumption of halocarbons and SF_6 (2.F), and 5.1 per cent were from metal production (2.C).

45. Latvia estimates emissions in accordance with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. Emissions from the industrial processes sector are estimated according to tier 2 approaches, using both default and plant-specific information for raw materials, production technologies and EFs.

46. Latvia reports CO_2 emissions from food and drink production (2.D.2) as "NE"; non-methane volatile organic compounds (NMVOCs) emissions from this category are reported. The ERT recommends that Latvia verify whether the notation key "NE" should be changed to not applicable ("NA") or not occurring ("NO").

47. As noted in the previous review report, Latvia predominantly uses EFs derived from the information submitted by industrial facilities under the EU ETS, which are based on plant-specific data, where available, or alternatively Latvia uses default values provided by European Commission decision 2004/156/EC establishing guidelines for the monitoring and reporting of GHG emissions. Plant-specific AD have been made available through the participation of companies in the EU ETS. However, production data since 2005 are reported as confidential ("C") for several categories (cement production, lime production, soda ash use, glass production, production of bricks and tiles). This reduces transparency and does not allow the ERT to assess the consistency of the time series. The ERT recommends that Latvia consider how it can ensure transparency or that the Party disclose these confidential data during the review.

48. The inventory is generally complete in terms of coverage of years, categories and gases. Actual emissions of HFCs and SF_6 are reported for years since 1995, but no emissions of PFCs are reported. Potential emissions of HFCs and SF_6 were only calculated for 2004–2006 because statistical

data on the import and export of these substances were not available for other years. The ERT recommends that Latvia report emission estimates and trends for these gases from 1990 onwards, in accordance with the UNFCCC reporting guidelines.

49. A tier 1 uncertainty analysis has been performed, the results of which are presented for each source category. A tier 2 uncertainty assessment has been applied to cement production.

50. The NIR provides a description of the QA/QC and verification procedures used in the preparation of the GHG inventory. The use of category-specific tier 2 QC procedures is not reported for any category in the industrial processes sector. The ERT recommends that, in order to improve the consistency of the time series, Latvia implement tier 1 QC checks, and recommends that the Party develop category-specific tier 2 QC procedures for key source categories. In particular, the ERT recommends that Latvia focus on production processes included under the EU ETS, and that it review publicly available information and information flagged as confidential, with a view to ensuring consistency in AD and in EFs.

51. Latvia provided recalculated estimates (table 8 (a)) for several categories in the industrial processes sector, as well as explanatory information for the period 1990–2005. In general, recalculations were made according to the recommendations of the previous review report, and were prepared in accordance with the IPCC good practice guidance.

52. The ERT noted that the transparency of the section on industrial processes in the NIR could be improved by combining the information on each of the subcategories into a single section. To improve the user-friendliness and readability of the text, the ERT recommends that Latvia consider reformatting this information, following more closely the reporting structure outlined in the UNFCCC reporting guidelines.

53. Almost all methods and EFs used in the 2008 inventory submission were also used in the 2007 inventory submission. After the review of the initial inventory report, that is after the submission of the 2007 inventory, Latvia revised emission estimates for cement production in its 2008 submission, using the IPCC tier 2 method, based on plant-specific conditions and developed a plant-specific CO_2 estimation methodology for iron and steel production. For the 2008 submission, more complete information on the consumption of fluorinated gases was available, which was obtained from questionnaires compiled by users of, and traders in these substances under "regulation (EC) No. 8421 2006 of the European Parliament and of the council on certain fluorinated GHGs". However, this had a relatively low impact on the relevant estimates.

B. Key categories

Cement production – CO_2

54. Following recommendations in the previous review report, Latvia now estimates CO_2 emissions from cement production using a tier 2 approach with plant-specific EFs. During the review, Latvia provided the ERT with information on how the country-specific clinker/cement ratio is estimated. The ERT commends Latvia on this improvement and recommends that the Party include a summary of the method used to estimate the country-specific clinker/cement ratio in the NIR of its next annual submission.

