



United Nations

FCCC/ARR/2010/AUT



**Framework Convention on
Climate Change**

Distr.: General
15 April 2011

English only

**Report of the individual review of the annual submission of
Austria submitted in 2010***

* In the symbol for this document, 2010 refers to the year in which the inventory was submitted, and not to the year of publication.

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I. Introduction and summary

A. Overview

1. This report covers the centralized review of the 2010 annual submission of Austria, coordinated by the UNFCCC secretariat, in accordance with decision 22/CMP.1. The review took place from 30 August to 4 September 2010 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Ms. Erasmia Kitou (European Union) and Ms. Anna Romanovskaya (Russian Federation); energy – Mr. Leonidas Osvaldo Girardin (Argentina), Mr. Leif Hockstad (United States of America), Ms. Ayse Yasemin Orucu (Turkey) and Mr. Hristo Vassilev (Bulgaria); industrial processes – Ms. Valentina Idrissova (Kazakhstan) and Ms. Sina Wartmann (Germany); agriculture – Mr. Bernard Hyde (Ireland) and Ms. Batima Punsalmaa (Mongolia); land use, land-use change and forestry (LULUCF) – Ms. Marina Shvangiradze (Georgia), Ms. Marina Vitullo (Italy) and Mr. Richard Volz (Switzerland); and waste – Ms. Kyoko Miwa (Japan) and Ms. Tatiana Tugui (Republic of Moldova). Mr. Hockstad and Ms. Tugui were the lead reviewers. The review was coordinated by Ms. Inkar Kadyrzhanova and Mr. Javier Hanna (UNFCCC secretariat).

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

B. Emission profiles and trends

3. In 2008, the main greenhouse gas (GHG) in Austria was carbon dioxide (CO₂), accounting for 85.0 per cent of total GHG emissions¹ expressed in CO₂ eq, followed by methane (CH₄) and nitrous oxide (N₂O), each accounting for 6.6 per cent. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) collectively accounted for 1.9 per cent of the overall GHG emissions in the country. The energy sector accounted for 74.7 per cent of total GHG emissions, followed by industrial processes (13.7 per cent), agriculture (8.8 per cent), waste (2.3 per cent) and solvent and other product use (0.4 per cent). Total GHG emissions amounted to 86,640.57 Gg CO₂ eq and increased by 10.8 per cent between the base year² and 2008.

4. Tables 1 and 2 show GHG emissions from Annex A sources and emissions and removals from activities under Article 3, paragraph 3, and, if any, Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector, respectively. In addition, table 2 shows emissions and removals from the LULUCF sector under the Convention. In table 1, CO₂, CH₄ and N₂O emissions included in the rows under Annex A sources do not include emissions and removals from the LULUCF sector.

5. Table 3 provides information on the most important emissions and removals and accounting parameters that will be included in the compilation and accounting database.

¹ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

² “Base year” refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from Annex A sources only.

Table 1
Greenhouse gas emissions from Annex A sources and emissions/removals from activities under Article 3, paragraphs 3 and 4, by gas, base year to 2008^a

		<i>Gg CO₂eq</i>								<i>Change</i>		
		<i>Greenhouse gas</i>	<i>Base year</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>Base year–2008 (%)</i>	
Annex A sources		CO ₂	62 068.13	62 068.13	63 951.18	65 799.05	79 772.95	76 687.06	73 972.29	73 629.59	18.6	
		CH ₄	8 305.59	8 305.59	7 633.77	6 640.53	6 085.71	5 955.58	5 861.10	5 716.62	–31.2	
		N ₂ O	6 197.36	6 197.36	6 599.54	6 274.65	5 429.69	5 471.40	5 497.31	5 681.28	–8.3	
		HFCs	26.32	26.32	411.89	901.88	986.41	962.62	1 061.99	1 058.10	3920.0	
		PFCs	1 079.24	1 079.24	71.27	84.79	133.82	145.72	190.12	173.53	–83.9	
		SF ₆	494.28	494.28	1 154.06	595.54	507.33	465.15	374.54	381.44	–22.8	
KP-LULUCF	Article 3.3 ^b	CO ₂								–1 307.07		
		CH ₄								NO		
		N ₂ O								NO		
	Article 3.4 ^c	CO ₂	NA								NA	NA
		CH ₄	NA								NA	NA
		N ₂ O	NA								NA	NA

Abbreviations: KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NO = not occurring, NA = not applicable.

^a “Base year” for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The “base year” for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol is 1990.

^b Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation. Only the inventory years of the commitment period must be reported.

^c Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation. For cropland management, grazing land management and revegetation, the base year and the latest inventory year must be reported.

Table 2

Greenhouse gas emissions by sector and activity, base year to 2008

		<i>Gg CO₂ eq</i>								<i>Change</i>	
<i>Sector</i>		<i>Base year^a</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>Base year– 2008 (%)</i>	
Annex A	Energy	55 403.93	55 403.93	57 671.32	59 076.02	72 182.73	68 604.68	65 463.08	64 727.07	16.8	
	Industrial processes	10 110.94	10 110.94	9 896.87	10 322.18	10 627.52	10 990.48	11 465.65	11 869.37	17.4	
	Solvent and other product use	511.80	511.80	422.45	425.12	384.65	411.97	387.23	388.41	–24.1	
	Agriculture	8 558.03	8 558.03	8 718.84	7 904.40	7 398.79	7 432.89	7 497.40	7 631.33	–10.8	
	Waste	3 586.22	3 586.22	3 112.23	2 568.72	2 322.22	2 247.51	2 143.99	2 024.40	–43.6	
	Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	LULUCF	NA	–13 139.39	–16 124.81	–17 153.51	–17 331.51	–17 316.99	–17 387.89	–17 337.16	NA	
Total (with LULUCF)		NA	65 031.53	63 696.90	63 142.93	75 584.39	72 370.54	69 569.46	69 303.41	NA	
Total (without LULUCF)		78 170.92	78 170.92	79 821.72	80 296.44	92 915.91	89 687.53	86 957.35	86 640.57	10.8	
KP-LULUCF	Article 3.3 ^b	Afforestation & reforestation							–2 530.67		
		Deforestation							1 223.61		
		Total (3.3)							–1 307.07		
	Article 3.4 ^c	Forest management								NA	
		Cropland management	NA							NA	NA
		Grazing land management	NA							NA	NA
		Revegetation	NA							NA	NA
Total (3.4)	NA							NA	NA		

Abbreviations: KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable.

^a “Base year” for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The “base year” for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol is 1990.

^b Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation. Only the inventory years of the commitment period must be reported.

^c Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation. For cropland management, grazing land management and revegetation, the base year and the latest inventory year must be reported.

Table 3

Information to be included in the compilation and accounting database, in tonnes of carbon dioxide equivalent

	<i>As reported</i>	<i>Adjustment^a</i>	<i>Final^b</i>	<i>Accounting quantity^c</i>
Commitment period reserve	309 479 408		309 479 408	
Annex A emissions for current inventory year				
CO ₂	73 630 226		73 629 587	
CH ₄	5 716 624		5 716 624	
N ₂ O	5 681 284		5 681 284	
HFCs	1 058 104		1 058 104	
PFCs	173 530		173 530	
SF ₆	381 439		381 439	
Total Annex A sources	86 641 209		86 640 569	
Activities under Article 3, paragraph 3, for current inventory year				
3.3 Afforestation and reforestation on non-harvested land for current year of commitment period as reported	-2 530 675		-2 530 675	
3.3 Afforestation and reforestation on harvested land for current year of commitment period as reported	NO		NO	
3.3 Deforestation for current year of commitment period as reported	1 223 608		1 223 608	
Activities under Article 3, paragraph 4, for current inventory year^d				
3.4 Forest management for current year of commitment period				
3.4 Cropland management for current year of commitment period				
3.4 Cropland management for base year				
3.4 Grazing land management for current year of commitment period				
3.4 Grazing land management for base year				
3.4 Revegetation for current year of commitment period				
3.4 Revegetation in base year				

Abbreviation: NO = not occurring.

^a "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustments.

^b "Final" includes revised estimates, if any, and/or adjustments, if any.

^c "Accounting quantity" is included in this table only for Parties that chose annual accounting for activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, if any.

^d Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more of these activities.

II. Technical assessment of the annual submission

A. Overview

1. Annual submission and other sources of information

6. The 2010 annual inventory submission was submitted on 15 April 2010; it contains a complete set of common reporting format (CRF) tables for the period 1990–2008 and a national inventory report (NIR). The NIR was resubmitted on 27 May 2010. In its NIR, Austria also submitted information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry, and minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 15 April 2010. The annual submission was submitted in accordance with decision 15/CMP.1.

7. Austria officially submitted revised emission estimates on 14 October and 4 November 2010 in response to questions raised by the expert review team (ERT) in the course of the centralized review (see para. 64 below). Austria also submitted revised information and data on KP-LULUCF on 14 October and 4 November 2010 in response to questions raised by the ERT during the centralized review (see paras. 102–105 below). Where necessary, the ERT also used previous years' submissions during the review. The values in this report are based on the submission of 4 November 2010.

8. In addition, the ERT used the standard independent assessment report (SIAR), parts I and II, to review information on the accounting of Kyoto Protocol units (including the SEF tables and their comparison report) and on the national registry.³

9. During the review, Austria provided the ERT with additional information and documents which are not part of the annual submission but are in most cases referenced in the NIR. The full list of information and documents used during the review is provided in annex I to this report.

Completeness of inventory

10. Austria submitted a complete set of CRF tables for the years 1990–2008 and an NIR. The inventory is complete in terms of years, gases, sectors, source/sink categories and geographical coverage for the period 1990–2008. The ERT commends Austria for having estimated previously not-estimated emissions, as recommended in the previous review report. Remaining emissions/removals reported as not estimated (“NE”) are in the LULUCF sector and relate to the carbon stock changes in wetlands remaining wetlands and settlements remaining settlements, which constitute optional categories. The ERT encourages Austria to provide estimates of these last remaining not-estimated emissions in its next annual submission.

