



FCCC/WEB/IRI/2004/LVA

10 March 2005

LATVIA

REPORT OF THE INDIVIDUAL REVIEW OF THE GREENHOUSE GAS INVENTORY SUBMITTED IN THE YEAR 2004¹

I. OVERVIEW

A. Introduction

1. This report covers the centralized review of the 2004 greenhouse gas (GHG) inventory submission of Latvia, coordinated by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, in accordance with decision 19/CP.8 of the Conference of the Parties. The review took place from 18 to 22 October 2004 in Bonn, Germany, and was conducted by the following team of nominated experts from the roster of experts: Generalists – Mr. Newton Paciornik (Brazil) and Mr. Bernd Gugele (European Community), Energy – Ms. Karen Treanton (International Energy Agency, IEA), Ms. Maria Lidén (Sweden) and Ms. Tetyana Gordiyenko (Ukraine), Industrial Processes – Ms. Ionela Draghici (Romania) and Mr. Teemu Oinonen (Finland), Agriculture – Mr. Len Brown (New Zealand) and Ms. Lilian Portillo (Paraguay), Land-use Change and Forestry (LUCF) – Mr. Mikhail L. Gytarsky (Russian Federation) and Ms. Kathryn A. Bickel (United States), Waste – Mr. Oscar Paz Rada (Bolivia) and Mr. Faouzi Ahmed Senhaji (Morocco). Mr. Mikhail L. Gytarsky and Mr. Newton Paciornik were the lead reviewers. The review was coordinated by Mr. Javier Hanna (UNFCCC secretariat).

2. In accordance with the “UNFCCC guidelines for the technical review of greenhouse gas inventories from Annex I Parties”, a draft version of this report was communicated to the Government of Latvia for comment prior to its publication.

B. Inventory submission and other sources of information

3. In its 2004 submission, Latvia has submitted a complete set of common reporting format (CRF) tables for the years 1990–2002 and a national inventory report (NIR). Where needed the expert review team (ERT) also used the previous year’s submission, additional information provided during the review and other information. The full list of materials used during the review is provided in annex 1 to this report.

C. Emission profiles and trends

4. In the year 2002, the most important GHG in Latvia was carbon dioxide (CO₂), contributing 68.9 per cent to total² national GHG emissions expressed in CO₂ equivalent, followed by methane (CH₄) – 20.4 per cent, and nitrous oxide (N₂O) – 10.7 per cent. Sulphur hexafluoride (SF₆) emissions are reported as virtually non-existent, and emissions of perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs) have not been estimated. The Energy sector accounted for 71.4 per cent of total GHG emissions,

¹ In the symbol for this document, 2004 refers to the year in which the inventory was submitted, and not to the year of publication.

² In this report, the term total emissions refers to the aggregated national GHG emissions expressed in terms of CO₂ equivalent excluding LUCF, unless otherwise specified.

followed by Agriculture (15.2 per cent), Waste (10.7 per cent), Industrial Processes (1.7 per cent) and Solvent and Other Product Use (1.0 per cent). In 2002, total GHG emissions amounted to 10,640.73 Gg CO₂ equivalent and were 63.1 per cent below 1990 levels. Total net GHG emissions amounted to 2,427.22 Gg CO₂ equivalent and decreased by 76.2 per cent from 1990 to 2002.

D. Key sources

5. Latvia has reported a key source tier 1 analysis, both level and trend assessment, as part of its 2004 submission. The key source analyses performed by the Party and the secretariat³ produced similar results, with some differences. The total of emissions used in the key source analysis by the Party was lower than the total emissions reported in the CRF, resulting in higher shares for the categories included in the analysis. Moreover, the threshold adopted was lower than 95 per cent. For these reasons Latvia identified fewer key sources than it otherwise would, including CO₂ emissions from Cement Production and CH₄ in Manure Management.

