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AUSTRIA

REPORT OF THE INDIVIDUAL REVIEW OF THE GREENHOUSE GAS INVENTORY SUBMITTED IN THE YEAR 2003[1]

(Centralized review)

I. OVERVIEW

A. Introduction

1. In accordance with decision 19/CP.8, of the Conference of Parties, the United Nations Framework Convention on Climate Change (UNFCCC) secretariat coordinated a centralized review of the 2003 greenhouse gas (GHG) inventory submission of Austria. The review took place from 8 to 13 September 2003 in Bonn, Germany, and was conducted by the following team of nominated experts from the roster of experts: Generalists – Mr. William Kojo Agyemang-Bonsu (Ghana) and Mr. Jan Pretel (Czech Republic), Energy – Mr. Audace Ndayizeye (Burundi), Mr. Poorundeo Ramgolam (Mauritius) and Ms. Karen Treanton (International Energy Agency, IEA), Industrial Processes – Mr. Jamidu Katima (Tanzania) and Mr. Jos G.J. Olivier (Netherlands), Agriculture – Ms. Tajda Mekinda-Majaron (Republic of Slovenia) and Ms. Penny Reyenga (Australia), Land-use Change and Forestry (LUCF) – Mr. Daniel Martino (Uruguay) and Mr. Nijavalli H. Ravindranath (India), Waste – Ms. Tatiana Tugui (Republic of Moldova) and Ms. Irina B. Yesserkepova (Kazakhstan).
Mr. William Kojo Agyemang-Bonsu and Ms. Penny Reyenga were the lead reviewers of this review. The review was coordinated by Ms. Astrid Olsson (UNFCCC secretariat).

2. In accordance with the UNFCCC "Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention", a draft version of this report was communicated to the Government of Austria, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Inventory submission and other sources of information

3. In its 2003 submission, Austria has submitted a complete set of common reporting format (CRF) tables for the years 1990–2001 and a national inventory report (NIR) which provides information on methodologies, activity data (AD), emission factors (EFs), recalculations, uncertainties, verification and quality assurance/quality control (QA/QC) procedures and key sources. 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 2001, the most important GHG in Austria was carbon dioxide (CO_2), contributing 80.5 per cent to total[2] national GHG emissions expressed in CO_2 equivalent, followed by methane (CH_4)

[1] In the symbol for this document, 2003 refers to the year in which the inventory was submitted, and not to the year of publication. The number (3) indicates that this is a centralized report.

[2] In this report, the term total emissions refers to the aggregated national GHG emissions expressed in terms of CO_2 equivalent excluding Land-use Change and Forestry, unless otherwise specified.

with 10.6 per cent and nitrous oxide (N_2O) with 6.9 per cent. Perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF_6) taken together contributed 2 per cent (HFCs 1.2 per cent, SF_6 0.8 per cent and PFCs less than 0.1 per cent) of overall GHG emissions in the country. The Energy sector accounted for 67.1 per cent of total GHG emissions (of which 23 per cent came from transport), followed by Industrial Processes (17.9 per cent), Agriculture (8.9 per cent) and Waste (5.4 per cent). Total GHG emissions (excluding LUCF) amounted to 85,880.36 Gg CO_2 equivalent and increased by 9.6 per cent between 1990 and 2001. CO_2 and N_2O emissions increased by 15 per cent and 2.5 per cent, respectively, CH_4 emissions decreased by 15 per cent, and the combined emissions of PFCs, HFCs and SF_6 were at the same level as in 1990 (an increase of HFCs has been fully compensated by a decrease in SF_6). The fastest-growing source of emissions was transport (49 per cent), followed by electricity generation (almost 9 per cent); in the Waste and Agriculture sectors, emissions have been decreasing.

D. Key sources

5. Austria has reported key source analyses (tier 1/tier 2), both level and trend assessment, as part of its 2003 submission. The analyses performed by Austria and the secretariat[3] produced similar results (Austria identified in total 33 key sources on a very disaggregated level, and the secretariat identified 23 key sources, all of them on the Austrian list). Austria prioritizes key source categories within the national inventory system.