³ The SIAR, parts I and II, is prepared by an independent assessor in line with decision 16/CP.10 (paras. 5(a), 6(c) and 6(k)), under the auspices of the international transaction log (ITL) administrator using procedures agreed in the Registry System Administrators Forum. Part I is a completeness check of the submitted information relating to the accounting of Kyoto Protocol units (including the SEF tables and their comparison report) and to national registries. Part II contains a substantive assessment of the submitted information and identifies any potential problem regarding information on the accounting of Kyoto Protocol units and the national registry.

2. A description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Overview

11. The ERT concluded that the national system continued to perform its required functions. The ERT considered that Austria's legal, procedural and institutional arrangements for estimating and reporting GHG emissions were in line with the general and specific functions of national systems defined in the annex to decision 19/CMP.1.

12. Austria reported that there have been no changes in its national system since the previous annual submission.

Inventory planning

13. The NIR described the national system for the preparation of the inventory. The Umweltbundesamt (Austrian Federal Environment Agency) is the single national entity with overall responsibility for the national inventory. Other legal and institutional arrangements are in place to guarantee that the data providers, either public or private, deliver the required statistical information to the Umweltbundesamt, including: an ordinance regarding the monitoring and reporting of GHG emissions to ensure that the inventory data are consistent with emissions data from the European Union emissions trading scheme (EU ETS); a contract of Statistik Austria with the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and the Federal Ministry of Economics and Labour to ensure the completion of the annual energy balances; agreements for the use of statistical information from Statistik Austria on imports and exports of fuels, industrial production and data on agriculture activities; regulations ensuring that activity data (AD) and emissions data from boilers over 2 MW are provided by industrial operators; legislation enforcing the collection of information on solid waste disposal sites; and an ordinance setting the reporting obligations for users of fluorinated gases (F-gases). The Umweltbundesamt has also secured access to confidential data in accordance with Austrian Federal Law.

14. Within the Umweltbundesamt, the Department of Emissions and Climate Change is responsible for the preparation of the emission inventory and all related work, such as choice of methods and emission factors (EFs), and collection, processing and archiving of data. Specific responsibilities are allocated to sectoral experts from departments within the Umweltbundesamt.

15. The reporting obligations are administered by BMLFUW, which is also the national focal point to the UNFCCC. This ministry is responsible for the official approval of the inventory, received from the Umweltbundesamt, and its submission to the secretariat.

16. As part of Austria's quality management system (QMS), the management of the inventory includes a control system for all documents and data and for records and their archives, as well as documentation on quality assurance/quality control (QA/QC) activities. This ensures the availability of the necessary documentation and the archiving of information for the future compilation of the inventory and for the timely response to requests during the review process.

17. Supplementary information required under Article 7 of the Kyoto Protocol as part of the national system as defined in the annex to decision 19/CMP.1 is prepared within the institutions of the national system, for example the KP-LULUCF information is prepared by the same sectoral experts preparing the information on the LULUCF sector under the Convention. Other such supplementary information is requested from the Austrian registry, which is also managed by the Umweltbundesamt.

Inventory preparation

Key categories

18. Austria has reported a key category tier 1 analysis, both level and trend assessments, as part of its 2010 submission. The key category analysis performed by Austria and that performed by the secretariat⁴ produced similar results, with differences due to the level of disaggregation used in the energy sector. Austria 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).

19. Austria reported in its NIR that if categories had been identified as key by level or trend assessment in a previous submission but not in this, then these categories were still considered key for this submission, as: (a) these categories may be categories that are close to the 95 per cent threshold criteria, but are not included in all years (e.g. owing to fluctuating emissions/removals); and (b) the emission calculation for these categories might have changed due to methodological changes and thus the contribution of these categories to the level or trend of emissions. Other qualitative criteria considered by Austria were mitigation techniques, high expected growth of emissions/removals and unexpected low or high levels of emissions/removals. The only additional key category identified using these qualitative criteria was natural gas distribution and pipelines. Austria's key category analysis is generally in accordance with the IPCC good practice guidance.

20. In previous review reports, Austria has been encouraged to include a tier 2 key category analysis in its future annual submissions. Austria reported in its 2010 NIR that it has still not been able to perform a tier 2 key category analysis, owing to a lack of resources. The ERT strongly encourages Austria to conduct a tier 2 key category analysis as soon as it has a complete set of uncertainty estimates for all categories, in accordance with the decision tree contained in the IPCC good practice guidance.

21. The ERT welcomed that, following a recommendation made in the previous review report, Austria has now identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Uncertainties

22. Austria has reported a tier 1 uncertainty analysis in its NIR. As the uncertainties of the total national emissions estimated by tier 2 analysis (the Monte Carlo approach) have not varied significantly over the past years, Austria decided to perform the Monte Carlo analysis every two years instead of every year. The next tier 2 uncertainty analysis will be provided in the Party's 2011 submission. The total uncertainty of the Party's inventory for 2008 is 4.4 per cent. The trend uncertainty for the period 1990–2008 is 2.1 per cent. The reported tier 1 analysis excluded the LULUCF sector and covered key categories only, although Austria had previously informed the ERT that a thorough evaluation of the

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 Intergovernmental Panel on Climate Change *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. Key categories according to the tier 1 trend assessment were also identified for Parties that provided a full set of CRF tables for the base year or period. 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.

uncertainty of the whole LULUCF sector was ongoing and that the results would be available for its 2010 annual submission. The ERT reiterates the recommendation made in the previous review report that Austria include the whole LULUCF sector as part of the uncertainty analysis in its next annual submission and cover all categories of the inventory.

Recalculations and time-series consistency

23. Recalculations have been performed and reported in accordance with the IPCC good practice guidance. The ERT noted that recalculations reported by Austria of the time series 1990 to 2007 have been undertaken to take into account: updates of AD and net calorific values (NCVs) following the update of the compliant energy balance reported to the International Energy Agency (IEA) (energy sector); updates of AD in the industrial processes, solvent and other product use, and waste sectors; improvements in methodologies and EFs (energy, industrial processes, solvent and other product use, and agriculture sectors); and improvements in the reporting of underlying AD (energy sector). The major changes, and the magnitude of the impact, include decreases in the estimated total GHG emissions in 1990 (by 1.1 per cent) and in 2007 (by 1.1 per cent). The rationale for these recalculations is provided in the NIR, but it is not provided in CRF table 8(b). The ERT reiterates the recommendation made in the previous review report that Austria also include explanations for recalculations in CRF table 8(b).

24. The lower estimate of total emissions for the whole time series in the 2010 submission compared with the 2009 submission is mainly attributable to the recalculated CH₄ emissions in the energy (fugitive emissions) and agriculture (enteric fermentation, manure management and direct soil emissions) sectors. The main reason for the recalculation is that a national study became available for calculating CH₄ emissions from natural gas distribution, replacing the estimates based on default EF values previously used. For the 2010 submission, the tier 2 method was applied and country-specific EFs were used. With respect to the agriculture sector, the availability of new data on animal waste management systems (AWMS) taken from national research is the main reason for recalculations in the sector.

Verification and quality assurance/quality control approaches

25. Austria has a QA/QC system in place, in accordance with decision 19/CMP.1, which is part of the national QMS. The ERT considers that Austria has developed and implemented general and category-specific QA/QC procedures which are in accordance with the IPCC good practice guidance. Details of these procedures have been provided in the NIR. The national QMS meets the requirements of the International Organization for Standardization (ISO) standard 17020. Additionally, the Umweltbundesamt has been accredited as an inspection body in accordance with Austrian accreditation law and is responsible for Austria's QA/QC activities. The QMS covers several processes that ensure the selection of methodologies, data collection and the management of the inventory. The QA/QC system includes a QA/QC plan/manual, general tier 1 QC procedures, category-specific tier 2 QC procedures, QA review procedures, and procedures for reporting, documentation and archiving. QC activities are performed by sectoral experts in accordance with QC checklists after the inventory is completed, and a deputy sectoral expert performs second-party checks. QA activities include: second-party audits for country-specific methodologies; annual second-party audits for every sector; second-party audits for work performed by subcontractors; and third-party audits for periodically checking the compliance of the QMS with ISO 17020. External data providers are periodically audited by the Austrian inspection body for emission inventories, an effort which the ERT commends.

26. The EU ETS emission data used by Austria have to be independently verified before their use. BMLFUW is in charge of granting the required licence to independent verifiers. In addition, the ministry has to fulfil a QC function, which is performed by the Umweltbundesamt on behalf of the ministry.

27. Despite Austria's rigorous QA/QC procedures, the ERT noted that, for example with regard to the LULUCF sector, there were differences between the emissions and trends reported in the general section of the NIR (chapter 2) and those reported in the sectoral overview (chapter 7). The ERT recommends that Austria review its QA/QC plan to see if further checks need to be added to the existing procedures or whether its implementation could potentially be further enhanced.

Transparency

28. The NIR is generally transparent, is well structured and, together with the information provided by Austria during the centralized review, provides much of the information necessary to assess the inventory. This greatly facilitates understanding of the major underlying assumptions and the rationale behind the choices of data, methods and other inventory parameters. There are some minor transparency-related problems, which are encountered mainly in relation to the LULUCF sector.

29. The ERT noted areas in the NIR and in the CRF tables where it was not easy to understand where certain data had been included (e.g. if the area of non-productive forest was included under the category forest land remaining forest land or how coke consumption was accounted for in the energy sector). In particular, regarding the LULUCF sector, Austria has not always been able to transparently report on whether certain pools (e.g. litter and deadwood) were sources of emissions or not. The ERT recommends that Austria enhance its efforts to provide transparent and verifiable information, especially regarding the LULUCF and energy sectors.

30. The ERT noted that explanations for implied emission factors (IEFs) and unusual trends, observed also in previous review reports, have yet to be fully addressed in the NIR. The ERT recommends that Austria carefully examine any variation in trends, including in relation to IEFs, in particular in the energy and industrial processes sectors, and provide the relevant explanations in the NIR of its next annual submission.

