



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

Note by the secretariat

The report of the individual review of the annual submission of Slovenia submitted in 2010 was published on 6 April 2011. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decision 4/CMP.4), the report is considered received by the secretariat on the same date. This report, FCCC/ARR/2010/SVN, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.



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

Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction and summary	1–5	3
A. Overview	1–2	3
B. Emission profiles and trends.....	3–5	3
II. Technical assessment of the annual submission.....	6–113	7
A. Overview	6–30	7
B. Energy	31–45	12
C. Industrial processes and solvent and other product use	46–59	15
D. Agriculture.....	60–70	19
E. Land use, land-use change and forestry.....	71–81	21
F. Waste	82–94	23
G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol	95–113	26
III. Conclusions and recommendations.....	114–123	29
IV. Questions of implementation	124	31
Annexes		
I. Documents and information used during the review.....		32
II. Acronyms and abbreviations.....		34

I. Introduction and summary

A. Overview

1. This report covers the centralized review of the 2010 annual submission of Slovenia, coordinated by the UNFCCC secretariat, in accordance with decision 22/CMP.1. The review took place from 13 to 18 September 2010 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Ms. Penelope Reyenga (Australia) and Mr. Klaus Radunsky (Austria); energy – Ms. Maria Liden (Sweden), Ms. Veronika Ginzburg (Russian Federation), Mr. Ricardo Fernandez (European Union (EU)) and Mr. Daniel Tutu Benefoh (Ghana); industrial processes – Mr. Jos Olivier (Netherlands), Mr. Samir Tantawi (Egypt) and Mr. Predrag Novosel (Montenegro); agriculture – Mr. Jacques Bamikole Kouazounde (Benin) and Ms. Rocio Danica Condor (Italy); land use, land-use change and forestry (LULUCF) – Ms. Thelma Krug (Brazil) and Mr. Ravi Nijavalli (India); and waste – Mr. Davor Vesligaj (Croatia) and Mr. Juraj Farkas (Slovakia). Ms. Reyenga and Ms. Krug were the lead reviewers. The review was coordinated by Ms. Sevdalina Todorova and Mr. Harald Diaz-Bone (UNFCCC secretariat).

2. In accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol” (decision 22/CMP.1), a draft version of this report was communicated to the Government of Slovenia, 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 Slovenia was carbon dioxide (CO₂), accounting for 84.1 per cent of total GHG emissions¹ expressed in CO₂ eq, followed by methane (CH₄) (9.7 per cent) and nitrous oxide (N₂O) (5.4 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) collectively accounted for 0.8 per cent of the overall GHG emissions in the country. The energy sector accounted for 82.1 per cent of total GHG emissions, followed by agriculture (9.3 per cent), industrial processes (5.6 per cent), waste (2.9 per cent) and solvent and other product use (0.1 per cent). Total GHG emissions amounted to 21,284.83 Gg CO₂ eq and increased by 6.0 per cent between the base year² and 2008.

4. Tables 1 and 2 show GHG emissions from Annex A sources, emissions and removals from the LULUCF sector under the Convention 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 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.

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 1986 for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs and SF₆. 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, of the Kyoto Protocol, by gas, base year to 2008

	Greenhouse gas	<i>Gg CO₂ eq</i>								<i>Change</i> Base year–2008 (%)	
		<i>Base year^d</i>	1990	1995	2000	2005	2006	2007	2008		
Annex A sources	CO ₂	16 287.47	14 738.29	14 988.80	15 176.87	16 626.14	16 805.83	16 930.39	17 899.75	9.9	
	CH ₄	2 263.30	2 202.64	2 091.78	2 186.87	2 155.30	2 184.32	2 189.68	2 069.44	–8.6	
	N ₂ O	1 390.76	1 269.68	1 229.65	1 307.05	1 205.65	1 222.99	1 227.01	1 157.38	–16.8	
	HFCs	28.96	NA, NO	28.96	29.32	87.33	97.19	113.01	120.26	315.3	
	PFCs	106.48	257.44	106.48	105.61	123.53	115.55	91.69	19.15	–82.0	
	SF ₆	11.52	10.30	11.52	15.74	18.84	18.84	18.84	18.84	63.5	
KP-LULUCF	Article 3.3 ^b	CO ₂							2 426.10		
		CH ₄							NO		
		N ₂ O							30.72		
	Article 3.4 ^c	CO ₂	NA							–10 309.28	NA
		CH ₄	NA							1.71	NA
		N ₂ O	NA							0.00	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, NA = not applicable, NO = not occurring.

^a “Base year” for Annex A sources refers to the base year under the Kyoto Protocol, which is 1986 for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs and SF₆. The base year for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol is 1986.

^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 inventory years of the commitment period must be reported.

Table 2
Greenhouse gas emissions by sector and activity, base year to 2008

	Sector	Base year ^a	Gg CO ₂ eq							Change	
			1990	1995	2000	2005	2006	2007	2008	Base year– 2008 (%)	
Annex A	Energy	16 072.47	14 400.20	14 848.40	14 953.73	16 193.55	16 336.31	16 432.54	17 473.20	8.7	
	Industrial processes	1 149.07	1 291.93	960.48	1 004.99	1 259.75	1 299.65	1 310.63	1 186.03	3.2	
	Solvent and other product use	81.90	43.40	17.25	42.73	43.32	44.15	42.16	27.59	–66.3	
	Agriculture	2 218.06	2 140.00	2 046.47	2 137.19	2 006.50	2 034.08	2 091.72	1 977.85	–10.8	
	Waste	566.99	602.83	584.60	682.81	713.68	730.53	693.59	620.17	9.4	
	Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	LULUCF	NA	–7 928.87	–7 891.42	–8 653.95	–8 526.20	–8 264.26	–8 509.48	–8 531.74	NA	
Total (with LULUCF)		NA	10 549.49	10 565.78	10 167.50	11 690.59	12 180.46	12 061.16	12 753.10	NA	
Total (without LULUCF)		20 088.50	18 478.37	18 457.20	18 821.46	20 216.80	20 444.72	20 570.63	21 284.83	6.0	
KP-LULUCF	Article 3.3 ^b	Afforestation & reforestation							NO		
		Deforestation							2 456.82		
		Total (3.3)							2 456.82		
	Article 3.4 ^c	Forest management								–10 307.57	
		Cropland management	NA							NA	NA
		Grazing land management	NA							NA	NA
		Revegetation	NA							NA	NA
		Total (3.4)	NA							–10 307.57	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, NO = not occurring.

^a “Base year” for Annex A sources refers to the base year under the Kyoto Protocol, which is 1986 for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs and SF₆. The base year for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol is 1986.

^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 inventory years of the commitment period must be reported.

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.