E. Main findings

6. All required inventory data and methodological information are provided in the CRF and in the NIR; no major inconsistencies between the CRF and the NIR have been identified. The NIR provides very detailed descriptions of all methodologies used for inventory preparation as well as full and transparent descriptions of the overall national system of data collection and inventory preparation. In general, the quality of the Austrian inventory (both the CRF and the NIR) can be rated as very high.

F. Cross-cutting topics

Completeness

7. Austria submitted GHG inventories for the years 1990–2001 using the CRF, accompanied by a very comprehensive NIR, which includes all information prescribed by the UNFCCC guidelines. The geographic coverage is complete. All major sources and sinks are covered; no other sources specific to Austria have been identified. Where emissions or removals are not reported, explanations are provided in the NIR and the CRF.

Transparency

8. Methods and the rationale for selecting information sources and EFs are adequately described and documented in the NIR and relevant tables.

Recalculations and time-series consistency

9. The revision of the national energy statistics for the time series 1990–2000 implies changes for category 1.A for all GHGs from 1990 onwards. The time series is now consistent regarding fuel categories, sectoral data splits and units. The effect of the recalculations for the base year was a decrease

[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.

by 3.51 per cent in CO_2 equivalent emissions excluding LUCF and 4.12 per cent including LUCF. Explanations for the recalculations are provided in the NIR on a sectoral basis.

Uncertainties

10. A tier 1 approach is used to provide quantitative estimations of uncertainty. Qualitative indications provided in the CRF table 7 are based on the transformation of quantitative values into qualitative categories; this is fully described in the NIR. The comprehensive uncertainty analysis comprising the whole emission inventory is based on the emission estimates submitted in 1999. It presents the results for three greenhouse gases (CO_2, CH_4 and N_2O) for the years 1990–1997. Since then, the emissions data have been recalculated but the uncertainty estimates have not yet been updated. However, it is assumed that the uncertainty has decreased as a result of the introduction of new, more accurate and more detailed methodologies. Emissions of CO_2 have a low uncertainty (about 2 per cent), whereas the uncertainty for N_2O is high (up to 90 per cent). The overall relative uncertainty calculated for the year 1990 was 9.8 per cent; for the year 1997 it was 8.9 per cent. The reduction is due to the increase in CO_2 emissions caused by the use of fossil fuels.

Verification and quality assurance/quality control approaches

11. A quality management system has been designed and is currently being implemented in Austria to ensure compliance with all requirements. After it is fully implemented the Department for Air Emissions, the inspection body, is scheduled to undertake the accreditation at the end of 2003. The system contains all relevant features of EN 45000 and demonstrates full compatibility with the QA/QC requirements of 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). QA activities are focused on transparent documentation and the adaptation of standard operation procedures to be applicable in practice and to fulfil the requirements both of IPCC and of EN 45004. It is planned that for the 2004 submission all key sources will be validated and some of them verified.

Follow-up to previous reviews

12. The expert review team (ERT) was impressed by the Party's continued improvement of its inventory. Compared to previous review findings, significant improvements have been made in implementation of the QA/QC and verification process, in disaggregating emission estimates to ensure a significantly higher level of transparency, and in the consideration given to the majority of missing sources.

G. Areas for further improvement

Identified by the Party

13. The NIR identifies several areas for improvement. Specific areas for improvement are reported on a sector-by-sector basis and they focus primarily on the key source categories. The review programme is supported by the internal Austrian review, the review under the European Union (EU) Monitoring Mechanism, and the QA/QC programme based on international standards (EN 45000, ISO 9000).

Identified by the ERT

14. The ERT finds that the Austrian inventory is substantially complete and the NIR provides comprehensive descriptions of methodology used and the overall structure of the national inventory system. Efforts to put more stress on key source categories and further improve the QA/QC and verification process in all the areas identified by Austria are very welcome. Recommendations relating to specific source/sink categories are presented in the relevant sector sections of this report.