E. Main findings

6. The NIR submitted by Latvia is broadly in conformity with the UNFCCC reporting guidelines. The methodologies used for estimating GHG emissions are generally consistent with the *Revised 1996 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC Guidelines) and the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance).

7. Many improvements have been made since the last (2003) submission and review, including the presentation of the NIR according to the outline presented in the UNFCCC reporting guidelines and the inclusion of a key source analysis. However, uncertainty estimation and quality assurance/quality control (QA/QC) procedures are still not included in the NIR.

F. Cross-cutting topics

Completeness

8. Latvia has provided inventory data for the years 1990–2002 and included all the required tables. Notation keys are used throughout the tables but are missing from some sectoral background data tables, and sometimes there are inconsistencies between tables. Some sectoral CRF tables have not been completed (e.g., table 4.C for 2002).

9. Estimates of emissions for HFCs and PFCs are not provided. In CRF table 9, Latvia reports a set of sources which are not included in the inventory, such as Fugitive Emissions from Solid Fuel Transformation, Field Burning of Agricultural Residues, Cultivation of Mineral Soils and N₂O from Industrial Waste Water. The ERT identified that emissions from Chemical Industry (reported as “not occurring” (“NO”)) and N₂O from Waste Incineration (reported as “not estimated” (“NE”)) are also missing, and the Party should investigate whether emissions from these sources do in fact occur.

10. The level of disaggregation in the Energy sector (Manufacturing Industries and Construction) is not always in line with the IPCC Guidelines, especially for the earlier years.

³ The secretariat had identified, for each individual Party, those source categories which are key sources in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC good practice guidance. Key sources according to the tier 1 trend assessment were also identified for those Parties providing a full CRF for the year 1990. Where the Party has performed a key source analysis, the key sources presented in this report follow the Party’s analysis. However, they are presented at the level of aggregation corresponding to a tier 1 key source assessment conducted by the secretariat.

Transparency

11. Transparency has improved compared with the previous submission, and more information is included regarding data and methods. However, calculation methodologies, activity data (AD) and emission factors (EFs) should be better documented in the NIR, particularly for country-specific data, as in the Agriculture and LUCF sectors.

Recalculations and time-series consistency

12. The ERT noted that the Party has carried out recalculations of the time series 1990–2001. The major changes include: the transferring of off-road mobile sources from the Energy Industries, Manufacturing Industries and Construction and Other Sectors source categories to the Transport category (resulting in an increase of 28.5 per cent in the estimates of CO₂ emissions for the Transport category for 1990); and a change in the value of the fraction of degradable organic carbon dissimilated (DOC_F) in the category Solid Waste Disposal on Land (a decrease of 22.1 per cent in the estimates of CH₄ for 2001). The ERT further noted that the difference for agricultural N₂O emissions for 1990 between 2003 and 2004 submissions is higher than 2.0 per cent reported by Latvia. The ERT encourages Latvia to undertake additional checks of recalculations and document them in the next submission.

13. Potential issues of time-series consistency were identified in the national energy balance data in the time series for fuel consumption for road transportation and waste incineration.

Uncertainties

14. Uncertainty estimation is not included in the NIR because of lack of financial and human resources. Latvia plans to report it in future inventory submissions.

Verification and quality assurance/quality control approaches

15. QA/QC procedures are not implemented because of lack of financial and human resources. Latvia plans to report them in future inventory submissions.

Follow-up to previous reviews

16. Many improvements have been made since the last submission and review, including the following: use of the outline recommended in the UNFCCC reporting guidelines; the inclusion of a key source analysis; and the provision of missing CRF tables and documentation of recalculations. Some information about institutional arrangements has been included but more detail on the responsibilities of the institutions involved should be provided. Cement and lime production are now reported separately and some EFs in the Agriculture sector have been corrected.