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	84 265 734		84 265 734	
Annex A emissions for current inventory year				
CO ₂	17 899 753		17 899 753	
CH ₄	2 069 442		2 069 442	
N ₂ O	1 157 377		1 157 380	
HFCs	120 264		120 264	
PFCs	19 154		19 154	
SF ₆	18 840		18 840	
Total Annex A sources	21 284 831		21 284 834	
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		NO		NO
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	2 456 816		2 456 816	
Activities under Article 3, paragraph 4, for current inventory year^d				
3.4 Forest management for current year of commitment period	-10 307 572		-10 307 572	
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 several adjustment(s).

^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 of Slovenia was submitted on 15 April 2010; it contains a complete set of common reporting format (CRF) tables for the period 1986–2008 and a national inventory report (NIR). The CRF tables were resubmitted on 17 May 2010 and the NIR was resubmitted on 24 June 2010. Slovenia 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. Slovenia officially submitted revised emission estimates and information (on KP-LULUCF) on 25 October 2010 in response to questions raised by the expert review team (ERT) in the course of the review. Where necessary, the ERT also used the previous year's submission during the review.

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, Slovenia provided the ERT with additional information and documents which are not part of the annual submission. The full list of information and documents used during the review is provided in annex I to this report.

Completeness of inventory

10. The inventory is generally complete in terms of years, sectors and geographical coverage. However, the ERT identified that emissions of SF₆ from the filling of soundproof windows for the period 1995–1997 and N₂O emissions from the application of sewage sludge to agricultural soils had not been estimated. These are categories for which 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) includes estimation methodologies. In response to questions raised by the ERT, Slovenia submitted estimates of N₂O emissions from the application of sewage sludge to agricultural soils for the period 2004–2008. The ERT recommends that Slovenia report estimates for the missing years of the time series for these categories in its next annual submission. Slovenia also reports as not estimated (“NE”) a number of other categories for which there are no estimation methodologies available in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines) or the IPCC good practice guidance, or for which reporting is not mandatory (under LULUCF). The ERT encourages Slovenia to

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.

report estimates, in its next annual submission, for the categories not yet addressed, in order to further improve the completeness and accuracy of its inventory.

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 commends Slovenia's efforts to improve the inventory estimates and implement the recommendations of previous ERTs. The ERT would also like to acknowledge that during the review week Slovenia was able to provide comprehensive responses and archived material in a timely manner. As reported in the NIR, Slovenia has not made any changes to the national system since the previous annual submission.

Inventory planning

12. The NIR described the institutional arrangements for the preparation of the inventory. The Environmental Agency of the Republic of Slovenia is the single national entity with overall responsibility for the national inventory. Other organizations involved in the preparation of the inventory are the Agricultural Institute of Slovenia and the Slovenian Forestry Institute, which assist in the estimation of emissions from the agriculture sector and the LULUCF sector, respectively. The Statistical Office of the Republic of Slovenia (SORS) is the main source of data for the inventory; some additional information on transport is provided by the Ministry of Transport, the Directorate of National Roads and the Ministry of Internal Affairs. Slovenia has established agreements with the organizations that participate in the preparation of the inventory and SORS to ensure that the data required are provided in a timely manner. The Ministry of Environment and Spatial Planning approves the inventory before it is submitted to the secretariat.

Inventory preparation

Key categories

13. Slovenia has reported key category tier 1 and tier 2 analyses, both level and trend assessment for tier 1 and level assessment for tier 2, as part of its 2010 submission. The key category analysis performed by Slovenia and that performed by the secretariat⁴ produced different results, owing to the different level of disaggregation used by the Party for the tier 1 analysis and the use of the tier 2 assessment. Slovenia has included the LULUCF sector in its key category analyses, but did not present the results of the analyses excluding LULUCF. The ERT recommends that Slovenia include the results of the key category analyses both with and without LULUCF in its next annual submission. The key category analysis was performed in accordance with 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). Slovenia's key category

⁴ The secretariat identified, for each Party, the categories that are key categories in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC *Good Practice Guidance for 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.

analysis is a driving factor in the preparation of its inventory and it uses the analysis to prioritize the future development and improvement of the inventory.

14. Slovenia did not correctly identify all key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. Deforestation should have been identified as a key category, as both land converted to cropland and grassland are key categories and the level of emissions from deforestation is greater than the level of emissions from the key category with the lowest level of emissions. The ERT recommends that Slovenia follow the guidance on establishing the relationship between the activities under the Kyoto Protocol and the associated key categories in the inventory as provided in chapter 5.4.4 of the IPCC good practice guidance for LULUCF and include this information in its next annual submission under the Kyoto Protocol.

Uncertainties

15. Slovenia has undertaken a tier 1 uncertainty analysis. The uncertainties of activity data (AD) and emission factors (EFs) were estimated using expert judgement or using values contained in the IPCC good practice guidance and the COPERT IV model. The uncertainties of the estimates for both level and trend assessment, were calculated. The results of this analysis have been included in an annex to the NIR. The NIR does not contain a full description of the judgements and assumptions made by the experts in assessing the uncertainties. In response to a question raised by the previous ERT, Slovenia explained that improvements to the uncertainty estimates and the descriptions of the approaches used would not be implemented until its 2011 submission. The ERT reiterates the recommendation of the previous ERT that Slovenia include in its NIR information on the methods used and descriptions of the expert judgement applied in its uncertainty analysis. In addition, the ERT encourages Slovenia to develop, where possible, uncertainty estimates based on statistical methods rather than expert judgement.

16. The ERT noted that the estimated quantitative uncertainty for total GHG emissions (without LULUCF) was 6.3 per cent for 2008, while the estimated uncertainty related to the trend was 5.6 per cent. The estimated quantitative uncertainty for total GHG emissions with LULUCF for the same year was 25.7 per cent. However, the same uncertainty was reported in the Party's 2009 submission as 7.3 per cent. The ERT recommends that Slovenia provide explanations for any changes in the uncertainty estimates in future annual submissions.

Recalculations and time-series consistency

17. Recalculations have been performed and reported in accordance with the IPCC good practice guidance. The ERT noted that recalculations reported by Slovenia for the time series 1986 to 2007 have been undertaken to take into account: the inclusion of previously unreported categories (i.e. transmission of natural gas, waste incineration, cropland, grassland and forest fires); reallocations of emissions between and within sectors (energy and industrial processes); improvements to methods (road transportation and forest land) and AD (wastewater and fluorinated gases (F-gases)); as well as to correct detected mistakes in EF and AD entries. The magnitude of the impact is a decrease of 0.7 per cent in the estimated total GHG emissions for the base year and for 2007. The major changes are in the LULUCF sector, namely 410.1 per cent and 47.4 per cent increases in the net removals for 1986 and 2007, respectively. The reasons for the recalculations have been provided in the NIR and in CRF table 8(b). However, the ERT noted that the explanations in the NIR were not always sufficiently detailed to allow a clear understanding of the changes (see para. 49 below) and that there were some inconsistencies between the information in the CRF tables and in the NIR (see para. 35 below). The ERT recommends that detailed information be provided in the NIR on the reasons for the recalculations and the impact of

the changes on time-series consistency. It also recommends that Slovenia provide consistent explanations in the NIR and the CRF tables.