Inventory management

31. Although data for the inventory are collected and processed by different sectoral experts working at the Umweltbundesamt, Austria has a centralized archiving system, which includes the archiving of disaggregated EFs and AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory. The archived information also includes internal documentation on QA/QC procedures, external and internal reviews, and documentation on annual key categories and key category identification and planned inventory improvements. The system also includes documentation (in a logbook) on the responsibilities of and the actions performed by the sectoral experts. Inventory information, both on paper and in electronic format, is stored at the Umweltbundesamt.

3. Follow-up to previous reviews

32. Austria has systematically followed up on recommendations made in previous review reports, and has discussed its efforts in detail in chapter 9 of the NIR on recalculations and improvements. The ERT noted the following improvements to the inventory since the Party's previous annual submission:

- (a) Detailed descriptions of category-specific QA/QC activities have now been provided for all sectors;
- (b) AD on and emissions from the use of biodiesel in road transportation have been reported under biomass separately from AD on and emissions from the use of fossil fuels;
- (c) Austria has updated the information on AWMS, on the basis of a new study;
- (d) The data availability problem in the industrial processes sector noted in previous submissions has been solved for all key categories.

33. However, the ERT identified some general recommendations that have either not yet been implemented or have been only partially implemented:

- (a) The preparation of a tier 2 key category analysis;
- (b) The inclusion of all categories of the LULUCF sector in the uncertainty analysis;
- (c) The use of country-specific NCVs also in the reference approach;
- (d) The inclusion of explanations for recalculations in the relevant CRF tables;
- (e) The examination of any variation in trends, including in relation to IEFs, in particular in the energy and industrial processes sectors, and the provision of the relevant explanations in the NIR.

34. Austria has shown, in its NIR, that it has a clear structure and established procedures for the consideration and implementation of any improvements identified in both internal and external reviews. The ERT commends Austria for its clear and transparent description and execution of this process.

4. Areas for further improvement

Identified by the Party

35. The 2010 NIR identifies several areas for improvement regarding the LULUCF sector, which include: the changing of the wood density values; the recalculation of the data on biomass and deadwood; the re-evaluation and improvement of the management factors for cropland; the separate reporting of the carbon stock changes in different pools; the improvement of the values for carbon stocks in biomass in viticulture and horticulture; the use of a model-based approach to estimate carbon stock changes in soil for forest land remaining forest land; the improvement of the consistency of the reporting on land-use conversions between cropland and grassland; and the updating of the uncertainty analysis by including the LULUCF sector. Additionally, the sector chapters of the NIR include specific planned improvements for certain categories.

Identified by the expert review team

36. The ERT identifies the following cross-cutting issues for improvement in Austria's next annual submission:

- (a) The review of the QA/QC plan to see if further checks need to be added to the existing procedures or whether its implementation could potentially be further enhanced;
- (b) The enhancement of efforts to provide transparent and verifiable information, especially regarding the LULUCF and energy sectors;

(c) The inclusion in the tier 1 uncertainty analysis of all categories in the LULUCF sector, in line with the IPCC good practice guidance for LULUCF;

(d) Reporting on the results of the corrective actions that have been taken to prevent future discrepancies in transactions of the national registry.

37. Recommended improvements relating to specific categories are presented in the relevant sector chapters of this report.

B. Energy

1. Sector overview

38. The energy sector is the main sector in the GHG inventory of Austria. In 2008, emissions from the energy sector amounted to 64,727.07 Gg CO₂ eq, or 74.7 per cent of total GHG emissions. A total of 99.3 per cent of the emissions from this sector originated from fuel combustion and the rest were fugitive emissions from fuels. Within the sector, 34.8 per cent of the emissions were from transport, followed by 25.0 per cent from manufacturing industries and construction and 20.9 per cent from energy industries. Other sectors accounted for 18.5 per cent and fugitive emissions from fuels (oil and natural gas) accounted for 0.7 per cent. The remaining 0.1 per cent were from other. From 2007 to 2008 emissions from the energy sector decreased by 1.1 per cent, owing mainly to lower levels of emissions in the transport and energy industries categories.

39. Since 1990, emissions from the energy sector have increased by 16.8 per cent. The key driver for the rise in emissions is the increase in fuel consumption for road transportation. The GHG emissions related to transport have increased by 60.8 per cent since 1990, followed by emissions from manufacturing industries and construction, which have increased by 26.5 per cent. On the other hand, emissions from other sectors have decreased by 16.9 per cent over the same period.

40. In 2008, emissions of CO₂ amounted to 63,473.61 Gg and represent 98.1 per cent of the emissions from the sector, with N₂O accounting for 1.2 per cent and CH₄ accounting for 0.8 per cent of the sectoral emissions. CO₂ emissions increased by 17.2 per cent in 2008 compared with 1990 figures, and N₂O emissions increased by 34.4 per cent. On the other hand, emissions of CH₄ have decreased by 24.4 per cent since 1990.

41. Regarding completeness, the inventory addresses all the IPCC categories for the energy sector and covers all years and gases. The level of disaggregation for the allocation of fuel consumption to individual end-use sectors is in accordance with the IPCC category classification. All the CRF tables, including the sectoral background data tables, are provided. The information provided in the CRF tables is consistent with the information included in the NIR and its annexes.

42. The reporting on the energy sector is transparent and the methodologies, EFs and NCVs used are well documented in the NIR. The notation keys are used correctly in the CRF tables. AD for stationary combustion come from the national energy balance, provided by Statistik Austria. AD for fugitive emissions from oil and natural gas are provided by industrial associations in Austria. Most of the EFs used are country-specific and information on them is provided in the NIR. However, IEFs and unusual trends that differ significantly from those of other Parties, identified over the years in previous review reports, have yet to be fully addressed in the NIR, as has been highlighted in previous review reports. Hence, the ERT reiterates the recommendations from previous review reports that Austria carefully examine any variation in trends in IEFs and provide the relevant explanations in the NIR of its next annual submission.

43. Austria has continued to carry out recalculations in the energy sector, which are well documented in the NIR. For the fuel combustion categories, recalculations have been undertaken to reflect changes in AD based on the availability of updated data from the national energy balance. For the fugitive emissions categories, recalculations were due to a change in the methodology (tier 1 to tier 2/tier 3), which resulted in a significant decrease in the estimated CH₄ emissions compared with those reported in the 2009 submission, mainly in the natural gas distribution category. This is particularly important because fugitive CH₄ emissions from natural gas is no longer identified as a level or trend key category as a consequence of these recalculations (but is identified as a qualitative key category). During the centralized review, Austria provided further explanation for this recalculation, including more detailed information and references, which the ERT recommends be included in the NIR of the Party's next annual submission. In respect of navigation, the update of the data on the split between national and international fuel consumption resulted in a recalculation of the respective emissions, using a tier 3a method. This resulted in a change in the share of fuel consumption of national and international navigation, with domestic navigation accounting for approximately 40 per cent of the total diesel oil consumption in 2008.

44. Information on uncertainties and time-series consistency for the fuel combustion and fugitive emissions categories was provided in the NIR. Also, information on QA/QC procedures and planned improvements was included for key categories. Information on improvements made in response to recommendations made in previous review reports was included in a separate chapter in the NIR.

2. Reference and sectoral approaches

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

45. For 2008, the estimates of CO₂ emissions are 6.3 per cent higher when calculated using the reference approach than when calculated using the sectoral approach. For 1990, estimated CO₂ emissions calculated using the reference approach were 4.19 per cent higher than those calculated using the sectoral approach. Disaggregated by type of fuel, for 2008 the estimated CO₂ emissions calculated using the reference approach are always higher than those obtained using the sectoral approach: by 2.88 per cent for liquid fuels, 35.69 per cent for solid fuels and 4.79 per cent for gaseous fuels. Austria has provided an explanation in the NIR (but not in the documentation box of CRF table 1.A(c)) for the observed differences between the two approaches, which are due, among other things, mainly to the fact that in the reference approach the IPCC default NCVs are used to calculate energy consumption, while in the sectoral approach country-specific NCVs are used. In addition, the selected EFs are different in each of the approaches, especially those for coal. Other differences, as explained in the NIR, relate to liquid fuels, mainly to diesel oil, because in the reference approach CO₂ emissions from diesel oil are fully accounted for as fossil emissions, while in the sectoral approach the share of mixed biofuel is accounted for as biogenic. In addition, Austria states in its NIR that the reference approach includes CO₂ emissions from the non-energy use of fuels, which in the sectoral approach are included under the industrial processes sector following the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines). The ERT reiterates the recommendation made in previous review reports that Austria use country-specific NCVs also in the reference approach.

46. In response to a question raised during the centralized review, Austria provided the ERT with additional explanations for the differences between the sectoral and reference approaches, namely highlighting table 20 of the NIR. However, the ERT did not find that table 20 of the NIR was sufficient to transparently explain the differences, namely the quantification of coke oven coke and biofuels contributing to the difference between the reference and sectoral approaches. Given the large differences between the estimates

reported by Austria of CO₂ emissions calculated using the reference and sectoral approaches, in particular for solid fuels, the ERT recommends that Austria reorganize section 3.2.1 of its NIR, including table 20, to more transparently and clearly explain the reasons for the differences, and make better use of the documentation boxes of the CRF tables, placing emphasis on explaining the differences in the reporting of emissions from solid fuels.

47. Apparent consumption in Austria's reference approach for 2008 corresponds closely to the IEA data. For 2008, there is a difference of 0.9 per cent in apparent consumption between the reference approach data and the IEA data. For all years in the time series the apparent consumption reported by Austria corresponds very closely to that reported to the IEA (differences are around 0.7–0.8 per cent).