C. Non-key categories

1. Lime production – CO_2

55. Emissions of CO_2 from lime production are estimated by Latvia using a tier 2 approach and a country-specific EF (0.3 t CO_2/t dolomite). As this value is the lowest of reporting Parties for the period 1990–1998, the ERT recommends that Latvia provide evidence in the NIR on the carbon content in the

final product (such as dolomitic quicklime). The ERT encourages Latvia to carefully monitor the composition of the raw materials (dolomite) and final products and to periodically update EF calculations.

2. Other (2.A.7) – CO_2

56. Latvia used different methodologies to estimate CO_2 emissions from the five plants producing bricks in the country, with different AD and EFs from different sources (country-specific calculations, monitoring and reporting guidelines under the EU ETS, and direct communications from plants under the EU ETS). Latvia reported these AD as confidential ("C") in its CRF. The ERT was not able to assess the consistency of the time series; for instance, overall emissions from this category are about 33 per cent higher in 2005 than they are in 2004. In order to improve the consistency of the time series, the ERT recommends that Latvia review publicly available information and information flagged as confidential, with a view to ensuring consistency in AD and in EFs. The ERT also recommends that Latvia address the issue of inconsistency in the method of estimating CO_2 emissions used among the plants.

3. Consumption of halocarbons and SF_6 – HFCs

57. The IPCC tier 2 (bottom-up) approach is used to estimate HFC emissions from refrigeration and air conditioning equipment. The explanation of the method used for this category in the NIR is not completely transparent, and Latvia is encouraged to provide a more detailed description of the methodology in its next annual submission. Latvia is also encouraged to take into consideration possible changes in EFs resulting from the implementation of control policies in order to improve the accuracy of its inventory and record the effects of future domestic policies.

58. Latvia reports HFC emissions from foam blowing as "NO". However, HFCs may be released from foam blowing applications (e.g. insulating, cushioning and packaging) if HFCs are used as replacements for chlorofluorocarbons and hydrochlorofluorocarbons. The Party is encouraged to consider producing an estimate based on country-specific data or on data reported by neighbouring countries.

IV. Agriculture

A. Sector overview

59. In 2006, emissions from the agriculture sector amounted to 1,998.83 Gg CO_2 eq, or 17.2 per cent of total GHG emissions. Emissions from the sector decreased by 66.3 per cent between 1990 and 2006. The key driver for the fall in emissions was the economic crisis between 1991 and 1995, when animal populations declined and the use of nitrogen (N) fertilizers decreased considerably. Within the sector, 59.7 per cent of emissions were from agricultural soils, 28.3 per cent were from enteric fermentation, and 12.0 per cent were from manure management. Most of the emissions (67.6 per cent of the sectoral total) were N_2O; the other 32.4 per cent were CH_4.

60. The categories poultry (enteric fermentation) and the field burning of agricultural residues are reported as "NE". In the course of the review, Latvia indicated to the ERT that CH_4 emissions from poultry were not estimated because the corresponding EF is not available in the Revised 1996 IPCC Guidelines or the IPCC good practice guidance. Latvia also indicated that according to the Ministry of Agriculture, activities emissions from the field burning of agricultural residues (cereals (except rice), pulses (except, tubers and roots)), and other (4.F.5) are negligible, and consequently Latvia has decided to report this category as "NA", "NE" and "NO" instead of just "NE". The ERT suggests that Latvia identify the CH_4 EF by using alternative sources of information (the latest scientific literature and data from other Parties) and that the Party assess the applicability of these potential data. The ERT also suggests that Latvia provide evidence to confirm that the field burning of agricultural residues has been negligible for the whole time series, but particularly for the most recent years. The ERT recommends that Latvia include the supporting information for the use of notation keys in its next annual submission.

61. The NIR is generally transparent although there are a few ambiguities, such as information on the burning of agricultural residues.

62. Latvia has recalculated N_2O emissions from manure management and agricultural soils based on recommendations from the 2006 review. For the 2005 inventory, these recalculations implied an overall increase for the agriculture sector of 59.83 Gg CO_2 eq (equivalent to 3.1 per cent). The basis for recalculations is reported in CRF table 8 (b) and is well explained in the NIR.

63. Since the 2007 submission, Latvia has made some improvements in the agriculture sector estimates by using some country-specific EFs to calculate both direct and indirect N_2O emissions from agricultural soils instead of using default EFs.