Verification and quality assurance/quality control approaches

18. Slovenia has in place a quality assurance/quality control (QA/QC) plan, which details the QA/QC processes for gathering data, calculating emission estimates and reporting. The NIR provides a description of the Party's QA/QC and verification procedures, which follow the tier 1 approach of the IPCC good practice guidance and are in line with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" (hereinafter referred to as the UNFCCC reporting guidelines). Slovenia uses an Oracle database (Emission Inventory Information System (ISEE)) to estimate emissions and archive AD, EFs and other parameters used in the inventory. Many of the tier 1 QC checks have been built into ISEE during its development; for example, checks of changes to methodologies and input data through the time series and checks of AD, EFs and other parameters. In response to a question raised by the ERT, Slovenia indicated that the next phase of the development of the database will include the integration of checks for discrepancies in AD and EFs between years and comparisons of EFs with the IPCC defaults. The ERT reiterates the recommendation of the previous ERT that Slovenia improve its documentation on how its QA/QC procedures have been implemented.

19. In response to the recommendations of the previous ERT, Slovenia has included in its NIR information on category-specific QC procedures, but this information is provided only for a limited number of categories. For example, Slovenia reports that data from the European Union emissions trading scheme (EU ETS) are compared with data collected by SORS. In addition, Slovenia presents a comparison of its CH₄ implied emission factor (IEF) for dairy cattle manure management with that of other Parties. The ERT encourages Slovenia to undertake additional tier 2 category-specific QC checks where country-specific methods have been used. The ERT also encourages Slovenia to provide more information in the NIR on the processes for verifying EU ETS data, to implement QA/QC procedures for estimates of land area and to implement and document planned QA/QC checks.

20. In relation to QA procedures, Slovenia has followed the recommendation of the previous ERT and provided additional information in the NIR on the QA activities that it has already undertaken (e.g. for the energy sector) and its plans to review the QA procedures for the waste sector. The ERT encourages Slovenia to conduct peer reviews for other key categories.

21. The ERT found a number of inconsistencies and errors within the NIR (e.g. in relation to the Party's uncertainty estimates, explanations for recalculations and equations for LULUCF), in the CRF tables and between the NIR and the CRF tables (see paras. 35, 37 and 38 below). The Party took note of these findings and promised to correct the inconsistencies in its next annual submission. In addition, the ERT identified a number of inconsistencies in the use of the notation keys in the CRF tables (see paras. 32, 39 and 73 below). The ERT recommends that Slovenia review its use of the notation keys, apply them appropriately and strengthen its QC before submitting its inventory, so as to ensure consistency between the CRF tables and the NIR and to reduce data entry mistakes.

Transparency

22. Slovenia has made significant improvements in terms of the transparency of the NIR by providing additional information on AD, EFs and other parameters used in the inventory. The ERT recommends that Slovenia continue to improve the transparency of its inventory by providing: more detailed descriptions of country-specific methods and data sources; analysis of trends in emissions and IEFs; and more detailed explanations of

recalculations. Sector-specific recommendations made by the ERT in relation to the transparency of Slovenia's inventory are described in detail in the sector chapters of this report (see paras. 34, 48, 62, 73, 84 and 98 below).

Inventory management

23. Slovenia has a centralized archiving system at its Environmental Agency, the ISEE database (see para. 18 above), which includes the archiving of EFs and AD, and documentation on how these factors and data have been aggregated for the preparation of the inventory. Other supporting documentation, reference material and past inventory submissions are stored either in electronic format or in hard copy at the Environmental Agency. Slovenia is working to scan its hardcopy documents so that they too can be stored electronically.

3. Follow-up to previous reviews

24. The ERT found that, in its 2010 inventory submission, Slovenia has implemented some of the recommendations made in the previous review report, thus improving its inventory, such as:

(a) Improving completeness by reporting emission estimates for cropland, grassland, forest fires and CO₂ from transmission of natural gas for the complete time series and potential emissions of HFCs for the years 1998–2008;

(b) Preparation of a tier 2 key category analysis and use of this analysis for prioritizing inventory improvements;

(c) Provision of examples of tier 1 QC checks and a detailed description of its inventory database (although the latter is in Slovenian);

(d) Inclusion of descriptions of category-specific QA/QC activities;

(e) Provision of more detailed explanations of recalculations;

(f) Provision of additional information on AD, EFs and other parameters, in order to improve transparency.

25. The main recommendations made in the previous review report which have not been implemented by Slovenia in its 2010 inventory submission include:

(a) Revision of the uncertainty assessment and inclusion in the NIR of information relating to the methods used in the uncertainty assessment and descriptions of the expert judgement applied;

(b) Performance of additional peer reviews.

26. The category-specific recommendations not yet addressed by the Party are reiterated in the relevant sector chapters of this report.

4. Areas for further improvement

Identified by the Party

27. The 2010 NIR identifies several cross-sectoral areas for improvement, such as: the further improvement of the documentation of QC undertaken during the preparation of the inventory; the improvement of the description of trends in the NIR; and the improvement and documentation of uncertainty estimates.

28. In addition, some sector-specific improvements are planned, such as: the estimation of CH₄ emissions from closed coal mines; the improvement of the estimates of emissions

from domestic and commercial wastewater treatment; the implementation of tier 2 category-specific QC checks for the waste sector and the performance of a peer review of the wastewater handling category; and an update of the land-use changes between 2007 and 2009 using the latest agricultural land-use map.

Identified by the expert review team

29. The ERT identifies the following cross-cutting issues for improvement:

(a) To continue to improve the completeness of the inventory by including estimates of SF₆ from the filling of soundproof windows for the period 1995–1997;

(b) To improve the basic QC procedures for checking the NIR and the CRF tables to ensure that data are accurate and consistent and that the appropriate notation keys are used. In addition, the ERT encourages Slovenia to implement tier 2 category-specific QC checks and a peer review (QA) for key categories, where possible;

(c) To continue to improve the transparency of the NIR by providing more detailed descriptions of country-specific methodologies and data sources and analysis of trends;

(d) To report the key categories, including for activities under Article 3, paragraphs 3 and 4, following the guidance provided in the IPCC good practice guidance for LULUCF;

(e) To improve the uncertainty estimates and include the required documentation in the NIR.

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

B. Energy

1. Sector overview

31. The energy sector is the main sector in the GHG inventory of Slovenia. In 2008, emissions from the energy sector amounted to 17,473.20 Gg CO₂ eq, or 82.1 per cent of total GHG emissions. Since 1986, emissions have increased by 8.7 per cent. The key driver for the rise in emissions from the energy sector is the strong increase in emissions from road transportation, which more than tripled between 1986 and 2008. Within the energy sector, 36.6 per cent of the emissions were from energy industries, followed by 35.2 per cent from transport, 13.2 per cent from manufacturing industries and construction and 12.9 per cent from other sectors. Fugitive emissions from solid fuels accounted for 1.9 per cent and fugitive emissions from oil and natural gas accounted for 0.2 per cent.