II. ENERGY

A. Sector overview

15. In 2001, Energy accounted for 67.1 per cent of Austria's total emissions excluding LUCF. The sector was responsible for the emission of 80.8 per cent of CO_2, 4.4 per cent of CH_4 and 23.0 per cent of N_2O. Transport contributed 23.0 per cent of total GHG emissions, other sectors 17.7 per cent, energy industries 16.8 per cent, manufacturing industries and construction 9.2 per cent, and fugitive emissions from oil and gas 0.4 per cent. Energy emissions have increased by 19.8 per cent since 1990.

16. For the Energy sector, all IPCC sources and sinks are addressed. All years and gases are covered. The CORINAIR methodologies have been used. The level of disaggregation is in line with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC Guidelines). Emission estimates for the indirect GHGs and sulphur dioxide (SO_2) are reported in the CRF. All the CRF tables including the sectoral background data tables have been provided.

17. The reporting of the Energy sector is transparent. Full documentation has been given on the responsibility of the various organizations involved in the preparation of the report, on the collection of data, on the contact persons and on institutional arrangements. All the methodologies used for the calculation of the direct and indirect GHGs have been well documented. The correspondence between the SNAP codes and the IPCC sources has been given, and the NIR specifies where military and multilateral operations have been included. The NIR provides sufficient back-up information for the CRF tables, and all the calculations are replicable.

18. Specific examples of QA/QC in the Energy sector have been listed in the NIR. Independent experts from TÜV Bayern verified emissions from off-road transport. Emission estimates from aviation were compared with estimates obtained using other approaches. For estimating emissions from road transport, a bottom–up approach based on road performance per vehicle was used. To be consistent with the national energy balance, total fuel consumption as obtained from this approach was compared with and adjusted to total fuel consumption according to the national energy balance.

19. Recalculations in the Energy sector are extensively documented in annex 2 of the NIR. In 2002, Statistik Austria compiled a new energy balance in the IEA format on the basis of the old Austrian institute of economic research (WIFO) energy balance and new information from industry. Inconsistencies in the old energy balance time series regarding fuel categories, sectoral data split and reporting units were eliminated and there is now greater detail in the split of fuels. As a result, for the 1990 base year, emissions from the Energy sector decreased by 4.4 per cent for CO_2, and increased by 5.6 per cent for CH_4 and 10.0 per cent for N_2O.

B. Reference and sectoral approaches

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

20. The differences between the reference and sectoral approaches vary between 8.1 per cent and 12.5 per cent between 1990 and 2001; these are quite large differences. However, the NIR has provided an extremely detailed description of the differences. The ERT has considered the reasons provided by the Party and encourages Austria to try to quantify the larger items to enable better understanding and to enhance transparency. In response to the draft review report the Party has indicated that it plans to provide a more detailed quantification of the differences in the next submission.

International bunker fuels

21. A detailed description is provided for the calculation of CO_2, N_2O and CH_4 emissions for aviation (including military aviation). Fuel consumption data for the different transport modes (national landing/take off cycle (LTO), international LTO, national cruise, international cruise) were obtained

from the MEET model developed by the European Commission. The ERT notes that Austria is currently in the process of harmonizing the CRF and IEA AD for international bunkers.

Feedstocks and non-energy use of fuels

22. The Party reports in table 1.A(d) that some categories of fuel have been used either as feedstocks or for non-energy use. However, for all the fuels, in the reference approach the same value of fraction of carbon stored (i.e., 1.0) has been used. In the IPCC Guidelines, only bitumen has a default value of 1.0. The ERT recommends that the rationale for this choice be made explicit.

23. There is no additional information in the NIR as to the relationship between the Energy sector and the Industrial Processes, Solvents and Other Product Use, and Waste sectors. The ERT recommends that the Party provide clear documentation on this issue in the NIR. In response to the draft review report the Party has indicated that it plans to provide a section on feedstocks and non energy use of fuels in the next submission.