64. Latvia plans to improve the methodology for calculating CH_4 from enteric fermentation by developing detailed methodology and national CH_4 EFs. Latvia also plans to improve data for assessments of uncertainties, which are currently incomplete.

B. Key categories

1. Enteric fermentation – CH_4

65. Latvia used a tier 1 methodology and IPCC default factors to calculate CH_4 emissions from enteric fermentation, including from dairy and non-dairy cattle, which are important animal species in Latvia. However, because enteric fermentation is a key category, Latvia is encouraged to develop and use country-specific EFs, in order to pursue its planned improvements and to prioritize the development of a tier 2 methodology, especially for cattle. AD are obtained from national statistics and are appropriate. During the 2006 review, the sharp fall in the number of animals from 1990 to 2006 (numbers of dairy cattle decreased from 535,000 to 182,000, non-dairy cattle from 904,000 to 105,000 and sheep from 165,000 to 41,000) was questioned, but Latvia explained that the decline was genuine and was due to the economic crisis during the period 1991–1995. The AD have been verified and are comparable with data from the Food and Agriculture Organization of the United Nations. The Party uses well disaggregated data of populations for different animal species and applies to them enhanced characterization in line with the IPCC good practice guidance. The data have been applied across all appropriate categories, which is in line with the IPCC good guidance practice. The ERT commends Latvia for this improvement.

2. Manure management – N_2O

66. The IPCC tier 1 methodology and a mixture of default and country-specific EFs were used to evaluate N_2O emissions from manure management. The N excretion value per animal and the distribution of manure management systems were national values. The ERT commends Latvia for this improvement and encourages the Party to include the development of a full set of national EFs and higher-tier methods in its improvements plan. The previous review report identified that the N excretion rate of 7 kg N/head/year for swine for the period 1990–2003 was below the IPCC default value (20 kg N/head/year). In its 2008 submission, Latvia revised the value to 10 kg N/head/year for all years and made recalculations. The ERT recommends that Latvia develop a country-specific N excretion rate.

3. Manure management – CH_4

67. The IPCC tier 1 methodology and default EFs were used to calculate CH_4 emissions from manure management. As this is a key category, the ERT recommends that Latvia use tier 2 methodology and country-specific EFs in its next annual submission.

4. Direct soil emissions – N_2O

68. The methodology used to calculate direct N_2O emissions from agricultural soils was the IPCC tier 1a. A mix of default and country-specific EFs was used. As this is a key category, the Party is

encouraged to use tier 2 methodologies and country-specific EFs. The previous review report recommended that Latvia re-assess the area of cultivated organic soils (histosols). In its 2008 submission, the Party used the correct data from the CSB on the area of histosols and has made recalculations. The ERT commends Latvia for this correction.

5. Indirect emissions – N_2O

69. The methodology used to calculate indirect N_2O emissions from agricultural soils was the IPCC tier 1a. A mix of default and country-specific EFs was used. Latvia is encouraged to use only country-specific EFs in its future annual submissions.

V. Land use, land-use change and forestry

A. Sector overview

70. In 2006, the LULUCF sector in Latvia was a net sink of 17,815.36 Gg CO_2 eq, offsetting 2.4 per cent of total GHG emissions. GHG net removals by sinks in the LULUCF sector decreased by 13.9 per cent from 1990 to 2006. The key driver for this decrease is the decrease in net removals from forest land remaining forest land (increase in carbon loss, which is supported by the increase in harvested volume).

71. In 2006, within the LULUCF sector, 16,028.15 Gg CO_2 eq and 1,547.70 Gg CO_2 eq of net removals were from forest land remaining forest land and land converted to forest lands, respectively, and 303.55 Gg CO_2 eq of net emissions were from grassland remaining grassland.

72. The CRF tables for 2006 include estimates of CO_2 emissions/removals for the categories forest land remaining forest land, land converted to forest land, cropland remaining cropland and grassland remaining grassland, and CO_2 emissions from agricultural lime application, as well as estimates of CO_2, CH_4 and N_2O emissions from biomass burning for forest land remaining forest land and grassland remaining grassland. The following categories were reported as "NE": wetlands, settlements, other land, land converted to cropland and land converted to grassland. The ERT recommends that Latvia improve the completeness of the inventory by reporting on these land-use categories in its future annual submissions. No major differences were found between the 2007 and 2008 submissions.