International bunker fuels

48. For the estimates of emissions from international bunkers, a tier 3a methodology from the core inventory of air emissions (CORINAIR) was applied for the period 2000–2008, while the MEET model was applied for the 1990–1999 period. According to the NIR, emissions from international aviation bunkers include flights according to visual flight rules and instrument flight rules for national landing/take-off (LTO) and national cruise, consistent with the approach taken for domestic civil aviation. Nevertheless, the ERT recommends that Austria explain in more detail how it has ensured consistency across the time series from 1990 to 2008 using the different models (CORINAIR and MEET).

49. Regarding emissions from international marine bunkers (inland navigation on the river Danube), Austria has reported these emissions separately from the emissions from navigation for the period 1990–2008 for the first time in its 2010 submission, in response to recommendations made in previous review reports. While the ERT commends this, it also recommends that Austria improve the transparency of this section of the NIR with regard to the sources of data used to differentiate between domestic and international marine fuel use.

Feedstocks and non-energy use of fuels

50. The information reported by Austria on feedstocks and non-energy use of fuels is transparent and well documented both in the NIR and in the CRF tables. The recommendation made in the previous review report that Austria report separately consumption of and emissions from naphtha has been implemented in its 2010 submission.

3. Key categories

Stationary combustion: liquid, solid, gaseous and other fuels – CO₂

51. As in previous review reports, the ERT noted a decrease in the CO₂ IEFs for liquid and other fuels from 1990 to 2008 (decreasing by 2.7 per cent and 13.0 per cent, respectively) reported for the category other (manufacturing industries and construction). Austria provided some information in the NIR and in response to earlier stages of the review process on how fluctuations in the fuel mix (fluctuations in petroleum coke used in cement industries) have an impact on the CO₂ IEFs; the Party explained that these IEFs can also be affected by the inclusion of plant-specific EFs since 2005 obtained from EU ETS data (waste reported under other fuels). In addition, Austria stated that the fuel use data used are consistent with the fuel consumption reported to IEA. The ERT reiterates the relevant recommendations made in the previous review report and encourages Austria to provide in its NIR more detailed explanations for these changes in the CO₂ IEFs for liquid and other fuels. Additionally, in categories with fluctuations in the mix of the type of fuel used and changes in country-specific EFs which lead to changes in the IEFs, such as in chemical industries, pulp, paper and print, and the category other, the ERT encourages

Austria to provide detailed explanations for and supporting data on, for example, the composition of other fuels, together with the evolution over time of the IEFs, for as far back as 1990, if applicable, in the NIR of its next annual submission. The ERT recommends that Austria provide further details in its NIR on the impact of the inclusion of plant-specific EFs for the applicable source categories.

52. The commercial/institutional category shows very high inter-annual changes (ranging from -25.4 per cent to +58.1 per cent) in the estimated CO₂ emissions (mainly for the periods 1991–1992, 1994–1995, 1999–2003 and 2004–2008). The explanation provided by Austria in its response to earlier stages of the review process indicated that this category represents fuel combustion not allocated to any of the other categories (or what Austria terms the residual fuel consumption) and therefore has a high trend uncertainty. The ERT also noted for this category that the CO₂ IEFs for liquid fuels show variations between 1990 and 2008: the CO₂ IEF for 2008 (73.91 t/TJ) is 2.5 per cent lower than that for 1990 (75.81 t/TJ). The ERT recommends that Austria provide, in its next annual submission, detailed information on the changes in fuel consumption and IEFs and provide further information on the allocation of fuel use for this category versus the allocation of fuel use for other categories in the sector, where a specific allocation exists.

53. In the previous review report, Austria was recommended to report on the effects of annual climatic conditions on the inter-annual variations in fuel consumption and emissions in the residential category using a graphical representation of the AD per type of fuel in relation to heating degree days. In the NIR of its 2010 submission, Austria provided such a graph and the ERT commends the Party for this improvement.

Road transportation: liquid fuels – CO₂

54. Estimated CO₂ emissions from liquid fuels used in road transportation in 2008 (21,410.69 Gg) are 61.2 per cent higher than those in 1990 (13,283.09 Gg). These CO₂ emissions increased by 80.8 per cent from 1990 to 2005 and decreased by 10.9 per cent from 2005 to 2008. Since 2005 biogenic fuels (mainly biodiesel and bioethanol) have been used for blending fossil fuels. The resulting CO₂ IEF for 2008 for gasoline is 1.8 per cent lower than the 1990 value (with the values ranging from 74.37 t/TJ for 1990 to 73.06 t/TJ for 2008). In its response to previous stages of the review process, Austria explained that this trend in the CO₂ IEFs was mainly driven by the ratio of kilometres driven to Austria's fuel exports. The ERT encourages the Party to provide in the NIR of its next annual submission a more detailed explanation of the effects of fuel exports on IEFs and CO₂ emissions.

Other transportation: gaseous fuels – CO₂

55. The estimated CO₂ emissions from this category in 2008 are 156.0 per cent higher than those in 1990. In addition, the ERT noted high inter-annual changes in these emissions for the periods 1991–1992, 1994–1995, 1999–2003 and 2007–2008. The explanation provided by Austria in response to previous stages of the review is that this category includes emissions from pipeline compressors only and that AD are taken from the national energy balance. Nevertheless, the ERT encourages the Party to provide further information in the NIR of its next annual submission that explains the reason for such variation in the time series. In the NIR (section 3.2.7.14), other transportation (pipeline compressors) is reported as a key category. Additional information provided by Austria after the centralized review noted that this category is reported under a more aggregated category (“1A gaseous”) in both table 7 (page 38) and table 24 (page 71) of the NIR. The ERT encourages the Party to use a consistent level of disaggregation for key categories in the NIR in order to enhance transparency of the inventory and facilitate its review.

Oil and natural gas: gaseous fuels – CH₄

56. In the previous review report, it was recommended that Austria implement a high-tier methodology to estimate emissions from this key category. The Party highlights in the NIR that it has adopted a tier 3 method to estimate emissions from natural gas transmission and distribution. However, in CRF table summary 3, emissions from this category are still mistakenly listed as being estimated using a tier 1 method. The recalculations resulting from this change in methodology led to a reduction in the estimated CH₄ emissions for all years in the period 1990–2007, and in the 2010 submission this category is not identified as a key category by level or trend, although Austria has identified it as a qualitative key category. The Party explained that the change in the methodology consisted mainly of a disaggregation of the pipelines and distribution networks depending on the material of the pipeline and applying the corresponding EFs for the materials of those pipelines, which is in line with the IPCC good practice guidance. The result was a drop in the IEF for the transmission and distribution category from 2,900 kg CH₄/km to 415.10 kg CH₄/km for pipelines and from 649.74 kg CH₄/km to 108.39 kg CH₄/km for distribution networks. However, the new data were taken not from a recent study but from a study from 1999. During the centralized review, Austria provided the ERT with an explanation for this situation, including more detailed information and references. The ERT recommends that Austria include this information in the NIR of its next annual submission.

C. Industrial processes and solvent and other product use**1. Sector overview**

57. In 2008, emissions from the industrial processes sector amounted to 11,869.37 Gg CO₂ eq, or 13.7 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 388.41 Gg CO₂ eq, or 0.4 per cent of total GHG emissions. Since 1990, emissions have increased by 17.4 per cent in the industrial processes sector and decreased by 24.1 per cent in the solvent and other product use sector. The key driver for the rise in emissions in the industrial processes sector is the dramatic increase in the consumption of halocarbons and SF₆, where emissions increased by 444.3 per cent. Emissions from metal production and mineral products also increased (by 15.1 and 7.8 per cent, respectively), while emissions from chemical industry decreased by 38.0 per cent. Within the industrial processes sector, 48.8 per cent of the emissions were from metal production, followed by 29.7 per cent from mineral products, 13.6 per cent from consumption of halocarbons and SF₆ and 7.9 per cent from chemical industry. Regarding solvent and other product use, the main drivers for the fall in emissions are the decreases in paint application and the use, manufacture and processing of chemical products, which decreased by 38.4 per cent and 44.4 per cent, respectively.

58. Austria's inventory for the industrial processes sector is transparent and complete; however, Austria is encouraged to continue increasing transparency for all categories by adding background information on the data sources and EFs used. The ERT noted especially the improvements made with regard to the category consumption of halocarbons and SF₆, for which gaps in reporting have been closed and the approaches used have been refined.

2. Key categoriesIron and steel production – CO₂

59. Emissions from integrated iron and steel production sites are estimated using the mass balance approach employed for the facilities also covered by the EU ETS. Austria reports emissions from the subcategories steel, pig iron and electric furnace steel production

and reports emissions from other subcategories as included elsewhere (“IE”). Emissions from electric arc furnaces were estimated using a country-specific approach that takes into account the amount of steel produced and a country-specific EF of 52 kg CO₂/t steel, which was developed from plant-specific data provided in 2003 and applied to the period 1990–2004. Since 2005, emissions have been reported by industry under the EU ETS using a similar approach. Between 2005 and 2008 the CO₂ IEF for electric arc furnaces varies between 72 kg/t steel and 82 kg/t steel, thus being considerably higher than the average value used for the period 1990–2004. The ERT recommends that Austria validate the consistency of the time series and provide explanations for the high variation in the CO₂ IEF in its next annual submission.

Consumption of halocarbons and SF₆ – HFCs, PFCs and SF₆

60. Emissions from this category are generally calculated using life-cycle models, taking into consideration stocks, lifetimes, annual leakage rates and emissions during production and disposal. With the exception of aerosols/metered dose inhalers and solvents, national EFs are used. For some subcategories of the refrigeration and air-conditioning equipment category, refilled amounts are considered as annual leakage. Calculations are based on two studies from 2001 and 2010. In Austria, AD have had to be reported by industry since 2004 on the basis of a national regulation related to F-gases, but the data received are not complete, owing to the complexity of some categories, such as refrigeration.

61. On the basis of the 2010 study, existing gaps in the Party’s reporting regarding uses of HFCs and PFCs have been closed in its inventory, which includes HFC emissions from fire extinguisher manufacture. Information in the study led to recalculations for most categories and to increases in the estimates of HFC, PFC and SF₆ emissions from these categories. Estimated HFC emissions increased by 15.7 per cent, PFC emissions by 7.4 per cent and SF₆ emissions by 3.5 per cent as averages between 1990 and 2007 compared with the estimates in the previous annual submission. Regarding HFCs, the largest recalculations happened in the category refrigeration, where emissions increased by 91.7 per cent as an average over the period 1990–2007.