C. Key sources

Stationary combustion

24. CO_2 from iron and steel (1.A.2.a) has been a key source by level assessment since 1990. The CO_2 implied emission factors (IEFs) for solid, liquid and gaseous fuels are the lowest of those reported by the Parties. In the NIR, the Party has reported that fuel combustion in the iron and steel industry is under category 1.A.2.a except for two sites that are reported under 2.C.1 with industrial process emissions, which explains the lower IEFs. The Party plans to reallocate combustion emissions from the industrial processes sector to the energy sector in the next submission.

D. Non-key sources

25. For civil aviation (1.A.3.a), the AD for jet kerosene and aviation gasoline in the CRF are higher than those reported by the IEA. The Party has responded that these data have not yet been harmonized but has plans to do so for the next submission. The ERT encourages Austria to harmonize the two data sets.

III. INDUSTRIAL PROCESSES AND SOLVENT USE

A. Sector overview

26. In 2001, industrial process emissions accounted for 19 per cent of total CO_2 equivalent emissions (without LUCF), less than in the base year 1990 (21 per cent). CO_2 emissions represented 83 per cent of the Industrial Processes sector's emissions in 2001 (mostly from metal and cement production). N_2O emissions (from nitric acid production) accounted for 6 per cent and actual emissions of fluorinated gases (F-gases) accounted for 11 per cent. In the period 1990–2001, industrial processes CO_2 equivalent emissions remained almost constant, mainly because of a decrease of 11 per cent in N_2O emissions from nitric acid production, compensated by a 17 per cent increase in F-gases. Recalculations for the complete time series have been made, notably for N_2O from nitric acid production. Both actual and potential emissions for individual F-gases are reported, except for PFCs for which no potential emissions are reported (although Austria reports PFC consumption for semiconductor manufacture). The Party indicated that this information will be included in the next submission.

27. For industrial processes, in addition to the seven key sources identified by the secretariat, Austria reports three more key sources (SF_6 used in magnesium foundries, PFCs from aluminium production, other sources of SF_6) and has split other mineral products into CO_2 from lime production and CO_2 from magnesia sinter plants. In addition, CO_2 from solvents was also identified by both the Party and the secretariat as a key source.

28. A major improvement has been made in the reporting of N_2O emissions from nitric acid production since flaws were detected in the former determination of the EFs, as explained in the NIR. These are now about five times higher than last year and account for about 1 per cent of national total emissions.

29. The transparency of the reporting of this sector could be improved by using the source allocation recommended in the IPCC Guidelines and the IPCC good practice guidance whenever possible (cement, iron and steel) and by using the correct notation keys in the CRF: for example the emissions in, 2.B.3 – N_2O; and 2.C.3 – CO_2, CH_4, non-GHG; are all indicated as "not estimated" (NE) instead of "not occurring" (NO). As Austria uses mostly CORINAIR or country-specific methods as well as country- or plant-specific EFs, to assist transparency and comparability the ERT recommends that Austria report the corresponding IPCC tier of these methods in the NIR. Austria indicated in its response to the draft review report that it will include the corresponding tier in its future NIRs.

30. Regarding completeness, Austria reports that not all sources are reported yet. Apart from the studies the Party has announced on CO_2 from limestone and dolomite use, from production and use of soda ash and from carbide production, the ERT encourages the Party also to conduct a survey of CO_2 from ferroalloys, CH_4 from iron and steel production (including coke production) and SF_6 from manufacture of electrical equipment. In response to the draft review report Austria indicated that this will be considered in the improvement plan. Moreover, the ERT encourages Austria to compile and report first-order estimates of exports of HFCs and SF_6, since this factor may well explain the relatively high potential to actual emissions (P/A) ratios compared to figures reported by other Parties.

B. Key sources

Cement production – CO_2

31. Austria applies the IPCC good practice guidance tier 2 method based on clinker production data, including CO_2 emissions from fuel combustion since the emission factor is based on stack measurements, which is considered more accurate since the carbon content of the different kind of wastes used as fuel fluctuates. The NIR states that this could not be corrected due to lack of data on fuel consumption and combustion emission factors. However, the Party responded that these emissions are not double-counted since a correction in the fuel consumption is made in the Energy sector. Also, based on detailed analysis in the NIR a separation of emissions into non-combustion processes and fuel combustion is presented. The ERT recommends the Party improve the transparency for this source by reporting combustion and non-combustion emissions separately, which the Party plans to do in the next submission.