73. Carbon stock changes in living biomass, deadwood and cultivated organic soil were estimated under the reported categories. Tier 1 and tier 2 methods and default factors from the IPCC good practice guidance for LULUCF were used. The IPCC approach 1 (i.e. basic land-use data presented in the IPCC good practice guidance for LULUCF) was applied to represent land areas. There is no significant difference between the 2007 and 2008 submissions. The ERT noted that the higher-tier method for the National Forest Inventory for the LULUCF sector was prepared after the 2007 submission. It is hoped that this will provide reliable AD, which Latvia plans to use in its next annual submission. The ERT recommends that Latvia, in its next annual submission, provide more documentation on the identification of land areas and develop land-use change matrices using this new method.

74. A GHG inventory quality improvement plan was prepared after the 2007 submission according to the QA/QC programme established by LEGMA and recommendations from the previous review report, but it was not fully implemented. The ERT recommends that Latvia improve QA/QC procedures and their implementation for the LULUCF sector in its next annual submission.

75. Uncertainty for the category forest land remaining forest land was assessed after the 2007 submission. The ERT recommends that Latvia include the uncertainty analyses for all other LULUCF categories in its next annual submission.

76. The ERT noted with concern that Latvia did not report forest conversion in the LULUCF sector under the Convention. This could create major problems with reporting in 2010 of mandatory activities

under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT recommends that Latvia report a complete inventory for the LULUCF sector under the Convention, and address effectively the issues relating to the national system being able to cover activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in its next annual submission.

B. Key categories

1. Forest land remaining forest land – CO_2

77. Forest land remaining forest land is a dominant category in the LULUCF sector (accounting for 90.0 per cent of net removals from this sector). Latvia used the IPCC tier 1 and tier 2 methods and default factors and parameters from the IPCC good practice guidance for LULUCF to estimate changes in carbon stocks in living biomass and dead organic matter. The ERT recommends that Latvia collect data and estimate carbon stock changes in soil organic matter and mineral soils in its future annual submissions.

2. Land converted to forest land – CO_2

78. Latvia used the IPCC tier 1 method and default factors and parameters from the IPCC good practice guidance for LULUCF to estimate carbon stock changes in living biomass. Carbon stock changes in dead organic matter and soils are reported as "NE". The ERT recommends that Latvia use country-specific parameters to estimate the carbon stock changes in living biomass and report on carbon stock changes in soil organic matter and mineral soils. Latvia reported CO_2 removals from cropland converted to forest land in the category grassland converted to forest land, and did not estimate wetland converted to forest land, settlements converted to forest land, and other land converted to forest land. The ERT recommends that Latvia report CO_2 removals from these land-use conversions in its next annual submission.

3. Grassland remaining grassland – CO_2

79. Latvia used the IPCC tier 1 method for estimating carbon stock changes in living biomass on bushes and abandoned managed land. Carbon stock changes in mineral soils were not estimated. The NIR does not contain documentation of the AD and the annual growth rate for CO_2 removals from abandoned managed land and bushes. The ERT recommends that Latvia estimate carbon stock changes in mineral soils and improve the documentation in the NIR of its next annual submission.

80. Latvia reported CO_2 emissions from cultivated organic soils using the IPCC tier 1 method. In CRF table 5.C the AD were reported as included elsewhere ("IE"). However, it is unclear where these emissions are included. The AD provided by the Party during the inventory review do not match the reported CO_2 emissions. The ERT recommends that Latvia provide transparent documentation of these estimates in the NIR of its next annual submission.

C. Non-key categories

1. Cropland remaining cropland – CO_2

81. Latvia used the IPCC tier 1 method for estimating carbon stock changes in living biomass in orchards and CO_2 emissions from cultivated organic soil. However, in CRF table 5.B the area of cultivated organic soil was reported as "IE". It is unclear where these emissions are included. The AD provided by the Party during the inventory review do not match the reported CO_2 emissions. The ERT recommends that Latvia provide transparent documentation of these estimates in the NIR of its next annual submission.