17. No estimation of uncertainties for the sectors of the inventory has been provided. Emissions of HFCs and PFCs are still not reported. The request of previous review for improvement of documentation on fugitive emissions has not been met: Latvia indicated that it did not have the resources to translate the information into English. The problems of inconsistencies in the energy data and in the vehicle fleet time series have not been resolved.

G. Areas for further improvementIdentified by the Party

18. The NIR identifies several areas for improvement for each sector of the inventory, including a general evaluation of uncertainties, establishing QA/QC procedures, and increasing institutional cooperation. Latvia also reports that work is in progress to improve data, including energy balances, the calculation system for the Road Transportation category, and country-specific EFs for key categories. Latvia is also planning to include most fugitive emissions and emissions from consumption of HFCs, PFCs and SF₆.

Identified by the ERT

19. The ERT identified the following cross-cutting issues for improvement: the completeness of the inventory should be improved by providing estimates for the categories that are currently missing and more precise information in the completeness sections of the inventory submission; transparency should be improved by including more information in the NIR regarding methods and country-specific data; uncertainty analysis and QA/QC procedures should be developed and improved; and more information should be provided on the institutional arrangements. Recommended improvements relating to specific source/sink categories are presented in the relevant sector sections of this report.

II. ENERGY**A. Sector overview**

20. In 2002, the Energy sector accounted for 71.4 per cent of total national GHG emissions. Fuel combustion contributed 69.8 per cent of total national GHG emissions and CO₂ emissions from fuel combustion contributed 95.7 per cent of the CO₂ emissions reported by Latvia (excluding LUCF). In 2002, Transport represented 25.5 per cent of total national GHG emissions and Energy Industries 23.4 per cent. Emissions decreased sharply between 1990 and 2002, with emissions from fuel combustion falling by 66.2 per cent over this period. The NIR noted that this decrease was mainly a result of the economic situation of the country during this period.

21. The use of notation keys is not complete and not consistent in the CRF. For instance, for the years 1990–1999, AD and emissions from the individual fuel types have been reported as “NE” in table 1.A(a) for subcategories 1.A.2a to 1.A.2e of the Manufacturing Industries and Construction source category, while at the subtotal level they have been reported as “included elsewhere” (“IE”).

22. Comparison of the fuel consumption reported in the CRF with data from the IEA shows several large differences. The ERT encourages Latvia to develop its energy collection and reporting system to improve the quality of its energy balances (including the time series back to 1990). When documenting the EFs in tables 3.5 and 3.6 of the NIR it would be helpful to show the EFs and the oxidation factors separately or at least to note that they have been combined.

23. According to CRF table 8(b), emissions from off-road vehicles have been removed from Energy Industries, Manufacturing Industries and Construction and Other Sectors and are now included in Other Transportation. However, according to the IPCC Guidelines, off-road vehicles and other mobile machinery should be reported under the Manufacturing Industries and Construction and Agriculture/Forestry/Fisheries source categories. They may be included in Other Transportation when it is not possible to include them in these categories. The ERT recommends Latvia to provide more and clearer information on the AD used and the reasons for the recalculations, bearing in mind that the NIR reports that only part of emissions from off-road vehicles is included under Other Transportation. Latvia has also made substantial recalculations for International Marine Bunkers. However, the NIR mentions that there are still data quality issues related to this sector and further work is needed.

B. Reference and sectoral approachesComparison of the reference approach with the sectoral approach and international statistics

24. Although the differences between the sectoral approach and reference approach for total emissions are small for the two most recent years, there are large differences for individual fuel types. This may indicate problems in the classification of fuels in the reference approach. The ERT recommends that more effort be put into reconciling the two estimates. For example, CO₂ emissions from natural gas in 2002 are 12 per cent higher in the reference approach than in the sectoral approach. Similarly, the fuel consumption given for the reference approach is 10 per cent higher than the IEA data. In addition, information in the documentation box of the CRF should be improved to explain the differences better.