62. The subcategory other (consumption of halocarbons and SF₆) was identified by Austria as a key category and includes SF₆ emissions from insulation of windows, tyres, shoes and research. Emissions are calculated using life-cycle models, taking into consideration stocks, lifetimes, annual leakage rates and emissions during production and disposal. Data come from industry, industry experts’ judgement and market research.

63. Owing to the information provided by the study published in 2010 indicated in paragraph 60 above, recalculations took place for insulation of windows (first year of disposal moved from 2006 to 2005), tyres (now using the assumption that SF₆ is emitted completely three years after filling instead of the assumption that it is emitted over the first three years after filling (one third per year)) and shoes (perfluoropropane (C₃F₈) emissions included for the first time). These recalculations changed the emission trend considerably, leading to increases as well as decreases in the emission estimates of up to 10 per cent for most years, but most notably a decrease of 21 per cent in the estimate for 2000 and an increase of 282 per cent in the estimate for 2005 (owing to shifting the first year of disposal of SF₆ used for insulation of windows to 2005).

3. Non-key categories

Ferroalloys production – CO₂

64. For this category Austria uses a tier 1b approach from the Revised 1996 IPCC Guidelines. AD (on ferroalloys production) for 1995 to 2007 were taken from the British Geological Survey on world mineral production (data on ferromolybdenum, ferronickel and

ferrovanadium). Data for 2008 were not available for inclusion in the 2010 submission; therefore, Austria extrapolated linearly the trend for the period 1996–2007, leading to a value of 13.27 kt for 2008. This linear extrapolation resulted in a downward trend in production (the value for 2008 being 8.5 per cent lower than the value for 2007 of 14.5 kt), although production values have been increasing since 2004 (17.9 per cent growth in production between 2004 and 2007). The ERT considered that the extrapolation approach taken by Austria might result in an underestimation of emissions for this category. In response to the list of potential problems and further questions raised by the ERT, after the centralized review Austria provided revised estimates for this category using AD (12.80 kt) from the British Geological Survey that became available in 2010.⁵ The effect of the revision was a reduction of the sectoral CO₂ emission estimate for 2008 by 0.64 Gg, or 0.01 per cent, with the revised estimate being 17.41 Gg CO₂. The ERT agrees with this revised value and recommends that Austria consider the use of proxy data that correlate best (e.g. growth in iron and steel production) for estimating emissions from this category when no AD are available.

65. In Austria ferromolybdenum, ferrovanadium and ferronickel are produced. As an EF is available only for ferronickel (1.36 t CO₂/t), this EF is also applied for the remaining ferroalloy products. In order to increase accuracy, the ERT encourages Austria to use a mass balance approach based on data collected from industry for the calculation of the estimates in its next annual submission.

D. Agriculture

1. Sector overview

66. In 2008, emissions from the agriculture sector amounted to 7,631.33 Gg CO₂ eq, or 8.8 per cent of total GHG emissions. Since 1990, emissions have decreased by 10.8 per cent. The key drivers for the fall in emissions are the continuous decrease in the livestock population, and thus the quantity of manure produced, and reduced nitrogen fertilizer application. This decrease in agricultural activities impacted on emissions from enteric fermentation, manure management and agricultural soils. Within the sector, 42.2 per cent of the emissions were from enteric fermentation, followed by 41.7 per cent from agricultural soils, 16.1 per cent from manure management and 0.02 per cent from field burning of agricultural residues. N₂O accounted for 53.5 per cent and CH₄ for 46.5 per cent of the total emissions from the sector.

67. The agriculture sector is well documented and transparently reported on in the NIR. The reporting is complete and there are no categories that have been reported as “NE”. Austria has further developed its documentation of QA/QC procedures and uncertainty analysis with the inclusion of relevant subcategory-level information on both QA/QC and uncertainty analysis. The ERT commends Austria for providing this information and encourages the inclusion of this additional information in its future annual submissions.

2. Key categories

Enteric fermentation – CH₄

68. Austria uses the IPCC tier 2 method to estimate emissions from cattle and the IPCC tier 1 method for all other livestock species. This is in line with the IPCC good practice guidance. For its 2010 submission, Austria undertook recalculations of the daily average

⁵ British Geological Survey. 2010. *World mineral production 2004–2008*. Keyworth, Nottingham: British Geological Survey. See <www.bgs.ac.uk>.

feed intake of dairy cows and suckling cows. The recalculations resulted in minimal differences to previously reported values for dairy cattle and to higher emissions for other cattle due to an increased GE intake of suckling cows in recent years (increase of 0.9 per cent in 2007). Austria continues to report in the NIR that a tier 2 approach together with Swiss EFs (for gross energy intake and the methane conversion factor (MCF)) were used to estimate emissions from poultry. In response to a question raised by the ERT during the centralized review, Austria stated that, owing to their comparable traditions and cultures and similar alpine conditions and the fact that the Revised 1996 IPCC Guidelines do not provide a methodology to estimate emissions from poultry, it decided to apply the results of the Swiss studies in its estimations. The ERT encourages Austria to update this approach if and when country-specific information becomes available.

69. Austria continues to use the default EF for sheep for the animal category other, which includes mainly a number of different species of deer (roe deer, red deer and fallow deer), in addition to wild boar. In response to a question raised by the ERT during the centralized review, Austria stated that the approach taken is a conservative and transparent approach. The ERT encourages Austria to update this approach if and when country-specific information becomes available.

Manure management – CH₄ and N₂O

70. Austria uses a tier 2 approach to estimate emissions of CH₄ from manure management for cattle and swine, while for all other livestock species a tier 1 approach is used. This is in line with the IPCC good practice guidance. To estimate emissions of N₂O from manure management, the default IPCC method is used, together with country-specific data on nitrogen excretion (Nex) and the distribution of AWMS. The ERT commends Austria for its use of updated information on AWMS as has been recommended in previous review reports.

71. The ERT noted that Austria has for the first time used country-specific MCFs for liquid systems for cattle and swine and commends Austria for using this information in estimating its emissions. While these MCFs are significantly different from those provided in table 4.10 of the IPCC good practice guidance, Austria provided sufficiently transparent information in its NIR as to their use. The ERT also noted that Austria uses the MCF from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (hereinafter referred to as the 2006 IPCC Guidelines) of 17 per cent for deep litter systems in its estimation of CH₄ emissions from manure management. The ERT recommends that Austria provide a more detailed explanation and the rationale for the use of this value in its next annual submission.

72. For its 2010 submission, Austria undertook recalculations for this category with respect to volatile solids excretion values and the inclusion of young swine from 20 to 50 kg in its emission estimates, which had the effect of increasing slightly the estimated emissions from both cattle and swine categories. However, as a result of the use of country-specific MCFs for liquid systems for cattle and swine, the estimated emissions are in fact reduced when compared with those in the previous annual submission.

73. To remain consistent with the use of the MCF for deep litter systems, Austria uses the EF from the 2006 IPCC Guidelines of 0.01 kg N₂O-N/kg N excreted (table 10.21) for cattle and swine deep bedding with no mixing of manure. The ERT recommends that Austria provide a more detailed explanation and the rationale for the use of this value for the emission estimates in its next annual submission. In addition, owing to the revision of the data on AWMS the share of sheep, goats, horses and other animals at pasture is reduced, resulting in a higher estimate of emissions from manure management.

Agricultural soils – N₂O

74. Austria uses both tier 1a and 1b approaches, in conjunction with country-specific AD, to estimate N₂O emissions from synthetic fertilizer application, animal manure applied to soils, nitrogen input from biological fixation, sewage sludge application, crop residues and nitrogen leaching. A decreased share of animals at pasture, as a result of newly implemented data on AWMS, has led to higher quantities of manure and thus nitrogen left for spreading, which had the effect of increasing the estimated emissions from animal manure application by 3.9 per cent for 1990 and by 7.3 per cent for 2007, and decreasing the estimated emissions from pasture, range and paddock by 22.8 per cent and 55.6 per cent for 1990 and 2007, respectively. The correction of an error in the calculation of N₂O emissions from certain crop residues has resulted in increasing the estimated emissions from crop residues by 43.5 per cent and 38.1 per cent for 1990 and 2007, respectively.

75. Despite recommendations being made in previous review reports in relation to the use of statistics on fertilizer use as the AD for emissions from synthetic fertilizer application, Austria has continued to use sales statistics in the form of an arithmetic mean over two years, on the basis that statistics on fertilizer use are not available. The ERT encourages Austria to continue its efforts to collect statistics on fertilizer use and, if possible, to use them for its next annual submission.

76. The ERT noted that Austria has undertaken a comprehensive revision of the agricultural model for estimating N₂O indirect emissions, including revisions to the calculation of ammonia and nitrogen oxides (NO_x) emissions, which has led to slightly lower estimates of emissions from nitrogen leaching and increased estimated N₂O emissions from atmospheric deposition.

3. Non-key categoriesRice cultivation – CH₄

77. Austria uses the notation keys “NO” (not occurring) and “NE” to report this category for the period 1990–2003 and the notation key “NO” for the period 2004–2008. The ERT recommends that Austria clarify its use of the notation keys for this category in its next annual submission.

Field burning of agricultural residues – CH₄ and N₂O

78. For this category Austria estimates emissions from the burning of straw from cereals and the residual wood of viticulture. The burning of agricultural residues is restricted by law and only occasionally permitted on a very small scale in Austria. Austria follows the IPCC default methodology for this category; however, it applies the default values for wheat from the Revised 1996 IPCC Guidelines (tables 4–17 of the reference manual) to all cereals. The ERT encourages Austria to use the relative areas of the individual crops to provide a breakdown of the emissions from this category on a crop by crop basis for its next annual submission.