32. The inventory for the energy sector is generally complete. During the review, the ERT identified two categories reported as “NE”: fugitive CH₄ emissions from other leakage at industrial plants and power stations and CO₂ emissions from post-mining activities (underground mines). IPCC methods and EFs are only available for the former category. In response to a question raised by the ERT, Slovenia provided the ERT with evidence that leakage does not occur in the country and indicated that it would change the notation key used to not occurring (“NO”) in its next annual submission. The ERT recommends that Slovenia correct the notation key used for that category and include an explanation as to why the category is reported as “NO” in its next annual submission.

33. The ERT noted that Slovenia depends mainly on the IPCC default methodologies and EFs for estimating CH₄ and N₂O emissions from the energy sector, although for estimating CO₂ emissions a combination of default and country-specific EFs is used. To

estimate emissions from transport, Slovenia has moved from using COPERT III (constant N₂O IEF for cars with catalytic converters) to COPERT IV (based on emission legislation class) for its 2010 submission. The ERT commends Slovenia for this improvement. The ERT noted that no improvements are planned for the key categories of manufacturing industries and construction and other sectors, where default EFs have been used, with the exception of for lignite and gas. Slovenia has recently carried out a survey on fuel use in the residential sector. The results of the survey, which are expected in 2011, should significantly improve the estimates of emissions from this key category. The ERT recommends that Slovenia provide a short description of this survey in its next annual submission. The ERT also recommends that Slovenia develop country-specific CO₂ EFs for fuels which have a significant share in the fuel mix for each key category and encourages it to develop higher-tier methods for non-CO₂ gases, where possible, as recommended in the IPCC good practice guidance.

34. There have been significant improvements made to the transparency of the information provided in the NIR for the energy sector, such as an improved description of feedstocks and non-energy use of fuels as well as additional information regarding the use of EU ETS data for estimating emissions from public electricity and heat production. In addition, annexes 2 and 4 to the NIR described the fuel mix by category for the sectoral and reference approaches at a good level of detail. The ERT commends Slovenia for improving the transparency of the reporting on the energy sector in its inventory and encourages the Party to continue making such improvements.

35. Slovenia has reported recalculations for the entire time series for the energy sector. The change from using COPERT III to COPERT IV to estimate emissions from road transportation led to the most significant recalculations. Other reasons for recalculations were the reallocation of some emissions and small corrections made to net calorific values (NCVs) and EFs for some minor fuels. As a result, estimated emissions from the energy sector increased by 3.45 Gg CO₂ eq (0.02 per cent) for 1986 and decreased by 255.82 Gg CO₂ eq (1.5 per cent) for 2007. The ERT noted, however, some small discrepancies between the information provided in the CRF tables and in the NIR regarding recalculations undertaken for the category energy industries. The ERT recommends that Slovenia ensure consistency between the NIR and the CRF tables in its next annual submission.

36. Most of the recommendations made in the 2009 review report have been implemented in the Party's 2010 submission. However, the ERT noted that while estimated emissions from jet kerosene use by the Slovenian army and police had been removed from under international bunker fuels as recommended, they had been reallocated to civil aviation, which is not in line with the IPCC good practice guidance. The ERT recommends that Slovenia, to the extent possible, report emissions from the military use of jet kerosene and aviation gasoline under other (mobile). The ERT also recommends that Slovenia, where possible, report emissions from army-related road transportation under other (mobile) and not under road transportation.

2. Reference and sectoral approaches

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

37. The difference between the estimates of CO₂ emissions calculated using the reference approach and the sectoral approach is -0.3 per cent for 2008. During the review process, a few discrepancies in the way the reference approach is reported were detected (e.g. petroleum coke reported as imported so as to reduce the differences between the two approaches, and bitumen consumption not reported (see para. 43 below)). The ERT recommends that Slovenia report the reference approach in accordance with the Revised

1996 IPCC Guidelines in its next annual submission. In addition, the ERT noted that the percentage difference between estimates calculated using the sectoral and reference approaches reported in CRF table 1.A(c) (-0.29 per cent) and in the NIR (0.14 per cent) is not consistent. The ERT recommends that Slovenia improve its QC checks of the NIR and the CRF tables prior to submission, in order to ensure consistency in the reporting.

38. Furthermore, the ERT found an inconsistency between the NIR, which states that data on sales of liquefied petroleum gas (LPG) will be collected by SORS in the future, and the CRF tables, which already include data on imports and exports of LPG under the reference approach. The ERT recommends that Slovenia ensure the consistency of the information contained in the NIR and the CRF tables.

39. In a few instances, data have been reported internationally that have not been reported in the CRF tables. For example, data for other kerosene, lubricants, bitumen, naphtha, refinery feedstocks and other oil are not reported in the CRF tables for before 2004. In response to a question raised by the ERT, the Party indicated the data are not available for the years before 2004. However, data for these fuels have been reported to the International Energy Agency and to the statistical office of the EU (Eurostat) via the Joint Energy Questionnaires for the reporting period 1990–2008.⁵ Slovenia has reported primary consumption of bitumen and small amounts of white oil/other oil in 2008 to Eurostat; however, the ERT noted that these are reported as “NE” and “NO”, respectively, in CRF table 1.A(b). The EU energy statistics regulation adopted in 2009, aiming at collecting detailed statistical data on energy flows by energy commodity, encourages member States of the EU to ensure the consistency of energy data in the energy balances with AD in the CRF tables. The ERT recommends that Slovenia investigate the differences described above, review its use of the notation keys and improve the completeness and time-series consistency of its reporting.

International bunker fuels

40. In response to the recommendation of the previous ERT, Slovenia has excluded emissions from jet kerosene used by the military and police from international aviation and reported them under civil aviation in its 2010 submission. This reallocation has, however, only been implemented for 2008. The ERT recommends that Slovenia reallocate these emissions for the entire time series and report on them as outlined in paragraph 36 above in its next annual submission, in order to ensure time-series consistency. It also recommends that Slovenia describe in the NIR the method used.

Feedstocks and non-energy use of fuels

41. In response to the recommendation of the previous ERT, Slovenia has included in the NIR a justification for its use of a 100 per cent storage factor for natural gas used as feedstock in methanol production. In every cycle, only one fifth of the natural gas is transformed into the product, while the remaining natural gas is returned to the process. All CH₄ used for methanol production is thus stored in the product or emitted as carbon monoxide.

42. According to the NIR, all lubricants in Slovenia are used for non-energy purposes, and county-specific factors of carbon (C) stored of between 74 and 86 per cent have been used for its 2010 submission, in line with the recommendation of the previous ERT. The NIR states that the waste oil recovered from lubricants used in vehicles is used in cement production and that the emissions are reported under manufacturing industries and construction. The ERT recommends that the Party provide additional information on the

⁵ See <<http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database>> (links: quantities > supply, transformation, consumption).

allocation of the emissions from the fraction of the carbon that is not stored in CRF table 1.A(d) and in the NIR of its next annual submission.