Lime production – CO_2

32. The IEF for CO_2 is constant, at 804 kg/t, until 1997, when it increased substantially. In the NIR Austria explains this increase as being due to an artefact. The ERT recommends the Party to recalculate the data set using consistent emission factors. Austria has identified plans to do this in the NIR.

Ammonia production – CO_2

33. The IEF for CO_2 peaks in 1998 (as does the IEF for CH_4). Austria explained that the large inter-annual change was due to the number of shutdowns and start ups during the year, especially after a turn around with exchange of catalyst (as in 1998). The ERT recommends that Austria provides this explanation in the NIR. In response to the draft review report the Party has indicated that it plans to provide an explanation in the next submission.

Nitric acid production – N_2O, CO_2

34. The NIR states that new measurements used to recalculate the N_2O EF are available for 1998 onwards but does not provide information about how the new EF for 1990–1997 was determined. The Party provided the ERT with an explanation of how the pre-1998 N_2O emission factors were determined

and the ERT recommends that this information be included in the NIR. The consistency of the time series will be improved by correction of the nitric acid production figures for 1992 and 1993, as announced in the NIR. In response to the draft review report the Party has indicated that it plans to include information on the pre-1998 emission factors in the next submission.

35. Austria reports minor process emissions of CO_2 from nitric acid production, whereas the IPCC Guidelines do not identify such a source of CO_2. The ERT recommends Austria to describe the nature of these emissions (from oxidation of ammonia used as feedstock in which some methane is resolved) and the determination of the emission factor in the NIR. In response to the draft review report the Party has indicated that it plans to include this information in the next submission.

Iron and steel production – CO_2

36. The NIR states that in 2000 CO_2 emissions for one power plant were not reported, causing a time-series inconsistency. However, the NIR also states that the company involved did make an estimate of these emissions. The ERT recommends that the missing emissions be estimated on the basis of the company's estimates, where available, or previous years' production and emissions statistics. In response to the draft review report the Party has indicated that it will estimate emissions using the methods recommended by the ERT.

37. The ERT recommends that the Party improves the transparency and consistency of the information provided by explaining how combustion and non-combustion emissions were accounted for and allocated. This includes CO_2 emissions from electric arc furnaces and aluminium production for 1990-1992, which are presently not accounted for. Austria announced that these will be included in the next submission and provided a general explanation for the decrease over time of the implied emission factor for CO_2.

Consumption of ozone-depleting substances substitutes – SF_6

38. Austria's explanations of the high P/A ratio for SF_6 emissions (13.7 in 2001) as being caused by its use in sound-insulating windows and electric switchgear manufacture are not justified by the filling losses for windows and the emissions from gas-insulated switchgear (GIS). The ERT therefore recommends that Austria further elaborate on this issue when new data become available as indicated in the NIR, for example, by checking the data used for calculating and reporting potential emissions of SF_6 (presently corresponding to the equipment stocks and exports reported as "NE"). In response to the draft review report the Austria indicated that the methodology will be reviewed in 2004.

Solvent and other product use – CO_2

39. According to the NIR, CO_2 emissions from solvent use are reported; however, no clear description is presented of how and where CO_2 related to other product use is accounted for and similarly for fossil fuel feedstock/non-energy use of fuels. The ERT recommends that, for all feedstock/non-energy product use sources of CO_2, Austria provides in the NIR a description of the method and factors used, and in which categories these emissions are reported and in particular how the emissions were checked for completeness and avoiding double counting in the national inventory. Austria has indicated that it will include a chapter on feedstock use in the next submission.

C. Non-key sources

Other production – CO_2

40. Austria reports minor CO_2 emissions from food and drink production related to bread, wine, spirits and beer, whereas the IPCC Guidelines do not identify such non-organic carbon sources of CO_2. Austria confirmed that this was due to an error which will be corrected in the next submission.