E. Land use, land-use change and forestry**1. Sector overview**

79. In 2008, net removals from the LULUCF sector amounted to 17,337.16 Gg CO₂ eq. Since 1990, net removals have increased by 31.9 per cent. The key driver for the rise in net removals is the increase in the carbon stock in forest land, which is due mainly to the increase in the forest land area. Within the sector, removals from forest land accounted for 19,466.96 Gg CO₂ eq, followed by emissions from cropland, accounting for 2,062.40 Gg

CO₂ eq, removals of 1,283.77 Gg CO₂ eq from grassland, emissions of 376.97 Gg CO₂ eq from wetlands and emissions of 517.46 Gg CO₂ eq from settlements. The remaining 456.74 Gg CO₂ eq were emissions from other land.

80. The ERT noted that the time series of GHG emissions and removals from the LULUCF sector reported in the sector overview of the NIR (table 207, page 298) is different from the data provided in chapter 2 of the NIR (table 13, page 52). The ERT recommends that Austria check the consistency of the reported data, enhancing the QC checks for its next annual submission.

81. The ERT noted an inconsistency between the data reported on forest land areas in the NIR (i.e. tables 208 and 209, pages 301 and 302) and those reported in the CRF tables. In response to the question raised by the ERT during the centralized review, Austria clarified that the aforementioned inconsistency was caused by the inclusion in the CRF tables of the subcategory representing the area of non-productive forest under the category forest land remaining forest land. Furthermore, Austria provided additional information on the methodologies used and annual data related to areas of forest land remaining forest land, on the basis of the existing datasets of the National Forest Inventory (NFI). In order to increase transparency and clarity, the ERT recommends that Austria report this detailed information and the assumptions used in the NIR of its next annual submission.

82. Austria reported an uncertainty estimate for carbon stock changes in living biomass only in the category forest land and stated in its NIR that a new uncertainty assessment is planned. Ranges of uncertainties based on non-referenced expert judgement were reported for the remaining categories; a quantitative uncertainty estimate for cropland remaining cropland was reported; while for land converted to cropland only grassland has been taken into account. No estimates were provided for the subcategory grassland remaining grassland, while for the wetlands and settlements categories very rough estimates have been reported. The ERT reiterates the recommendation made in the previous review report that Austria assess uncertainties for the whole LULUCF sector for its next annual submission.

2. Key categories

Forest land remaining forest land – CO₂

83. The forest area and land-use change areas from and to forest are based on data from the NFIs. Annual data between two consecutive NFIs were calculated by linear interpolation. Austria reported carbon stock changes in the litter pool under the soil organic matter (SOM) pool. In response to the question raised by the ERT during the centralized review, Austria informed the ERT of its intention to report litter carbon stock changes separately in its next annual submission, as was already stated in the previous review report. As this approach is not in accordance with the IPCC good practice guidance for LULUCF, the ERT recommends that Austria report net changes of litter carbon stock under the dead organic matter (DOM) pool in its next annual submission.

84. Austria used modelling approaches to estimate the carbon stock changes in the SOM pool. However, Austria did not use the obtained results and reported soil carbon stock changes following the tier 1 approach of the IPCC good practice guidance for LULUCF. In response to a question raised by the ERT during the centralized review, Austria provided additional information on the different parameters considered for the modelling approach, stating that Austria plans to improve the estimates for carbon stock changes in forest soils in the near future, on the basis of the outcomes of a reassessment of the forest soil inventory currently ongoing on selected sites. The ERT recommends that Austria include this additional information in the NIR of its next annual submission in order to increase the transparency of its inventory estimates.

Land converted to forest land – CO₂

85. The land-use change areas from and to forest are based on data from the NFIs. Annual data between two consecutive NFIs were calculated by linear interpolation. The split of these data into subcategories of subsequent or previous land uses was done using the same ratio resulting from the NFI 2000/2002. Austria reported carbon stock changes in the litter pool under the SOM pool. As this approach is not in accordance with the IPCC good practice guidance for LULUCF, the ERT recommends that Austria report net changes of litter carbon stock under the DOM pool in its next annual submission.

86. Austria provided some values for soil carbon stocks based on expert judgement (e.g. 150 t C/ha for bogs; 60 t C/ha on average for settlements and traffic areas; and 30 t C/ha for other land uses). The ERT reiterates the recommendation from the previous review report that Austria, in its next annual submission, include clear references for these values.

Cropland remaining cropland – CO₂

87. AD on cropland areas were obtained from official national statistics (from Statistik Austria); the area of cropland remaining cropland has been computed from the total cropland area minus land converted to cropland. The carbon stock changes related to annual cropland remaining annual cropland are estimated to be zero, while changes in carbon stock in biomass of perennial cropland have been estimated using the tier 1 approach. Austria reported carbon stock changes in living biomass from annual crops as a consequence of changes in agricultural management and conversion from annual to perennial crops, and vice versa. In the previous review report, Austria was encouraged to report in its next annual submission all the relevant information to clarify whether and how the temporal variation (i.e. the presence of the same carbon stock in the living biomass pool and in mineral soils in two different but subsequent portions of the same year) in the annual carbon balance was factored out, or to revise the applied EFs, if it were unable to address the above-mentioned issue.

88. For its 2010 submission, Austria recalculated the carbon stock of living biomass in annual cropland using country-specific data. Root/shoot ratios from the United States Department of Agriculture were applied to estimate the total plant biomass. In response to a question raised by the ERT during the centralized review, Austria clarified that changes in living biomass of annual crops due to changes in agricultural management were not investigated and were not reported in its NIR. Only in the case of the conversion of annual to perennial crops and vice versa were the changes in biomass estimated, although the information provided in the NIR on the methodology used for estimating carbon stock changes remains insufficient to understand whether the approach followed has led to double counting of carbon stocks already accounted for in a different pool. The ERT recommends that Austria provide detailed explanations of the methodology and EFs applied in its next annual submission.

89. Austria provided in the NIR different soil organic carbon values for perennial and annual cropland; the ERT noted that it was not clear whether soil carbon stock changes have been estimated for annual and perennial cropland. In response to a question raised by the ERT during the review, Austria clarified that soil carbon stock changes have been estimated for annual cropland only. For perennial cropland a tier 1 method was applied by Austria, thus no carbon stock change is assumed for soils. The ERT recommends that Austria clearly explain the approaches followed for calculating the estimates in this category and improve completeness in its next annual submission.

Land converted to grassland – CO₂

90. Austria used a country-specific value for the carbon stock in living biomass in grassland, calculated taking into account the areas of the different grassland categories (one-cut meadows, two-cut meadows, litter meadows, rough pastures and cultivated pastures), to deduce an average biomass yield per year for grassland. In order to make the estimation process more transparent, the ERT recommends that Austria provide a more detailed explanation of the approach followed in its next annual submission.

F. Waste**1. Sector overview**

91. In 2008, emissions from the waste sector amounted to 2,024.40 Gg CO₂ eq, or 2.3 per cent of total GHG emissions. Since 1990, emissions have decreased by 43.6 per cent. The key driver for the fall in emissions is Austria's waste management policies, including biogenic and paper waste separation and reuse and recycling, since the early 1990s, which led to the decrease in the degradable organic carbon (DOC) in residual waste. The implementation of the regulation in 2004 prohibiting the disposal of untreated waste is influencing the amount of landfilled waste significantly, as indicated in the NIR. In addition, the increase of landfill gas recovery has been a driving force for the decrease in CH₄ emissions; however, the amount of gas recovery peaked in early 2001 and since then is declining owing to the decrease in the DOC in the landfills. Within the sector, 76.9 per cent of the emissions were from solid waste disposal on land, followed by 14.4 per cent from wastewater handling and 0.8 per cent from waste incineration. CH₄ and N₂O emissions from biological treatment of solid waste are accounted for under the category other, which contributes 8.1 per cent of the sectoral emissions. Although the relative contribution of this category is not large, the emissions have increased by 372.0 per cent since 1990.

92. Austria provides in the NIR explanations of its QA/QC activities, including a newly introduced data collection procedure for volumes of waste deposited in landfills and annually updated data on waste treated in mechanical-biological treatment plants. In response to recommendations made in previous review reports, Austria adjusted the fraction of DOC dissimilated (DOC_F) for sludge disposal and biowaste from 0.7 to 0.55, taking into account the lignin in them. The denitrification rate for estimating N₂O emissions from wastewater treatment has been updated, as indicated in the NIR. Newly published data from the Food and Agriculture Organization of the United Nations (FAO) on the daily protein intake of Austria is reflected in the inventory. As a result of the availability of updated data, Austria conducted recalculations for CH₄ emissions from solid waste disposal on land, N₂O emissions from wastewater handling, and CH₄ and N₂O emissions from other (compost). The ERT commends Austria for its continuous effort to carefully use available data updates that improve its inventory.

93. During the centralized review, in response to questions raised by the ERT for clarification, Austria informed the ERT that table 251 of its NIR, which is titled "Composition of residual waste", covers more than just residual waste. However, this information was corrected later, and Austria confirmed to the ERT that table 251 of the NIR does refer to the residual waste only. The ERT suggests that Austria consider improving the linkages between explanations in the text and the related tables and figures in its next annual submission to avoid such misunderstandings. In table 258 of the NIR, the column titles of CH₄ and N₂O are in the wrong places. The ERT recommends that Austria implement additional minor improvements in its future annual submissions, which could include correcting the titles of tables presented in the NIR, the reporting of all values used for its estimations, and the provision of additional background information and other information to increase the transparency of the inventory.

2. Key categories

Solid waste disposal on land – CH₄

94. Austria estimated CH₄ emissions from solid waste disposal on land using the IPCC tier 2 method – the first order decay model. Background information on the country-specific AD, including types of waste, and the sudden change in the volume of waste deposited as a result of a new regulation, is appropriately documented in the NIR. The ERT noted that the CH₄ generation potential (Lo) of each waste type is not fully explained in the NIR, which Austria informed the ERT during the centralized review that it would incorporate in its next annual submission.