International bunker fuels

25. In the NIR Latvia states that separate information on International Marine Bunkers is not available from the Central Statistical Bureau prior to 2001. For Aviation, the split between domestic and international flights is only available from 1999. In both instances, Latvia has estimated the split for earlier years and indicated that it is in process of improving the data for its future submissions. However, the ERT noted that the split for aviation given in table 3.4 of the NIR does not correspond to the split given in table 1.C of the CRF. In addition, the splits in table 1.C for Marine and Aviation are identical. The ERT encourages Latvia to work on this issue and to provide complete documentation on the improvements in the NIR.

Feedstocks and non-energy use of fuels

26. No information is available in the NIR as to how the iron and steel industry is accounted for in the inventory. The ERT recommends that the treatment of this source be made explicit, specifically the division between Energy and Industrial Processes.

27. As in previous submissions, in the reference approach (table 1.A(b)), carbon stored is shown for gas/diesel oil, liquefied petroleum gas (LPG), bitumen, lubricants and natural gas. In table 1.A(d), only bitumen is included. Normally these two tables should be consistent.

C. Key sourcesRoad transportation: oil – CO₂

28. Consumption of gasoline for Road Transportation is very high in 1990 and diesel consumption is high in 1995. As a result there are large fluctuations in the emissions. The NIR indicates that the data used for the years 1990–1995 are not of good quality but do nevertheless come from official statistics. Since this is one of the largest key sources, the high fuel consumption will affect the base year emission totals. The ERT encourages Latvia to verify the fuel consumption for Road Transportation for the entire time series.

Other transportation: oil – CO₂

29. Fuel consumption for this source category is very high for the years 1990–1992. In the NIR Latvia indicates that off-road vehicles have been included here and that it is doing further work on this series. The ERT suggests that this further work be documented in the NIR.

Agriculture/forestry/fisheries: oil – CO₂

30. Fuel consumption for this source category is very high for 1994. No documentation is provided in the NIR. The ERT encourages Latvia to work on this issue.

Fugitive emissions: all fuels – CO₂, CH₄, N₂O

31. With the exception of CH₄ emissions from the Transmission and Distribution of natural gas and CH₄ emissions from Other (underground storage), all fugitive emissions have been reported as “NE” or “NO”. The ERT considered that priority should be given to improving the estimates of emissions from fuel combustion; however, after that, fugitive emissions could be considered.

D. Non-key sourcesRoad transportation: oil – CH₄, N₂O

32. The IEFs for diesel oil used in Road Transportation fluctuate between 1990 and 2002. In its response to the 2004 previous review stages, Latvia indicated that it has used the IPCC default EFs. Latvia also indicated that it is working on its fleet characteristics. The 2003 desk review identified breaks

in the series for the fleet composition between 1993 and 1994 and recommended that Latvia reassess this information. The ERT encourages Latvia to pursue this work in order to achieve a consistent time series.

III. INDUSTRIAL PROCESSES AND SOLVENT USE

A. Sector overview

33. In 2002, the Industrial Processes sector made a small contribution – 1.7 per cent – to Latvia's total national GHG emissions, while the Solvent and Other Product Use sector accounted for 1.0 per cent. From 1990 to 2002, total GHG emissions from the sector decreased by 64.6 per cent, and emissions from Solvent and Other Product Use increased by 2.5 per cent. The completeness of the inventory could be improved by including emissions from consumption of HFCs, PFCs and SF₆. The NIR could also provide justification for the claim that there are no emissions from Chemical Industry.

B. Key sources

34. Latvia has not identified any key source for the Industrial Processes and Solvent and Other Product Use sectors.

C. Non-key sources

Cement production – CO₂

35. Latvia uses the IPCC good practice guidance tier 2 method, and takes into account the cement kiln dust correction factor. The estimates in the 2004 submission are based on clinker data instead of the cement production figures which were used previously. The time series of AD (clinker production) shows large inter-annual variations, but they are in line with the international statistics of cement production for Latvia and, as the Party explained, are due to changes in general economic circumstances. This category was identified as a key source by the secretariat's key source assessment but not by Latvia.