IV. AGRICULTURE

A. Sector overview

41. The Agriculture sector contributed 8.9 per cent of total national CO_2 equivalent emissions in 2001. Between 1990 and 2001 emissions from the sector declined by 6.6 per as a result of animal populations declining.

42. The reporting of emissions in the CRF for the Agriculture sector is complete. Rice cultivation (4.C) and Prescribed burning of savannas (4.E) are reported as "NO". Information about AD, methodologies, EFs, QC procedure and quantitative estimates of uncertainty has been provided in the NIR and all are well documented.

43. Recalculations of previous inventories have been made following revisions to methods and AD. The changes have been applied appropriately across the time series and are explained in the NIR.

44. In the next submission Austria plans to update milk yield data for the time series and use IPCC default emission factors for the burning of cereal residues. Studies on the distribution of waste to manure management systems are planned for the future.

B. Key sources

Enteric fermentation – CH_4

45. Austria now uses country-specific tier 2 methods to estimate emissions from cattle. These new methods represent a major improvement in the Austrian inventory and produce gross energy intakes (GEIs) that are comparable to those reported by other Parties. To assist transparency it would be useful if a brief summary of the inputs into the dairy model (eg. diets, liveweights) could be included in the NIR. For non-dairy cattle either a weighted average daily intake should be included in table 4.A or the detailed GEIs should be reported in the documentation box. Austria has indicated in its response to the draft review report that it will provide this information in its next submission.

Manure management – CH_4

46. The NIR indicates that there is a time-series discontinuity in the numbers of swine in different age classes. This is due to changes in data collection in 1993. This only affects manure management emissions, as enteric fermentation is calculated using total swine numbers. As total swine numbers are available, the ERT recommends that the Party adjust the age class data for 1990–1992 so that they add up to the total number of swine. Total swine could be split into the different age classes using proportions derived from the 1993 data. In response to the draft review report the Party has indicated that it will use the approach recommended by the ERT to split age classes for the next submission.

Manure management – N_2O

47. Austria estimates emissions for different animal waste management systems (AWMS) but reports all emissions under liquid systems in the CRF tables. The ERT recommends that the Party report emissions under the appropriate AWMS in the CRF. There is an inconsistency in the allocation of swine and sheep waste to AWMS in tables 4.B(a) and 4.B(b). For example, table 4.B(a) reports that over 70 per cent of swine waste is treated in liquid systems but no waste is allocated to this AWMS in table 4.B(b). The Party has indicated that there is an error in table 4.B(b) which will be corrected in the next submission.

48. Swine numbers for 1990–1992 should be corrected as described for manure management CH_4.

Direct emissions from agricultural soils – N_2O

49. The quantity of animal waste nitrogen (N) applied to soils is greater than the quantity of nitrogen reported for non-pasture AWMS in table 4.B(b). It is also inconsistent with the values reported in the NIR. The N reported in table 4.B(b) should represent the maximum N available for animal waste applied to soils. The Party has indicated that there is an error in table 4.B(b) which will be corrected in the next submission.

C. Non-key sources

Animal production – N_2O

50. The amount of nitrogen excreted onto pasture range and paddock reported in table 4.D is greater than that reported in table 4.B(b). The Party has indicated that there is an error in table 4.B(b) which will be corrected in the next submission.

V. LAND-USE CHANGE AND FORESTRY

A. Sector overview

51. The LUCF sector represents a net sink of 7,633 Gg, offsetting 9 per cent of Austria's total emissions. From 1990 to 2001 net removals declined by 17.2 per cent. Austria reports the same net removal value for the five years 1997–2001. This value is a projection based on the average of the 1992–96 forest inventory.

52. Austria has used country-specific methods to estimate emissions from the LUCF sector. It has only estimated CO_2 emissions and removals from 5.A Changes in forest and other woody biomass stocks. Sectoral background data tables have been completed. Emissions and removals from categories 5.B, 5.C and 5.D are reported as "NO", "included elsewhere" (IE) (covered by the National Forest Inventory (NFI) and reported under 5.A) or "NE" because of lack of data and the insignificant magnitudes involved. The methods and use of notation keys are explained in transparent way in the NIR and CRF tables.