2. Biomass burning – CH_4 and N_2O

82. Emissions of CH_4 and N_2O from on-site biomass burning were reported but the emissions from forest fires were reported as "NE". The ERT recommends that Latvia include the estimates of CH_4 and N_2O emissions from forest fires in its future annual submissions.

83. The NIR indicates that the value of the biomass available for controlled burning of grassland (4.1 t dry matter per ha) was chosen from the IPCC good practice guidance for LULUCF. However, the IPCC good practice guidance for LULUCF does not contain such data. The ERT recommends that the Party provide the correct data in its next annual submission.

VI. Waste

A. Sector overview

84. In 2006, emissions from the waste sector accounted for 764.42 Gg CO_2 eq, or 6.6 per cent of total GHG emissions. Since 1990, emissions have increased by 12.0 per cent. Solid waste disposal on land was the main source of emissions (CH_4) in the waste sector, and was identified as a key category in the both level and trend assessment.

85. Latvia reported the following categories as "NE": CH_4 from industrial wastewater – sludge; N_2O from industrial wastewater; CO_2 and N_2O from waste incineration – biogenic; and CH_4 and N_2O from waste incineration – non-biogenic. During the review, Latvia informed the ERT that it hopes to estimate and report on N_2O emissions from industrial wastewater in its next annual submission, and that it intends to report the other categories as "NA" in its next submission, mainly due to the lack of EFs in the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the core inventory of air emissions (CORINAIR) methodology. The ERT welcomes the decision to estimate N_2O emissions from industrial wastewater and encourages Latvia to provide detailed background information on this in the NIR to improve transparency. For those categories that would be reported as "NA" due to the lack of EFs, the ERT suggests that Latvia make efforts to look for EFs in other sources of information (the latest scientific literature and data from other Parties) and that the Party assess the applicability of this potential data to national circumstances, or that the Party use the notation key "NE" instead of "NA". The ERT recommends that Latvia include the rationale for the use of the corresponding notation keys in the NIR and, if applicable, in CRF table 9 (a) of its next annual submission.

86. The information provided by Latvia in the NIR is in general transparent, and most methodologies, parameters and data sources are provided. However, the structure of the waste sector in the NIR is not in accordance with outline suggested in the UNFCCC reporting guidelines. Information on category-specific QA/QC, verification and recalculation of each category was not included. The ERT encourages Latvia to revise the structure of the NIR for the waste sector and to include all of this information.

87. Latvia implemented QA/QC procedures in accordance with the IPCC good practice guidance for the first time, as a response to the recommendations of the previous review report. The ERT encourages Latvia to continue to implement QA/QC procedures, and to describe the content of QA/QC procedures in the chapter on waste in the NIR.

88. In the 2008 submission, emissions from the waste sector are not recalculated. In short, any methodologies, AD and EFs used in calculations have not changed. The content of the NIR has changed very little. The only change was that figure 8.5 (recovered CH_4 from waste landfills (Gg)) had been inserted.

B. Key categories

1. Solid waste disposal on land – CH_4

89. Latvia has estimated the amounts of waste disposed in landfills for the period 1970–1989 by extrapolation, using the correlation between waste production, gross domestic product and population. During the in-country review of the 2006 inventory submission, Latvia provided the ERT with the spreadsheets used for the extrapolation and the ERT concluded that the method was acceptable. During the review, Latvia provided the ERT with a detailed explanation of the extrapolation method. To improve transparency, the ERT encourages Latvia to provide this explanation in future annual submissions.

90. Latvia used the first order decay (FOD) method (tier 2) and default parameters, such as CH_4 correction factor, fraction of degradable organic carbon, fraction of CH_4 landfill gas (F) and k value (CH_4 generation rate constant), provided by the Revised 1996 IPCC Guidelines and the IPCC good practice guidance to estimate CH_4 emissions from managed waste disposal on land. The ERT encourages Latvia to develop country-specific parameters in future annual submissions, as previously recommended. During the review, Latvia informed the ERT that there is lack of expertise in the Party to undertake the development of these country-specific parameters.