Solvent and other product use – CO₂

Latvia uses the CORINAIR methodology to calculate these emissions since no IPCC methodology is available. The implied emission factor (IEF) is similar to those of other Parties. This category was identified as a key source by the secretariat's key source assessment but not by Latvia.

Consumption of halocarbons and SF₆ – HFCs, PFCs and SF₆

36. Emissions from this category have not been estimated, with the exception of a small amount of SF₆ from Electrical Equipment. This is likely to be a key source, or to become a key source in the future, as ozone depleting substances are phased out. The ERT encourages Latvia to develop an inventory of potential and actual emissions for this category as soon as possible.

Iron and steel production – CO₂

37. The ERT also compared the coke consumption data reported by Latvia to the international statistics on steel production. While the general shape of the time series is similar, the comparison indicated that more attention should be paid to data quality.

Chemical industry – CO₂, CH₄, N₂O

38. The ERT noted that the Chemical Industry category is not reported. In response to questions, Latvia informed the ERT that there are no chemical industry activities that could lead to GHG emissions in the country, and explained briefly the kinds of activity that do occur within the country's borders. The inclusion of this information in the NIR of future submissions would increase the transparency of Latvia's reporting.

IV. AGRICULTURE

A. Sector overview

39. In 2002, the Agriculture sector accounted for 15.2 per cent of Latvia's total national GHG emissions. The largest source of emissions in the sector was N₂O from Agricultural Soils (contributing 49.8 per cent of emissions from the sector). Emissions decreased by 68.7 per cent from 1990 to 2002, with the greater part of the decrease occurring between 1990 and 1993. Since 1999, emissions have increased because of increases in livestock numbers and fertilizer use.

40. The ERT noted that Latvia is progressively increasing the transparency of its inventory, and encourages Latvia to continue to provide more explanation of the AD, the methodologies and the country-specific EFs in the NIR. Latvia provided the ERT with additional material on its livestock data collection, the allocation of livestock to animal waste management systems (AWMS), and the derivation of country-specific nitrogen excretion rate (Nex) values. The ERT encourages Latvia to incorporate more of this supporting information in its future NIRs.

41. The NIR reports that Latvia is developing its inventory of the Agriculture sector by working on developing country-specific EFs and additional livestock characterization data. The ERT recognizes that these are considerable tasks and encourages Latvia to continue with them. The ERT noted that population data, Frac_{GRAZ}, Frac_{BURN} and Frac_R, identified as problems in previous reviews, had been corrected in the 2004 submission.

B. Key sources

Enteric fermentation – CH₄

42. A tier 1 methodology is used with the IPCC default EFs. The NIR states that Latvia is developing additional livestock characterization data. The ERT encourages Latvia to continue with collecting the necessary data for an enhanced livestock characterization and to progress towards an IPCC tier 2 methodology for significant animal species.

43. Livestock population data are obtained from the statistical yearbooks of Latvia. The population data agree with the Food and Agriculture Organization of the United Nations (FAO) population statistics. This is an improvement compared with the previous inventory. The ERT noted that there are large inter-annual fluctuations in emissions that are attributed to changes in population size. In response to a request from the ERT, Latvia provided documentation on the changes in agricultural production and livestock population from 1991 to 2000. To improve the transparency of the reporting, the ERT encourages Latvia to include a summary of this information in the NIR.

Manure management – N₂O

44. Latvia has developed country-specific Nex values on the basis of research by national experts. For dairy and other cattle, the Nex values are comparable to the IPCC defaults; however, the country-specific values are very different in the cases of Sheep, Swine, Horses and Poultry. Latvia uses the same country-specific Nex value for Goats as for Sheep. The calculation of the country-specific Nex values was documented in additional material provided in response to a request by the ERT. In addition, Latvia explained that no data on quantities of excreta for goats were available. To improve transparency, the ERT encourages Latvia to include this information in the NIR.