53. Austria has established a standardized procedure for QA/QC which is described in the NIR. The uncertainty of estimates of net removals from 5.A Changes in forest and other woody biomass stocks has been estimated to be in the range of +/–20 per cent to +/–74 per cent.

54. A new NFI is expected in 2003 and Austria has indicated that it will update the CO_2 emission and removal estimates in the next inventory. Austria has proposed to improve reporting in categories 5.B and 5.C and plans to undertake an assessment of soil carbon levels to enable it to report in 5.D.

B. Sink and source categories

Changes in forest and other woody biomass stocks

55. A country-specific NFI-based methodology consistent with IPCC methodology is adopted. The average annual growth rates of 4.91 t/ha/yr for evergreen forest and 5.15 t/ha/yr for deciduous temperate forest include below-ground biomass and are within the IPCC default ranges. The CRF tables report 2000 ha of plantations but no growth rate or removals are estimated. The ERT recommends that the Party estimate removals from this source for the sake of completeness. To increase transparency, the biomass losses due to harvesting and forest conversion could be separately reported, using information from the NFI and other data sources. In response to the draft review report the Party has indicated that removals from plantations will be estimated for the next submission.

Forest grassland conversion

56. To increase transparency, the ERT encourages the Party to report the biomass losses associated with forest harvesting and forest conversion separately. In response to the draft review report the Party has indicated that it plans to report these losses separately in the 2004 or 2005 submission.

57. Non-CO_2 emissions associated with forest fires or biomass burning are reported as "NE" in Table 5. In response to the draft review report the Party has indicated that these emissions should be reported as "NO" as the practice of burning during forest conversion in not used in Austria. The ERT recommends that the correct notation keys be reported in the next submission.

Abandonment of managed lands

58. To increase transparency, the ERT encourages the Party to report the CO_2 removals associated with the abandonment of managed lands. In response to the draft review report the Party has indicated that it plans to report CO_2 from abandoned lands in the 2004 or 2005 submission.

VI. WASTE

A. Sector overview

59. Emissions from the Waste sector represented about 5.4 per cent of total GHG emissions in 2001. There has been a 19.9 per cent decline in emissions since 1990 as a result of waste management policies.

60. The reporting of the Waste sector is complete and covers emissions from all source categories: solid waste disposal on land, waste-water handling, waste incineration and other (sludge spreading and compost production). CH_4 emissions from sludge are reported as "IE" and the documentation box explains that these emissions are included in emissions from waste water. In response to the 2001 in-country review report recommendation, N_2O emissions from human sewage are now reported.

61. All CRF tables specific to the Waste sector have been submitted and contain appropriate data and notation keys. Methodologies, assumptions, background data and studies used for estimating emissions from the Waste sector are summarized in a relatively accessible format and described in the NIR. The studies on waste composition and oxidation factors are not developed on a continuous basis. The methodology and emission factors given in the CRF and the NIR are comparable to those from other Parties. Qualitative uncertainty estimates are provided in table 7 of the CRF. Methane emissions from solid waste disposal sites (SWDS) for 1998–2001 have been recalculated on the basis of the Austrian disposal database. Austria has provided recalculated estimates (table 8(a)) and explanatory information for 1990–2000.

62. Austria is planning the following improvements: a review of the methodology used for estimating emissions; updating of AD for non-residual waste; revision of the time series of residual waste; updating the rate of landfill-gas collection; and the reallocation of CH_4 emissions from sludge spreading and compost production from "other" to 6.B Waste-water handling and 6.A Solid waste disposal on land, respectively.

B. Key sources

Solid waste disposal on land – CH4

63. The method for calculating the emissions from SWDS separates waste into two categories, "residual waste" and "non-residual waste". Because of lack of data, non-residual waste is assumed to be constant for all inventory years. The ERT recommends that the Party develop an extrapolation of the non-residual waste figures, taking into account population growth and changes in management practices such as incineration and recycling. The NIR indicates that Austria has plans to update these AD.