43. Slovenia reports bitumen as “NE” under the reference approach and in CRF table 1.A(d). The Party informed the ERT that, as there was no energy use of bitumen in the country, it had not been included under the reference approach. In addition, the ERT noted that Slovenia has reported carbon stored in petroleum coke under the reference approach (CRF table 1.A(b) but has not reported petroleum coke in CRF table 1.A(d). The ERT recommends the strict application of the Revised 1996 IPCC Guidelines when completing CRF tables 1.A(b) and 1.A(d).

3. Key categories

Stationary combustion: solid fuels – CO₂

44. In response to the recommendation of the previous ERT, Slovenia has provided information regarding the thermal plants under the EU ETS in its 2010 submission. The NIR states that CO₂ emissions from solid fuel combustion under this category have been estimated using EU ETS data (AD, NCVs and EFs). During the review, Slovenia explained that the AD reported under the EU directive on large combustion plants (directive 2001/80/EC) had been the main source of data on fuel consumption in power plants before the EU ETS was established, and that from 2005 it had used only EU ETS data. The ERT recommends that Slovenia include this information in its next annual submission. The ERT also recommends that Slovenia describe in its next annual submission how it has ensured a consistent time series given the change in data source, as well as that it provide information on the completeness of and QA/QC procedures applied to the data from the EU ETS and ensure that the used data are in line with the IPCC good practice guidance. Finally, the ERT noted that the AD for plants under the EU ETS are not publicly available, whereas the AD for large combustion plants were and remain publicly available.

Stationary combustion (other sectors): biomass – CH₄

45. The ERT noted that for CH₄ emissions from combustion of biomass in the residential sector, which is a key category, the AD and estimated emissions reported are constant throughout the time series 1986–2008 (the same is true for the commercial/institutional sector between 1986 and 2000). During the review, Slovenia explained that data on biomass will not be available until the completion of a Eurostat-financed project on fuel use in the residential sector, which is due in 2011. Slovenia also explained that these CH₄ emissions had not been underestimated and provided good supporting evidence based on its national action plans for renewable energy in accordance with EU directive 2009/28/EC. The ERT recommends that Slovenia provide more information in its next annual submission to justify why the current assumptions for biomass do not result in an underestimation of emissions. The ERT looks forward to the completion of the Eurostat project and encourages Slovenia to make use of the results as quickly as possible.

C. Industrial processes and solvent and other product use

1. Sector overview

46. In 2008, emissions from the industrial processes sector amounted to 1,186.03 Gg CO₂ eq, or 5.6 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 27.59 Gg CO₂ eq, or 0.1 per cent of total GHG emissions. Since the base year, emissions have increased by 3.2 per cent in the industrial processes sector and decreased by 66.3 per cent in the solvent and other product use sector. The key

drivers for the increase in emissions in the industrial processes sector are increased emissions from cement production (by 18.2 per cent) and HFC consumption (by 315.3 per cent), largely compensated by the 82.0 per cent decrease in PFC emissions from aluminium production, which is due mainly to technological changes (closure of old Horizontal Stud Soderberg and prebaked anode type plants in 1991 and 2007). Within the industrial processes sector, 70.8 per cent of the emissions were from mineral products, followed by 16.0 per cent from metal production, 11.7 per cent from consumption of halocarbons and SF₆ and 1.5 per cent from chemical industry.

47. Slovenia's inventory for the industrial processes sector is complete, with the exception of estimates of emissions of SF₆ from the filling of soundproof windows for the period 1995–1997 and of some potential emissions of F-gases. CO₂ emissions from solvent and other product use and N₂O emissions from aerosol cans are reported as "NE", but there are no default IPCC methodologies for estimating emissions for these categories. The ERT commends Slovenia for reporting for the first time estimates of potential emissions of HFCs (without reporting export data) for the years 1995–2008 and SF₆ for 1995–1997. The ERT recommends that Slovenia provide estimates of potential emissions of HFCs and SF₆ for the entire time series and encourages the Party to estimate N₂O emissions from aerosol cans.

48. Following the recommendations of the previous ERT, the transparency of the NIR has been improved with the inclusion of additional documentation on emission trends and EFs used and the reasons for recalculations undertaken for the industrial processes sector. Slovenia has also included a section with a description of source-specific QA/QC procedures related to the 12 plants that report process emissions under the EU ETS. However, the ERT considers that the justification of the Party's choice of EFs and explanations of EF trends could be further enhanced. Moreover, the ERT noted that, although estimates of the emissions associated with the consumption of halocarbons and SF₆ were reported in CRF table 2(II), the reporting in CRF table 2(II).F is not complete. The ERT recommends that Slovenia complete the reporting in CRF table 2(II).F. In addition, the ERT recommends that F-gas emissions from manufacturing for foam blowing be reported under emissions from manufacturing and SF₆ emissions from electrical equipment and emissions from fire extinguishers be reported in CRF table 2(II).F under emissions from stocks, with the exception of emissions from installation, which should be reported under emissions from manufacturing.

49. Slovenia has reported recalculations of the entire time series for the industrial processes sector due to the inclusion of new data on aluminium production for 1992–1999 and on the amount of HFCs in mobile air-conditioning for 1995–2007. Other reasons for recalculations include the reallocation of CO₂ emissions from the use of limestone and dolomite (for sulphur dioxide scrubbing, from the energy sector to the category limestone and dolomite use under the industrial processes sector, and for the use of soda ash for glass production to the category other (mineral products)). As a result, estimated emissions from the industrial processes sector increased by 0.05 per cent for 1986 and by 7.7 per cent for 2007. The recalculations made to the estimates of CO₂ and PFC emissions for the period 1992–1999 were not sufficiently explained in the NIR in terms of the nature of the changes and their effect on time-series consistency. The ERT recommends that Slovenia include this type of information in the NIR in relation to future recalculations.

50. Slovenia has implemented most of the recommendations of the previous ERT, except for the provision of estimates of total potential emissions of HFCs and SF₆ by category (partly implemented) and the revision of the estimates of HFC emissions from foam blowing and fire extinguishers (see para. 56 below).

2. Key categories

Cement production – CO₂

51. Slovenia has estimated CO₂ emissions from cement production using data on clinker in accordance with the IPCC tier 2 methodology. The Party has implemented the recommendation of the previous ERT to provide more detailed data on the EF time series. Slovenia applies the average of the plant-specific EFs for the years 1999–2004 to the period 1986–2004, but uses annual EFs for the period 2005–2008, which are based on plant-specific production conditions reported under the EU ETS. While the use of the average EF is appropriate for the period 1986–1998, there is no reason why the actual annual EFs cannot be used for the period 1999–2004. The ERT recommends that Slovenia estimate emissions for the years 1999–2004 using the year-specific EFs and include, in the NIR, an explanation of the inter-annual variation in the IEFs. During the review, Slovenia informed the ERT that the cement kiln dust (CKD) factor is 1, since 100 per cent of CKD from both of the country's cement plants is returned to the process, as confirmed by a group of experts that visited the plants. The ERT recommends that Slovenia include this information in the NIR of its next annual submission.