45. The livestock population is distributed between AWMS based on an analysis carried out in 2002 and an assessment for 1990. The distribution in the intervening years is assessed from structural changes in Latvia's agriculture. In additional information provided to the ERT, Latvia clarified the allocation of livestock to AWMS types, including the composition of Other AWMS which make up 28 per cent of emissions from this source and are associated with small farms. To improve the transparency of the inventory, the ERT encourages Latvia to include this information in its future inventory submissions.

Direct N₂O emissions from agricultural soils – N₂O

46. Latvia's values for $Frac_{NCRBF}$ (0.02) and $Frac_{NCRO}$ (0.03) are not the IPCC default values and there is no explanation in the NIR supporting these parameters. The ERT recommends that Latvia include information to support these values.

47. The ERT noted that the amount of nitrogen (N) reported in 2002 from AWMS was not correctly calculated. The CRF reports 18,431,974 kg N, whereas the ERT's calculation estimated 20,055,127 kg N using the values reported in the CRF. This will also affect indirect N₂O emissions. The ERT recommends that Latvia review these calculations.

48. The area of cultivated histosols was obtained from a national expert. However, the methods used by the expert to produce the area of cultivated histosols are not transparent and the ERT recommends Latvia to provide supporting information in the NIR.

Indirect N₂O emissions from nitrogen used in agriculture – N₂O

49. The ERT noted that in the previous (2003) submission $Frac_{GRAZ}$, $Frac_{BURN}$ and $Frac_R$ were not reported correctly, but they have been corrected in the 2004 submission.

C. Non-key sources

Manure management – CH₄

50. This category was identified as a key source by the secretariat's key source assessment but not by Latvia. For the estimations Latvia uses a tier 1 methodology with IPCC default EFs. To improve the accuracy of the emissions estimates, the ERT encourages Latvia to consider developing country-specific EFs.

Field burning of agricultural residues – CH₄, N₂O

51. The NIR states that burning of agricultural residues occurs on a small scale and emissions are not estimated. Emissions from tubers and roots are estimated but not reported in the CRF. The NIR also states that emissions from "last year grassland" burning are not estimated because of time constraints. The ERT encourages Latvia to continue to improve the completeness of the inventory and include these emissions in subsequent inventories.

V. LAND-USE CHANGE AND FORESTRY

A. Sector overview

52. The LUCF sector is a net sink which offset total national GHG emissions by at least 65 per cent each year from 1990 to 2002 and by more than 100 per cent from 1993 to 1996. In 2002, the LUCF sink was 8,213.51 Gg CO₂, reducing national emissions by 77.2 per cent. The LUCF sink decreased by 55.9 per cent from 1990 to 2002 as a result of regulations initiated in 1990 which increased harvesting and a shift in the sector towards more intensive forest management methods on private land. The LUCF categories are estimated using IPCC tier 1 methods, IPCC defaults and country-specific factors. Given the importance of LUCF with respect to overall national emissions, the ERT encourages Latvia to prioritize improving the methodology used in the sector, working towards the implementation of higher-tier approaches, evaluating their efficacy using validation procedures, and reporting uncertainty analysis.

53. Net emissions and/or removals have been provided for all four LUCF reporting categories. Not all sources within the reporting categories are addressed; those which are not are specifically noted below.

54. As noted by previous reviews, the NIR should explain the rationale for the country-defined sub-reporting categories and the choice of emission/removal factors.