64. The CRF additional information tables report the fraction of municipal solid waste (MSW) disposed of to SWDS as 0.29, with 0.15 and 0.34 disposed of to waste incineration and recycling, respectively. The sum is less than 1. The NIR states that an additional 0.15 is allocated to biogenous waste recycling and 0.06 to mechanico-biological pre-treatment. The ERT recommends that the Party include these data in the CRF additional information box. In response to the draft review report the Party has indicated that it plans to include this information in the next submission.

65. The CH_4 oxidation factor (0.2) is significantly higher that the IPCC default value (0.1) recommended for well-managed SWDS. The choice of oxidation factor should be explained in the NIR and the CRF. In response to the draft review report the Party has indicated that it plans to recalculate emissions for the next submission using the default IPCC oxidation factor.

66. The quantity of waste composition reported as "other" (51 per cent) seems high in comparison to those reported by other Annex I Parties. It is unclear whether the "other" is inert or organic waste as the table reports "other – inert" as 2.41 per cent and "other – organic" as 0.00 per cent. Further explanation should be provided in the NIR and the CRF. The Party has indicated to the ERT that it plans to obtain more accurate information of composition for the next submission.

C. Non-key sources

Waste incineration – CO_2

67. Austria has informed the ERT that CO_2 emissions from the incineration of waste oil are either reported under 6.C, when there is no energy recovery, or under 1.A Fuel combustion, when there is energy recovery. The ERT recommends that the Party improve the documentation of the allocation of incinerated waste in the NIR. In response to the draft review report the Party has indicated that it plans to improve the documentation in the next submission.

ANNEX 1: MATERIALS USED DURING THE REVIEW

A. Support materials used during the review

2002 and 2003 Inventory submissions of Austria. 2003 submission including CRF for years 1990–2001 and an NIR.

UNFCCC secretariat. "Report of the individual review of the greenhouse gas inventory of Austria submitted in the year 2001 (Centralized review)." FCCC/WEB/IRI(3)2001/AUT (available at http://unfccc.int/program/mis/ghg/countrep/autcentrev.pdf).

UNFCCC secretariat. "Report of the individual review of the greenhouse gas inventory of Austria submitted in the year 2001 (In-country review)." FCCC/WEB/IRI(2)2001/AUT (available at http://unfccc.int/program/mis/ghg/countrep/autincountrep.pdf).

UNFCCC secretariat. "2003 Status report for Austria" (available at http://unfccc.int/program/mis/ghg/statrep00/swe00.pdf).

UNFCCC secretariat. "Synthesis and assessment report of the greenhouse gas inventories submitted in 2003. Part I." FCCC/WEB/SAI/2003 (available at http://unfccc.int/program/mis/ghg/s_a2003.html) and Part II – the section on Austria (unpublished).

Austria's comments on the draft "Synthesis and assessment report of the greenhouse gas inventories submitted in 2003" (unpublished).

UNFCCC secretariat. Review findings for Austria (unpublished).

UNFCCC secretariat. "Handbook for review of national GHG inventories." Draft 2003 (unpublished).

UNFCCC secretariat. "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories." FCCC/CP/1999/7 (available at http://www.unfccc.int/resource/docs/cop5/07.pdf).

UNFCCC secretariat. "Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention." FCCC/CP/2002/8 (available at http://unfccc.int/resource/docs/cop8/08.pdf).

UNFCCC secretariat. Database search tool – *Locator* (unpublished).

IPCC. *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories 2000* (available at http://www.ipcc-nggip.iges.or.jp/public/gp/gpgaum.htm).

IPCC/OECD/IEA. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, volumes 1–3, 1997* (available at http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm).

B. Additional materials

Responses to questions during the review were received from Mr. Helmut Hojesky (Federal Ministry for Agriculture, Forestry, Environment and Water) including additional material on the methodology and assumptions used.

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