Lime production – CO₂

52. CO₂ emissions from lime production were calculated according to the methodology contained in the IPCC good practice guidance. Slovenia has followed the recommendation of the previous ERT and provided more detailed data on lime production and the method for estimating emissions applied, in order to explain the fluctuation in the EF over the period 2005–2007. Similar to those for cement production, the EFs for lime production for the period 2005–2008 are based on EU ETS data, whereas for the period 1986–2004 the average EF for the period 1999–2004 was applied. The ERT recommends that Slovenia estimate emissions for the period 1999–2004 using the year-specific EFs for its next annual submission. The ERT also recommends that Slovenia include in the NIR more detailed information on how a plant-specific EF was determined and how time-series consistency between the EU ETS and earlier plant-specific data was ensured.

Aluminium production – CO₂ and PFCs

53. Slovenia used a tier 3 method for estimating PFC emissions. In response to recommendations made by previous ERTs, Slovenia has included in the NIR transparent information on technological changes and improved operating conditions in the aluminium production process in order to explain the inter-annual changes in the IEFs for PFCs and CO₂. The ERT commends the Party for these efforts. To further improve transparency, the ERT recommends that the Party include explanations for the level of and trend in the CO₂ IEF and information on the determination of the EF for anode burn-off in its next annual submission. In addition, the ERT recommends that Slovenia correct the figures and units in table 4.11.2 of the NIR.

Ferroalloys production – CO₂

54. The ERT noted significant inter-annual changes in the CO₂ IEF, with changes of –49.2 per cent for 1997/1998 and +85.9 per cent for 2006/2007. The CO₂ IEF is the same (2.49 t/t) for 2007 and 2008, which Slovenia informed the ERT was because the country's only ferroalloy producer closed in the first quarter of 2008 and the assumptions were made that the production of ferroalloys and the associated fuel consumption in 2008 were 25 per cent of those in 2007 and that the EF for 2008 was equal to that for 2007, which was much higher than the EF for previous years. The ERT accepts these assumptions, noting that the choices made did not lead to an underestimation of emissions for 2008. However, the ERT

recommends that the Party explain the large variation in the IEF over the entire time series in its next NIR.

Consumption of halocarbons and SF₆ – HFCs⁶

55. Slovenia used the tier 2 method to estimate the actual emissions of HFCs. From the information provided in the NIR, it was not possible for the ERT to determine which of the EFs used for the refrigeration subcategories were country-specific values and which were based on IPCC default ranges or how a default value was determined from these ranges. In response to a question raised by the ERT, Slovenia explained that the EFs for all of the subcategories, except mobile air-conditioning, had been taken from research conducted by the Chamber of Commerce and Industry of Slovenia in 1999. The ERT observed that some of the EFs may be too high and recommends that Slovenia review the values used, in particular for domestic refrigeration, stationary air-conditioning and mobile air-conditioning, and justify or recalculate them as appropriate. In addition, the ERT recommends that Slovenia include in its next NIR further justification for the annual decrease of 1 per cent in the EF for the PFC stock in mobile air-conditioning for the years after 2005 and for the AD used to estimate the HFC stock in mobile air-conditioning.

56. Estimated actual emissions of HFCs from foam blowing and fire extinguishers have been kept constant since 1999 (for foam blowing) and 1997 (for fire extinguishers) owing to a lack of data. The ERT reiterates the recommendation of previous ERTs that Slovenia provide, in its next annual submission, estimates of these emissions (although the sources are minor) using recommended methods from the IPCC good practice guidance, such as trend extrapolation using a proxy, if actual data remain unavailable.

3. Non-key categories

Soda ash consumption – CO₂

57. Slovenia used import and export data to calculate the domestic consumption of soda ash. The ERT observed that the figures for the period 1998–2006 are much lower than those for the preceding years of the time series, and that the figures for 2007 and 2008 are much higher than those for the rest of the time series, which may indicate the incomplete reporting of imports for the period 1998–2006. As the import/export statistics show some improbable inter-annual variations (in particular, with regard to imports in 2000, 2007 and 2008), the ERT recommends that Slovenia investigate the possibility of collecting consumption data from actual users in order to improve the AD. As long as Slovenia continues to use its current methods and data sources, the ERT recommends that the Party provide an explanation for the increases in domestic consumption of soda ash of approximately 100 per cent or more in the figures for 2007 and 2008 and that the uncertainty estimates for the AD for recent years of the time series be increased.

Consumption of halocarbons and SF₆ – SF₆

58. Owing to a lack of data on SF₆ emissions from electrical equipment, Slovenia has reported a constant estimate of emissions for 2005 onwards. The ERT noted that the increasing trend in emissions in the preceding years of the time series and that keeping the emissions estimate constant for 2005 onwards could have resulted in an underestimation of emissions. During the review, Slovenia provided new data based on trend extrapolation of AD and EFs, which demonstrated that the current approach did not result in an

⁶ Emissions from foam blowing and fire extinguishers under this category were not identified as a key category by the Party. However, since issues related to this category are discussed as a whole, the individual subcategories are not assessed in separate sections.

underestimation of the reported emissions for 2008. The Party stated that it has initiated a process of gathering data from power plants and electrical distribution companies on an annual basis. The ERT recommends that Slovenia recalculate the estimated post-2005 emissions for its next annual submission using either new data for those years or the trend extrapolation as presented, if no new data for those years are available.

59. The NIR indicates that the majority of the soundproof windows containing SF₆ manufactured in Slovenia were exported and that present domestic demand is very low; therefore, emissions from the use of SF₆ in windows were reported as “NO”. During the review, Slovenia confirmed that the manufacturing of windows with SF₆ did occur in the country, at least in the years 1995–1997, but that the associated emissions had not been estimated. The ERT recommends that Slovenia estimate the emissions from filling for the years 1995–1997 and include the estimates in its next annual submission.

D. Agriculture

1. Sector overview

60. In 2008, emissions from the agriculture sector amounted to 1,977.85 Gg CO₂ eq, or 9.3 per cent of total GHG emissions. Since 1986, emissions have decreased by 10.8 per cent. The key driver for the fall in emissions is a decline in the number of livestock, mainly cattle. Within the sector, 35.9 per cent of the emissions were from agricultural soils, followed by 34.3 per cent from enteric fermentation and 29.8 per cent from manure management. CH₄ contributed 56.2 per cent of the sectoral emissions, while N₂O contributed 43.8 per cent.

61. The inventory for the agriculture sector is complete in terms of categories and gases. Slovenia reported that rice cultivation, savanna burning and field burning of agricultural residues do not occur in the country. During the review, the ERT identified that direct and indirect N₂O emissions from the application of sewage sludge to agricultural soils were not estimated (see para. 70 below).