91. Latvia used a value of 0.18 for degradable organic carbon (DOC) for the FOD method. In the NIR, Latvia explained that all EFs used were default factors from the Revised 1996 IPCC Guidelines, but there is no explanation as to why the value 0.18 was selected. During the review, Latvia informed the ERT that the DOC value was selected as a result of expert advice given at the expert meeting on the estimation of CH_4 emissions from solid waste disposal sites using the FOD method organized by the European Union Climate Change Committee and held in 2006. The ERT recommends that Latvia provide the rationale for the application of the value in its next annual submission in order to improve transparency.

2. Wastewater handling – CH_4

92. Latvia uses the check method provided by the IPCC good practice guidance to estimate CH_4 emissions from this key category. Latvia explained during the initial review in 2007 that there were no data available to use a more detailed method. The ERT reiterates the recommendation that Latvia consider the application of higher-tier methodology in its future submissions, as was indicated in the initial review report.

93. The total organic product of industrial wastewater in 2006 was 10.46 Gg degradable organic component (DC) per year, a decrease of 44.6 per cent compared to 2005 (18.86 Gg DC/year). The NIR contains no information on the trends. The ERT recommends that Latvia provide explanations on the trend of the organic product of industrial wastewater in its next annual submission.

94. Latvia estimates CH_4 emissions from industrial wastewater by using the amount of food production as a parameter in the equation indicated in the NIR for the estimation of CH_4 emissions from industrial wastewater. Use of this method means that only emissions from the food production industry are taken into account. Latvia indicates that other industries do not produce significant amounts of organic wastewater, which is the source of the CH_4. The ERT encourages Latvia to investigate and identify other industries that may produce large volumes of organic wastewater, such as the pulp and paper, and organic chemicals industry, and to provide the information and estimates in its next annual submission.

C. Non-key categories

1. Wastewater handling – N_2O

95. The value of per capita protein consumption of 27.375 kg/year used by Latvia to estimate N_2O emissions from human sewage is taken from local data. Latvia is encouraged to provide more detailed information on this value to improve transparency in the NIR of its next annual submission.

2. Waste incineration – CO_2

96. According to the NIR, more waste is incinerated with energy recovery than without energy recovery. CO_2 emissions from waste incinerated with energy recovery seem to be included in the energy sector but the NIR does not contain a detailed description. The ERT recommends that Latvia clarify in the NIR of its next annual submission whether CO_2 emissions from waste incinerated with energy recovery are reported in the energy sector in accordance with the Revised 1996 IPCC Guidelines. During the review, Latvia informed the ERT that emissions from used waste oils and used tires are estimated and reported under the energy sector.

97. The amount of biogenic waste incinerated from 1995 to 2006 is reported in CRF table 6.C, but emissions from biogenic waste incineration are reported as "NE". The ERT encourages Latvia to estimate these emissions and to report them in its next annual submission. Only emissions of nitrous oxide (NO_X), carbon monoxide (CO), NMVOCs and sulphur oxide (SO_X) are estimated from cremations using the CORINAIR methodology. The corresponding GHG emissions are not estimated because of a lack of EFs.

3. Other – CH_4 and N_2O

98. Latvia has estimated CH_4 and N_2O emissions from waste composting from 2003 to 2006 by using the default methodology and EFs provided in recognized international literature that has been recently published. The ERT welcomes Latvia's plans to continue to report emissions from this category and to make efforts to improve the quality of data and the result of calculations.

VII. Other issues

1. Changes to the national system

99. The Party reported on changes to its national system in its 2008 submission. The changes include improvements made to the QA/QC system since the 2007 submission, which involved providing a general overview of the QA/QC system and including a more elaborated quality improvement plan. The ERT considers these changes to be in accordance with the requirements of national systems as defined in decision 19/CMP.1. However, the ERT finds that the national system should be in full accordance with the requirements of decision 19/CMP.1 after Latvia has implemented all of the proposed changes to the QA/QC system. Latvia explained during the initial review in 2007 that all issues regarding QA/QC activities would be resolved under new regulations, which were due to enter into force in June 2008. However, according to the NIR submitted in 2008, this new legislation – which is expected to prescribe detailed functions (roles) and responsibilities for institutions involved in the preparation of the national inventory, including the designation of an institution controlling the QA/QC procedures for every institution – is still under development. The ERT recommends that Latvia continue to make efforts to improve its QA/QC plan, elaborate on the corresponding institutional arrangements following the implementation of the new legislation, and report on these improvements in its next annual submission.