B. Sink and source categories

Changes in forest and other woody biomass stocks – CO₂

55. Emissions and removals are estimated in accordance with the IPCC Guidelines and can be replicated from the data in the NIR and CRF. In addition to emissions/removals from managed forests, Latvia estimates removals from parks and gardens, bushes, and clearing and rough afforestation. As noted in previous reviews, the rationale for including these subcategories and the choice of removal factors for each should be provided in future NIRs. The ERT noted that the annual growth increment for gardens and parks is 4.5 in the NIR and 4.46 in the CRF, and recommends that this inconsistency be corrected. In addition, clearing and subsequent afforestation are estimated as removals, while notable emissions may occur from this activity. To improve the transparency of the reporting, the ERT encourages Latvia to provide more information on this activity in its next inventory submission.

56. The ERT noted that carbon sequestration in forests may be underestimated. Forest inventories often estimate growth and harvest together; increment data derived from inventories may therefore already account for harvesting. The ERT recommends that Latvia consider how the increment data for forests were developed in order to ensure that they do not include harvesting. In addition, the ERT recommends that Latvia include supporting information for its choice of wood density and expansion factors and explore the possibility of developing species-specific factors to improve the estimates.

57. The ERT noted that in CRF table 5 CO₂ emissions from wood harvesting are reported as Harvested Wood, whereas they should be reported under Changes in Forest and Other Woody Biomass Stocks in Temperate Forests. The ERT further noted that removals from temperate forest plantations are not estimated. To improve the consistency and completeness of the reporting, the ERT encourages Latvia to undertake efforts to estimate removals in temperate forest plantations and to report wood harvesting correctly.

Forest and grassland conversion – CO₂, CH₄, N₂O

58. CH₄ and N₂O emissions from burning slash on-site are estimated according to the IPCC Guidelines and default factors, and can be replicated from the data provided in the NIR and the CRF. However, the IPCC Guidelines also recommend reporting CO₂ emissions from burning and decay of slash on-site. The ERT noted that CO₂ emissions from slash are included elsewhere according to table 5.B of the CRF and recommends Latvia to explain this further. The ERT also recommends Latvia to estimate CO₂ emissions from slash left on-site following the IPCC Guidelines.

Abandonment of managed lands – CO₂

59. Removals are estimated in accordance with the IPCC Guidelines and can be replicated from the data provided in the NIR and the CRF. The ERT noted that the average annual growth rate has been revised in response to previous reviews. While the revised rate is consistent with the IPCC default value for boreal regions, no supporting information is provided. The ERT encourages Latvia to document the assumptions used to select the rate.

CO₂ emissions and removals from soil – CO₂

60. CO₂ emissions from Cultivation of Organic Soils and Liming of Agricultural Soils are estimated, while CO₂ emissions and removals from Cultivation of Mineral Soils are not, because only limited data are available. The ERT recommends Latvia to include an estimate for Cultivation of Mineral Soils using the IPCC defaults. If national data are not available, the ERT recommends using land-use data from FAO and expert opinion.

61. The estimates of CO₂ emissions from the Cultivation of Organic Soils and Liming of Agricultural Soils follow the IPCC Guidelines. A country-specific EF for organic soils has been used that falls within the range identified by the IPCC. The ERT recommends Latvia to provide more supporting information for this factor. In addition, to improve transparency, the ERT recommends reporting AD on the

Cultivation of Organic Soils and Liming of Agricultural Soils in the NIR. The ERT noted that the area of cultivated organic soils reported in table 5.D of the CRF is about 2,000 hectares less than the area reported in the Agriculture sector (table 4.D) and recommends cross-checking between sectors to resolve this inconsistency.

VI. WASTE

A. Sector overview

62. In 2002, the Waste sector contributed 10.7 to total national GHG emissions in terms of CO₂ equivalent. Emissions of CH₄ from the Waste sector (48.6 per cent of total national CH₄ emissions, excluding LUCF) increased by 37.4 per cent from 1990 to 2002 and decreased by 2.4 per cent from 2001 to 2002. Emissions of CH₄ from Solid Waste Disposal on Land represented 81.7 per cent, and CH₄ from waste-water handling represented 18.3 per cent, of the emissions of the sector in 2002. Emissions of CO₂ from Waste Incineration and of N₂O from Waste-water Handling are also reported.