62. Slovenia has improved the transparency of its reporting by providing in the NIR detailed information on the preparation of the inventory for the agriculture sector and the time series, as well as by justifying the use of some EF values that differ from the IPCC defaults. However, the ERT encourages Slovenia to provide further information on trends for main AD (e.g. fertilizers) and explanations of inter-annual variations in the IEFs and emissions in its next annual submission (see para. 69 below).

63. Slovenia has reported recalculations of the entire time series for the agriculture sector. The implementation of a tier 2 method for estimating emissions from cattle led to the most significant recalculations. Other reasons for recalculations were updates to the manure management system allocations and revisions to the area of cultivated histosols, following the recommendation of the previous ERT. These changes led to recalculations of the estimates of CH₄ emissions from enteric fermentation (cattle) and manure management (cattle and swine), and N₂O from manure management (liquid systems and solid storage and dry lot) and agricultural soils (manure deposited on the soil). The recalculations resulted in a decrease in emissions by 5.0 per cent for 1986 and an increase in emissions by 0.5 per cent for 2007. The recalculations for each category were justified in the NIR.

64. The ERT noted that, although a number of the recommendations of the previous ERT in relation to the agriculture sector were implemented by the Party, further improvements in relation to transparency, the referencing of data used and justifications of the EFs used are still required. Also pending are the recommended changes to the QA/QC section of the NIR and improvements to the uncertainty analysis for the agriculture sector.

Other recommendations that are outstanding are described in the relevant category-specific paragraphs below.

2. Key categories

Enteric fermentation – CH₄

65. Slovenia estimated CH₄ emissions from cattle using a tier 2 approach. For swine, the IPCC default EF was used for animals from commercial farms, while a country-specific EF was used for animals from family farms, owing to the differences in live weight. For the rest of the animal categories, the IPCC tier 1 default EFs were used. During the review process, Slovenia provided the ERT with the tier 2 parameters used to estimate emissions from cattle. The ERT welcomes Slovenia's efforts to improve its estimation methods. The ERT recommends that Slovenia improve the transparency of its NIR by providing a more detailed description of the characterization used for cattle and by reporting the time series of parameters (e.g. milk production), AD and EFs for each cattle subcategory. The ERT also recommends that Slovenia provide in its NIR additional information on the assumptions and references used to estimate these emissions.

66. The livestock numbers are collected by SORS. There were a number of changes to the collection methods used by SORS over the period 1986–2003; however, the NIR noted that SORS has published revised data for the period 1991–2002 in order to harmonize the data and ensure time-series consistency. For transparency, the ERT encourages Slovenia to provide more information on this issue and to include in the NIR the web link to the official agricultural statistics used for estimating emissions.

Manure management – CH₄

67. Slovenia calculated CH₄ EFs for cattle and swine using the IPCC tier 2 approach. The Party's EF for swine (15.18 kg/head/year) is much higher than the IPCC default value for swine in Eastern European countries with cool temperatures (4 kg/head/year). Slovenia adequately justified the use of this higher EF by explaining that approximately 60 per cent of swine manure is treated in liquid systems in the country, while the IPCC default value assumes this at only 18 per cent. In addition, Slovenia uses the methane conversion factor (MCF) of 39 per cent for liquid systems from the IPCC good practice guidance, which is higher than the default MCF in the Revised 1996 IPCC Guidelines (10 per cent). Slovenia informed the ERT that it will investigate alternative MCFs for liquid systems. The ERT encourages Slovenia to undertake this investigation and make use of the results for its next annual submission.

Manure management – N₂O

68. Nitrogen (N) excretion rates for cattle and swine are estimated using country-specific methods, while for other animals the IPCC defaults are used. The recommendation made by previous ERTs that the Party include clear information on the collection of AD and the methodology for ammonia accounting has not been implemented. In response to a question raised by the ERT, Slovenia explained that the methods for estimating excretion rates had been harmonized with those used for reporting ammonia under the Convention on Long-range Transboundary Air Pollution. For cattle, the method is based on an analysis of Swiss animals as Swiss cattle production is considered to be similar to that in Slovenia. The ERT reiterates the recommendation of previous ERTs that Slovenia improve the transparency of the NIR by including information justifying its use of country-specific EFs.

Agricultural soils – N₂O

69. Emissions of N₂O from agricultural soils are estimated using methods from the Revised 1996 IPCC Guidelines and the IPCC good practice guidance, incorporating country-specific parameters. The emissions decreased by 7.7 per cent between 2007 and 2008, which Slovenia explained was due to a decrease in the application of synthetic fertilizers to soils. The ERT recommends that Slovenia include a clear explanation of these trends in its next annual submission.

70. The ERT identified that Slovenia had not estimated the direct and indirect N₂O emissions associated with the use of sewage sludge on agricultural soils. Data to estimate emissions for this subcategory are available from the data collected under the EU sewage sludge directive (directive 86/278/EEC). The ERT recommended that Slovenia estimate emissions for this subcategory for the entire time series and describe the data used and the method applied. In response to the recommendation of the ERT, Slovenia submitted estimates for this subcategory for the period 2004–2008 and provided the ERT with information on the data used and the method applied. The Party applied the methods from the IPCC good practice guidance and the sewage N content of Austria. The ERT concluded that the estimate is acceptable and has been transparently documented. The ERT recommends that Slovenia include the methodological information and relevant justifications in the NIR of its next annual submission, together with estimates for the entire time series. According to national legislation, official data should be available for 2000 onwards. For the earlier years of the time series, the ERT recommends that the Party use methods for estimating emissions such as those outlined in the IPCC good practice guidance in order to ensure time-series consistency. The ERT also recommends that Slovenia use a country-specific parameter for the sewage N content.

E. Land use, land-use change and forestry

1. Sector overview

71. Slovenia has reported net removals from the LULUCF sector of 8,531.74 Gg CO₂ eq for 2008. In 1986, the sector was a net sink of 8,106.77 Gg CO₂ eq. Since 1986, net removals have increased by 5.2 per cent. Within the sector, CO₂ is the main GHG and forest land is the dominant and only net sink category, with its net removals totalling 10,911.07 Gg CO₂ eq. The remaining land categories are net sources with cropland and grassland contributing emissions of 870.39 Gg CO₂ eq and 1,508.94 Gg CO₂ eq, respectively. There were no major changes in the relative contributions of these categories within the sector during the period 1986–2008.

72. Slovenia's inventory for LULUCF is generally complete, incorporating estimates for all required categories, gases and pools. The ERT observed that small areas of land conversion to and from wetlands, settlements and other lands are reported in the CRF tables, but that associated carbon stock changes are reported as not applicable ("NA") or "NO". During the review, Slovenia explained that the expert judgement is that these land conversions do not actually occur in the country. The land areas reflect statistical errors associated with the agricultural land-use mapping methods and are reported in the CRF tables to ensure the reporting of a consistent land area. The ERT recommends that this information be provided in the documentation boxes of the relevant CRF tables, including a cross reference to the detailed explanation in the NIR for the cases in which AD exist but emissions are not estimated. Slovenia does not estimate emissions from the voluntary reporting categories wetlands remaining wetlands, settlements remaining settlements and other lands remaining other lands.