95. Austria applied the DOC value for 2004 for 2005 onwards, owing to the absence of information on the residual waste deposited in municipal solid waste disposal sites at the national level. The linear increase in the DOC values between 2000 and 2004 applied in the estimation is derived from the interpolation between two different data sources for 2000 and 2004, respectively. During the centralized review, Austria informed the ERT of the possibility of updating the DOC value for 2008 at the provincial level, which could then be applied to the whole country to adjust the 2004–2008 time series accordingly. The ERT recommends that Austria correct the DOC values with updated information, or re-evaluate the method of data collection for DOC, in order to increase the accuracy of the estimated emissions from this category in its next annual submission.

Wastewater handling – N₂O

96. Emissions from this category were recalculated using newly published FAO data on the daily protein intake in Austria. A new value for the denitrification rate became available for 2008. The estimation method and AD and other parameters used are clearly explained in the NIR and are in line with the Revised 1996 IPCC Guidelines.

97. Austria assumes that industrial wastewater treated at municipal wastewater treatment plants contributes an additional 30 per cent to the sectoral N₂O emissions. As N₂O emissions from wastewater handling is a key category, the method used for this subcategory is not consistent with the IPCC good practice guidance. The ERT recommends that Austria identify industries that are large sources of wastewater and obtain data to estimate emissions by industry in accordance with the IPCC good practice guidance for its next annual submission.

3. Non-key categories

Wastewater handling – CH₄

98. Austria estimates CH₄ emissions from septic tanks and cesspools using the IPCC default method and a country-specific MCF. As for sludge, the lack of data on the share of aerobic and anaerobic treatment of industrial, as well as domestic, sludge prevents Austria from estimating emissions from these subcategories. However, Austria considers the CH₄ emissions from sewage sludge from both industrial and domestic wastewater handling as not occurring (nevertheless these emissions are reported as “IE”), assuming that the energy obtained from sewage gas in the Austrian energy balance is almost equal to the amount recovered from the wastewater treatment, and that only an insignificant amount of CH₄ emissions may occur in the treatment of industrial and commercial and domestic wastewater. In addition, Austria informed the ERT that it is planning to elaborate on the treatment of municipal sewage sludge in its next annual submission. The ERT strongly recommends that Austria make efforts to obtain data on sludge from both industrial wastewater handling and domestic and commercial wastewater handling, to reflect these

data in its inventory and to improve the completeness and transparency of its reporting of this category, including the appropriate use of notation keys, in its next annual submission.

Waste incineration – CO₂, CH₄ and N₂O

99. Austria estimated emissions from the incineration of waste oil, municipal waste and clinical waste without energy recovery using the CORINAIR methodology and country-specific EFs. The ERT encourages Austria to include further explanations for the choice of these EFs in future annual submissions to improve the transparency of the estimates under this category.

Other – CH₄ and N₂O

100. Austria conducted recalculations for this category (biological treatment of solid waste) using updated and more complete data on organic waste composted. Municipal garden/park waste was taken into account for the first time. The amount of home waste composted was also revised and reflected in the inventory. The recalculations resulted in an increase in the estimate of CH₄ emissions for 2007 by about 53.0 Gg CO₂ eq (148.7 per cent). Considering the increasing trends in this category, the ERT commends the effort made by Austria to refine the emission estimates. Information on the use of EFs based on wet weight values is missing from the NIR of the 2010 submission. The ERT recommends that Austria include this in its next annual submission to improve the transparency of the NIR.

G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol

1. Information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Overview

101. The ERT noted that Austria submitted estimates for afforestation, reforestation and deforestation activities under Article 3, paragraph 3, of the Kyoto Protocol. The Party did not elect to report on any activities under Article 3, paragraph 4, for the first commitment period. Austria chose commitment period accounting for activities under Article 3, paragraph 3.

102. The ERT noted that Austria generally reported all of the information required in paragraphs 5 to 9 of the annex to decision 15/CMP.1. However, the ERT noted that information related to demonstrating that activities under Article 3, paragraph 3, of the Kyoto Protocol were directly human induced was not adequately provided. During the centralized review, in its response to questions raised by the ERT, Austria provided additional information on its legal framework for forest activities, and its definitions of forest and forest management. However, the ERT, after assessing this information, recommended that Austria provide more robust information regarding this issue, in accordance with the timing and procedures outlined in the Article 8 review guidelines. After the centralized review, Austria, in its response to the list of potential problems and further questions formulated by the ERT, reaffirmed that also in the case of natural regeneration, areas subject to this activity are subject to the provisions of the Austrian Forest Act, and that area afforested by means of natural regeneration also qualifies as forest under management under the Austrian Forest Act.

103. The understanding of the ERT is that the additional information provided by the Party demonstrates that the provisions of the Austrian Forest Act do not cover all areas where forest is expanding and do not predetermine that “land under non-forest use and no

longer cultivated” has to become forest. Furthermore, the Austrian Forest Act does not protect this land as forest as far as the thresholds established in the Austrian Forest Act are not exceeded, with some exceptions.⁶ Subsequently, in its comments to the draft annual review report, Austria reiterated its views that the Austrian Forest Act is the best demonstration for a generally valid national decision regulating afforestation and reforestation activities, provided that the land is a forest according to the definition of forests in the Austrian Forest Act. Austria further confirmed its position that the decision of a landowner to stop using land considered as cropland or grassland but to allow for forest regeneration does not mean that this land is unmanaged. Austria further stated its opinion that, as long as the land undergoing a land-use transformation to forest land, be it by natural or artificial regeneration, does not qualify as forest under the Austrian Forest Act, it continues to be accounted under the previously reported land-use category. Austria further stated that, under Austrian law, land will be regarded as forest land wherever it meets the qualification set out in the Austrian Forest Act; as such, a change in the land use, either by natural or artificial regeneration, is a decision taken by the landowner, Austria regards this as “direct human-induced” afforestation/reforestation activity under Article 3, paragraph 3, of the Kyoto Protocol.

104. Nevertheless, in the view of the ERT, the provided additional information does not demonstrate that all units of land reported under afforestation and reforestation activities have been subject to activities aimed at converting them to forest. In particular, insufficient information has been provided to demonstrate that all natural regeneration of forests is the consequence of direct human-induced activities, or that a decision was taken to allow trees to grow as a promotion of natural seed sources on each unit of land reported under afforestation and reforestation, as indicated in the definitions provided in paragraph 1 of the annex to decision 16/CMP.1. The ERT considers that a potential inclusion of areas spontaneously converted to forest under afforestation and reforestation could result in an overestimation of removals by sinks in the area subject to activities under Article 3, paragraph 3, of the Kyoto Protocol. Therefore, the ERT recommends that Austria clearly identify the units of land in relation to which a decision was taken to allow forest to grow, and/or provide regional or national decisions demonstrating that all land that is no longer cultivated shall become forest. The ERT also recommends that Austria report this information in its next annual submission.

105. Furthermore, the ERT noted that Austria did not provide information that demonstrates that activities under Article 3, paragraph 3, of the Kyoto Protocol began on or after 1 January 1990 and before 31 December 2008, as required in paragraph 8(a) of the annex to decision 15/CMP.1, and during the centralized review it recommended that Austria provide such information in accordance with the Article 8 review guidelines. In response to this requirement included in the list of potential problems and further questions formulated by the ERT, after the centralized review Austria reported the required information, on the basis of the results of land-use changes from and to forest according to the Austrian NFIs for the period 1992–1996. For the years after 2002 (the last year that is covered by a finalized NFI assessment), the average annual areas subject to afforestation, reforestation and deforestation for the period 1992–1996 were used. These areas will be

⁶ According to Article 4 of the Austrian Forest Act (Bundesgesetz vom 3. Juli 1975, mit dem das Forstwesen geregelt wird (Forstgesetz 1975), BGBl. Nr. 440/1975 idF BGBl. Nr. 231/1977, 142/1978, 576/1987, 257/1993, 970/1993, 532/1995, 419/1996, BGBl. I Nr. 158/1998, 108/2001, 59/2002, 65/2002, 78/2003, 83/2004, 87/2005 und 55/2007), it applies only when both cover and height thresholds (e.g. 5/10 of crown cover and height of 3 m) have been reached by the vegetation and in some specific areas: areas reforested for compensation of authorized deforestation (Article 18, paragraph 2); areas afforested as a consequence of subsidies; and particular areas identified by administrative acts of the Federal Ministry of Agriculture, Forestry, Environment and Water Management.

revised when the results of the recently finished Austrian NFI for the period 2007–2009 will be available. The ERT considers this issue to have been correctly addressed by the Party in its response and recommends that Austria report the information provided to the ERT after the centralized review, in its next annual submission.

106. In addition, the ERT noted that Austria did not fill in the column “Other” in table NIR-2, resulting in a total area for the country of 309 kha versus the value of 8,387 kha deduced by the ERT from the Party’s reporting of different land uses under the Convention. In response to the question raised by the ERT during the centralized review, Austria stated that the mistake will be rectified in its next annual submission.

Activities under Article 3, paragraph 3, of the Kyoto Protocol

Afforestation and reforestation – CO₂

107. Austria included estimates of litter carbon stock changes in the estimates of soil carbon stock changes. During the centralized review, Austria was required by the ERT to provide transparent and verifiable information to demonstrate that the litter pool is not a net source of emissions. After the centralized review, in response to the list of potential problems and further questions formulated by the ERT, Austria satisfactorily reported additional information on the assessment of the litter pool, assuring that litter will be reported as a separate pool in its next annual submission. The ERT recommends that Austria report on carbon stock changes in the litter pool in its next annual submission.

Deforestation – CO₂

108. Austria included estimates of carbon stock changes in the deadwood pool in the estimates of biomass carbon stock changes. During the centralized review, Austria was required by the ERT to provide transparent and verifiable information to demonstrate that the deadwood pool is not a net source of emissions. After the centralized review, in response to the list of potential problems and further questions formulated by the ERT, Austria reported insufficient additional information on the assessment of the deadwood biomass pool, assuring that an accurate assessment of the deadwood pool would be available with the forthcoming results of the NFI for the period 2007–2009. The ERT strongly recommends that Austria enhance its efforts and report sufficient verifiable information on carbon stock changes in the deadwood pool in its next annual submission.