63. The Party's inventory is complete with the exception of N₂O from Waste Incineration. In the CRF, no information is provided in the documentation boxes and little information is provided in the additional information tables. The ERT encourages Latvia to provide this information in its future submissions.

64. The information presented in both the NIR and the CRF tables is transparent, but not sufficient to allow for the replication of the emission estimates calculations. The CRF background data tables are not completely filled in: some important information is missing; and the references used for the different default factors have not been specified.

B. Key sources

Solid waste disposal on land – CH₄

65. Latvia does not specify which IPCC tier methodology is used to estimate CH₄ emissions. Data and information are not fully provided in the documentation box and the additional information table of table 6.A. CH₄ recovered is reported in table 6.A for Managed Waste Disposal on Land (2.2 per cent of CH₄ emitted in 2002), but not referenced in the NIR.

66. The sharp increase in emissions from 2000 to 2001 reported in the 2003 inventory submission and noted in the 2003 desk review report has been corrected through recalculations (the AD and DOC_F for 2000 have been changed).

67. Apart from DOC_F (0.6), the main parameters for calculating CH₄ generation (degradable organic carbon (DOC), CH₄ oxidation factor, fraction of municipal solid waste disposed at solid waste disposal sites, and CH₄ fraction in landfill gas) are not reported.

Waste-water handling – CH₄

68. The methodology used by the Party is the "check method" provided for in the IPCC good practice guidance as a quick method to check national estimates, and is not the accepted IPCC default method. As stated in the previous (2003) desk review report, the ERT recommends that the Party consider implementing the IPCC default methodology.

69. The waste-water fluxes are not clearly described in the NIR. The share of industrial waste water released to municipal waste-water treatment plants is not reported. The biogas produced by the waste-water treatment plants in Riga (12,000 m³/day) and burned in a co-generation facility is not reported clearly in the Energy sector. Consequently, the estimate of CH₄ emissions from Waste-water Handling has been reduced by one-third without clear justification. The ERT recommends that the Waste-water Handling source category be treated more thoroughly (waste-water and sludge treatment, percentage of aerobic and anaerobic systems, etc.) and in consistency with the reporting of the Energy sector.

70. The NIR and the CRF tables report emissions of CH₄ from Waste-water Handling but N₂O emissions are reported as “NE”. However, emissions of N₂O are reported for Human Sewage. The additional information table of the CRF table 6.B, has not been completely filled in. The ERT recommends Latvia to complete the additional information table.

C. Non-key sources

Waste incineration – CO₂

71. Latvia has applied the IPCC good practice guidance method and default factors for this category. Emissions from clinical, hazardous and municipal wastes have been calculated.

72. Estimates of CO₂ emissions from the incineration of medical, household and hazardous waste are reported from 1999 to 2002. The amount of waste incinerated increases strongly from 1999 to 2002, as stated in the NIR (table 8.2). The ERT recommends that Latvia review these data.

73. Emissions of N₂O are reported as “NE” because of lack of information on incineration technologies. Like the previous review, the ERT recommends that the Party keep this issue under review.

ANNEX 1: MATERIALS USED DURING THE REVIEW

A. Support materials used during the review

- 2003 and 2004 Inventory submissions of Latvia. 2004 submission including a set of CRF tables for 1990–2002 and an NIR.
- UNFCCC secretariat. “Report of the individual review of the greenhouse gas inventory of Latvia submitted in the year 2003 (Desk review).” FCCC/WEB/IRI(1)/2003/ LVA (available on the secretariat web site
<http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/pdf/latdeskrev03.pdf>).
- UNFCCC secretariat. “2004 Status report for Latvia” (available on the secretariat web site
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B. Additional materials

Responses to questions during the review were received from Ms. Agita Gancone (Latvian Environment Agency) including additional material on the methodologies and assumptions used.