2. Changes to the national registry

100. Latvia reported on changes to its national registry in its 2008 submission. The changes include updates and testing procedures carried out on the national registry since the 2007 submission. The ERT

considers these changes to be in accordance with the requirements of national registries as defined in decision 13/CMP.1.

3. Commitment period reserve

101. Latvia has not reported its commitment period reserve in its 2008 submission. In response to questions raised by the ERT during the review Latvia reported its commitment period reserve to be 58,107,231 t CO_2 eq based on the total GHG emissions in its most recently reviewed inventory (11,621.45 Gg CO_2 eq). The ERT agrees with this figure. The ERT recommends that Party include information on its commitment period reserve in its next annual submission.

VIII. Conclusions and recommendations

102. In terms of completeness, consistency and comparability, the 2008 submission of Latvia is broadly in conformity with the UNFCCC reporting guidelines, the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. The ERT finds that transparency of the NIR could be enhanced by adhering more closely to the reporting structure outlined in the UNFCCC reporting guidelines, and by describing in more detail in the NIR the data and methods used to calculate GHG emissions.

103. Latvia has made considerable improvements in reporting its QA/QC system in the 2008 submission, since the 2007 submission. Additional information on QA/QC procedures was provided in response to questions posed during the review. The ERT encourages Latvia to continue these efforts in future annual submissions, in particular by describing the institutional arrangements for ensuring the quality of all data used in inventory preparation, providing information on general and source-specific QA/QC procedures (including a copy of the QC form described in the NIR), illustrating the incorporation of QA/QC into inventory preparation, and reporting on procedures for verification and any issues associated with confidential data.

104. In general terms, completeness, consistency and comparability of the 2008 submission is broadly in conformity with the UNFCCC reporting guidelines. However, transparency could be enhanced by a more complete description in the NIR of the data and methods used to calculate GHG emissions.

105. The ERT has identified some areas for improvement and recommends that Latvia:

(a) Review additional potential data sources, and develop and implement a data collection plan aimed at generating emissions estimates for all non-estimated categories;

(b) Continue the improvements in reporting the QA/QC system by providing general and category-specific QA/QC procedures, especially for all elements of QA/QC plans, as described in the IPCC good practice guidance;

(c) Designate an institution responsible for the coordination of overall QA/QC activities once the legislation that is presently under development is sanctioned and implemented;

(d) Complement its key category analysis with a qualitative approach;

(e) Document transparently in the NIR how plant-specific data are incorporated to estimate emissions, in a way that demonstrates the completeness, accuracy and time-series consistency for each category;

(f) Improve the discussion about the rationale for sectoral recalculations, document these recalculations more transparently in both the NIR and the CRF, and report the overall impact of recalculations on national emissions;

(g) Elaborate the discussion of uncertainties in the NIR for all categories, particularly key categories; and transparently document the sources of uncertainty in the emissions estimates and the references for the AD and EF uncertainty values selected. Expand the efforts made to improve the uncertainty analysis by conducting a quantitative uncertainty analysis for the remaining land-use categories and include the uncertainty analysis for LULUCF in the appropriate annex of the NIR;

(h) Ensure that the NIR sufficiently describes the national system, including the roles, responsibilities and minimum capacities of all collaborating entities, as well as the availability of formal agreements, for coordination between the different bodies that collaborate in inventory preparation;

(i) Report a complete inventory for the LULUCF sector under the Convention and effectively address the issues relating to the national system being able to cover activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in its next annual submission;

(j) Report annually in the NIR the calculation of the commitment period reserve.

IX. Questions of implementation

106. No questions of implementation were identified by the ERT.

Annex

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

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B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Agita Gancone (Latvian Environmental, Geological and Meteorological Agency), including additional material on the methodology and assumptions used.

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