2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

109. Austria has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 15/CMP.1 and 14/CMP.1. The ERT took note of the findings and recommendations included in the SIAR on the SEF tables and the SEF comparison report.⁷ The SIAR was forwarded to the ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings and recommendations contained in the SIAR.

110. Information on the accounting of Kyoto Protocol units has been prepared and reported in accordance with chapter I.E of the annex to decision 15/CMP.1, and reported in accordance with decision 14/CMP.1 using the SEF tables. This information is consistent with that contained in the national registry and with the records of the international

⁷ The SEF comparison report is prepared by the ITL administrator and provides information on the outcome of the comparison of data contained in the Party’s SEF tables with corresponding records contained in the ITL.

transaction log and the clean development mechanism (CDM) registry and meets the requirements set out in paragraph 88(a-j) of the annex to decision 22/CMP.1. No non-replacement has occurred.

National registry

111. The ERT took note of the SIAR and its finding that the reported information on the national registry is complete and has been submitted in accordance with the annex to decision 15/CMP.1. The ERT also took note of the SIAR and its finding that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1. The national registry also has adequate security, data safeguard and disaster recovery measures in place and its operational performance is adequate. The national registry has fulfilled all requirements regarding the public availability of information in accordance with section II.E of the annex to decision 13/CMP.1. However, the SIAR identified discrepancies in some transactions within the Austrian national registry that do not conform with the transaction procedures as required by section II.D, paragraph 42 of the annex to decision 13/CMP.1. In response to questions raised by the ERT during the centralized review, Austria indicated that corrective actions have been undertaken to prevent future discrepancies. The ERT commends the Party for addressing this problem and recommends that Austria report the results of these corrective actions in its next annual submission.

Calculation of the commitment period reserve

112. Austria has reported its commitment period reserve in its 2010 annual submission. The Party confirmed that its commitment period reserve has not changed since the initial report review (309,479,408 t CO₂ eq), as it is based on the assigned amount and not on the most recently reviewed inventory. The ERT agrees with this figure.

3. Changes to the national system

113. Austria reported that there have been no changes in its national system since the previous annual submission. The ERT concluded that Austria's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1.

4. Changes to the national registry

114. Austria reported in its NIR that there have been changes in its national registry since the previous annual submission. These changes were due to the implementation of the first amendment of the Registry Regulation 917/2007/EC referred to the change of the National Allocation Plan table and the additional information to be made available to the public in the registry's user interface in the Internet. The ERT concluded that the Party's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

5. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

115. Austria has reported information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, as requested in chapter I.H of the annex to decision 15/CMP.1, in its 2010 annual submission.

116. The reported information is considered complete and transparent. Austria is striving to phase out market imperfections by implementing several European Union directives concerning common rules for the internal market in electricity, natural gas, etc. In addition, Austria uses fiscal incentives for road transportation (traditional fuel) and is promoting the use of alternatively operated vehicles, for example hybrid or hydrogen-fuelled vehicles or those that use blended biofuels such as E85, as an important instrument to advance the achievement of the objectives of the Convention.

117. Austria has implemented more than 50 CDM projects all over the world via the Austrian CDM Purchase Programme. In order to strengthen the capacity of developing countries to improve environmental efficiency, Austria recently launched the energy efficiency programme “CDM to Africa”. The ERT welcomes these efforts.

III. Conclusions and recommendations

118. Austria made its annual submission on 15 April 2010. The annual submission contains the GHG inventory (comprising the CRF tables and an NIR) and supplementary information under Article 7, paragraph 1, of the Kyoto Protocol (information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, Kyoto Protocol units, changes to the national system and the national registry, and minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol). This is in line with decision 15/CMP.1. The NIR was resubmitted on 27 May 2010.

119. The ERT concludes that the inventory submission of Austria has been prepared and reported in accordance with the UNFCCC reporting guidelines. The inventory submission is complete and Austria has submitted a complete set of CRF tables for the years 1990–2008 and an NIR; these are complete in terms of geographical coverage, years, sectors, categories and gases. The only categories reported as “NE” were the carbon stock changes in wetlands remaining wetlands and settlements remaining settlements in the LULUCF sector and the destroyed amount of HFCs, PFCs and SF₆ and any resulting emissions in the industrial processes sector. The ERT encourages Austria to provide estimates of these last remaining not-estimated emissions in its next annual submission. Austria officially submitted revised emission estimates on 14 October and 4 November 2010 in response to questions raised by the ERT regarding CO₂ emissions from ferroalloys production in the course of the centralized review (see para. 64 above).

120. The information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported generally in accordance with decision 15/CMP.1.

121. Austria’s inventory is in line with the UNFCCC reporting guidelines, the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF.

122. The ERT noted that Austria has not reported all the necessary information required by decision 15/CMP.1 related to demonstrating that activities under Article 3, paragraph 3, of the Kyoto Protocol were directly human induced. In the opinion of the ERT the information provided during the centralized review and the revised information and data submitted on 14 October and 4 November 2010 by Austria referring to this issue does not fully demonstrate that all afforestation and reforestation activities carried out on the identified units of land were directly human induced. The ERT considers that a potential inclusion of areas spontaneously converted to forest under afforestation and reforestation could result in an overestimation of removals by sinks in the area subject to activities under Article 3, paragraph 3, of the Kyoto Protocol. In addition, the ERT noted that Austria did not provide information that demonstrates that activities under Article 3, paragraph 3, of the Kyoto Protocol began on or after 1 January 1990, as required in paragraph 8(a) of the annex

to decision 15/CMP.1. After the centralized review, in response to the request by the ERT, Austria provided the required information.

123. Austria has reported information on its accounting of Kyoto Protocol units in accordance with chapter I.E of the annex to decision 15/CMP.1, and used the required reporting format tables as required by decision 14/CMP.1.

124. The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1.

125. The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the CMP.

126. Austria has reported the information requested in chapter I.H of the annex to decision 15/CMP.1, "Minimization of adverse impacts in accordance with Article 3, paragraph 14", as part of its 2010 annual submission. The reported information is considered complete and transparent.

127. In the course of the review, the ERT formulated a number of recommendations relating to the completeness and transparency of the information presented in Austria's annual submission. The key recommendations are that Austria:

- (a) Prepare a tier 2 key category analysis;
- (b) Include all categories of the LULUCF sector in the uncertainty analysis;
- (c) Use country-specific NCVs also in the reference approach;
- (d) Include explanations for recalculations in the relevant CRF tables;
- (e) Examine any variation in trends, including in relation to IEFs, in particular in the energy and industrial processes sectors, and provide relevant explanations in the NIR;
- (f) Review the QA/QC plan to see if further checks need to be added to the existing procedures or whether its implementation could potentially be further enhanced;
- (g) Enhance its efforts to provide transparent and verifiable information, especially regarding the LULUCF and energy sectors;
- (h) Report the results of the corrective actions that have been undertaken to prevent future discrepancies in the national registry in its next annual submission;
- (i) Further prepare and report robust information on afforestation, reforestation and deforestation activities, in line with the requirement set out in paragraph 8(a) of the annex to decision 15/CMP.1 in relation to demonstrating that these activities are directly human induced, and include the information provided after the centralized review demonstrating that these activities began on or after 1 January 1990 in its next annual submission;
- (j) Enhance efforts to report sufficient verifiable information on carbon stock changes in the deadwood pool under deforestation in its next annual submission.

IV. Questions of implementation

128. No questions of implementation were identified by the ERT during the review.

Annex I

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

Available at <<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>>.

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/>>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*.

Available at <<http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>>.

“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/SBSTA/2006/9.

Available at <<http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf>>.

“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>>.

“Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol”.

Decision 19/CMP.1.

Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Decision 15/CMP.1.

Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Decision 22/CMP.1.

Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

Status report for Austria 2010.

Available at <<http://unfccc.int/resource/docs/2008/asr/aus.pdf>>.

Synthesis and assessment report on the greenhouse gas inventories submitted in 2010.

Available at <<http://unfccc.int/resource/webdocs/sai/2010.pdf>>.

FCCC/ARR/2009/AUT. Report of the individual review of the annual submission of Austria submitted in 2009. Available at <<http://unfccc.int/resource/docs/2010/arr/aus.pdf>>.

UNFCCC. *Standard independent assessment report*, parts I and II. Available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Michael Anderl (Umweltbundesamt (Austrian Federal Environment Agency)), including additional material on the methodologies and assumptions used. The following documents¹ were also provided by Austria:

Elisabeth Kampel, Katharina Lenz. 2007. *Nitrous Oxide Emissions from Industrial Wastewater, Evaluation of the currently used method to calculate N₂O emissions from industrial waste water handling*. Umweltbundesamt, Vienna.

Rudolf Orthofer, et. al. 1995. *N₂O-Emissionen in Österreich*. Seibersdorf.

E. Steinlechner, et al. 1994. *Möglichkeiten der Vermeidung und Nutzung Anthropogener Methanemissionen*.

¹ Reproduced as received from the Party.

Annex II

Acronyms and abbreviations

AD	activity data
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CRF	common reporting format
EF	emission factor
ERT	expert review team
EU ETS	European Union emissions trading scheme
F-gas	fluorinated gas
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ without GHG emissions and removals from LULUCF
HFCs	hydrofluorocarbons
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
kg	kilogram (1 kg = 1,000 grams)
LULUCF	land use, land-use change and forestry
NA	not applicable
NE	not estimated
N ₂ O	nitrous oxide
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
SEF	standard electronic format
SF ₆	sulphur hexafluoride
SIAR	standard independent assessment report
TJ	terajoule (1 TJ = 10 ¹² joule)
UNFCCC	United Nations Framework Convention on Climate Change