73. Although the transparency of the LULUCF chapter of the NIR has been improved since the Party's previous annual submission, the ERT identified many errors and gaps in the NIR: for example, the equation on page 174 needs to be revised, years are missing from tables 7.2.6–7.2.8 (land-use matrices for 1998–2007), the percentages for land conversions referred to on pages 177 and 178 refer to the period 1998–2006 and are not annual land-use conversions, and there are errors in the reporting of land areas in the CRF tables (e.g. areas of cropland and grassland are incorrectly reported, excluding the area of organic soil, and areas of organic soil for the land conversion subcategories are incorrectly reported as “NA” rather than “NO” or “NE” in most cases). The ERT recommends that Slovenia review the NIR and the CRF tables and correct these errors in its next annual submission.

74. Slovenia has recalculated estimates for the LULUCF sector for the entire time series. The main reason for the recalculations was the implementation of a tier 2 method for estimating emissions/removals from forest land and the inclusion of estimates for cropland, grassland and forest wildfires for the first time. These recalculations resulted in increases in the net removals from the sector of 6,517.52 Gg CO₂ eq (410.1 per cent) for 1986 and of 2,735.12 Gg CO₂ eq (47.4 per cent) for 2007. The ERT recommends that Slovenia provide more detailed descriptions of recalculations in its next annual submission.

75. The ERT commends Slovenia for its efforts to improve the completeness of the LULUCF inventory and for improving the estimates. In response to the recommendations of the previous ERT, Slovenia has reported the land-use change matrix, emissions from organic soils under grassland remaining grassland and CO₂ emissions from agricultural liming, and has recalculated estimates for the entire time series. The NIR indicates that further improvements are planned in relation to forest fires, the biomass expansion factor, root-shoot ratio, wood density, changes in carbon stocks in mineral and organic soils and uncertainty assessment. The ERT encourages the Party to implement these improvements as soon as possible.

76. Slovenia uses approach 3 for land representation, using data from the Agricultural Land-Use Maps (ALUMs) published in 2002 and 2008 for the years 1998 and 2007, respectively. Data for 1998 were generated from the analysis of aerial photographs at the scale 1:5,000 acquired in 1994 and 2001, assuming that the land-use changes in the period were constant. For 2008, Slovenia made a projection assuming a constant rate of change in land transitions. The information will be updated in the next annual submission, when data from ALUM 2009 will be available. The ERT commends Slovenia for the improvement in its estimation of land-use changes, and recommends that the Party provide more information on ALUMs, including on data processing and analysis, and an assessment of their accuracy.

2. Key categories

Forest land remaining forest land – CO₂

77. Slovenia has applied a new method for estimating changes in carbon stock based on the tier 2 method from the IPCC good practice guidance for LULUCF, which uses country-specific conversion factors and biomass functions. Carbon stock change data come from the 2000 and 2007 National Forest Inventories (NFIs). The new method represents a significant improvement in terms of the accuracy of the inventory. In the CRF tables, carbon stock changes in soil on forest land remaining forest land are reported as “NA”, while the NIR states that these changes are likely to be small. The ERT recommends that the Party include the relevant estimates in its next annual submission.

Cropland remaining cropland – CO₂

78. Slovenia estimates carbon stock changes associated with perennial woody crops, the conversion of annual crops to perennial crops, mineral soils and the cultivation of organic soils using tier 2 methods. For transparency, the ERT recommends that the areas of perennial and annual crops and the associated carbon stock changes be reported as separate subcategories in CRF table 5.B.

Land converted to cropland – CO₂

79. Slovenia has adopted tier 2 methods and equations, based on nationally-derived EFs for living biomass and soil carbon, for estimating carbon stock changes from land converted to cropland. The ERT identified a number of errors in the presentation of these methods in the NIR. These errors include the reversal of the living biomass accumulation rate for annual crops and perennial crops on page 204 (equation 15) and the presentation of the equation for biomass instead of for soil carbon on page 205 (equation 16). The ERT recommends that Slovenia correct these equations and improve the QC checks for its next annual submission.

Land converted to grassland – CO₂

80. Tier 2 methods (for biomass and soil carbon) are used by the Party for estimating carbon stock changes from land converted to grassland. Although the NIR states that IPCC default carbon accumulation rates are used, the ERT identified that the rates reported in the NIR (equation 19) are not consistent with those contained in the IPCC good practice guidance for LULUCF. In response to the request of the ERT to check the estimates for cropland converted to grassland, Slovenia confirmed that an error was made in the calculations and that the estimates will be recalculated for its next annual submission. The ERT recommends that Slovenia also correct the relevant text in the NIR and improve the QC checks for its next annual submission.

81. Slovenia provides in the NIR an estimation of N₂O emissions from disturbance associated with land-use conversion to cropland; however, the emissions for this category are reported in CRF table 5(III) as “NA” and “NO”. In addition, the NIR includes an estimation of N₂O emissions from soils for land converted to grassland; however, the ERT noted that there is no IPCC method for estimating emissions for this land-conversion category, nor do the CRF tables provide a specific place where these emissions could be reported. The ERT recommends that Slovenia provide the estimation of N₂O emissions from soils for land converted to cropland in CRF table 5(III) in its next annual submission.

F. Waste

1. Sector overview

82. In 2008, emissions from the waste sector amounted to 620.17 Gg CO₂ eq, or 2.9 per cent of total GHG emissions. Since 1986, emissions have increased by 9.4 per cent. The key driver for the rise in emissions is the 33.8 per cent increase in emissions from solid waste disposal on land, which is due to increased disposal of municipal waste. Within the sector, 64.5 per cent of the emissions were from solid waste disposal on land, 35.0 per cent from wastewater handling and 0.6 per cent from waste incineration. The level of emissions from wastewater handling was 19.2 per cent lower in 2008 than in 1986, which is due primarily to the implementation of the recovery of CH₄ in wastewater treatment plants and the decrease in the generation of industrial wastewater.

83. The inventory for the waste sector is complete, with all emission sources and gases for which there is an IPCC methodology estimated. The ERT noted that estimates of CO₂

and N₂O emissions from waste incineration for the period 1990–2008 were included in the inventory for the first time.

84. In response to the recommendations of the previous ERT, Slovenia has improved the transparency of the NIR by including more information on recalculations and historical emission trends and an explanation of where emissions from waste incineration with energy recovery are reported. However, the ERT identified additional areas where transparency could be improved (see paras. 86, 88, 89, 92 and 94 below).

85. Slovenia has reported recalculations for the time series 1986–2007 for wastewater handling and N₂O emissions from human sewage, which were undertaken due to the availability of new data on population, CH₄ recovery and protein consumption. The recalculations resulted in increases in the estimated sectoral emissions by 0.1 per cent for 1986 and by 1.4 per cent for 2007. The greatest changes were made to the estimates of emissions from wastewater handling (+6.0 Gg CO₂ eq, or 2.6 per cent).

2. Key categories

Solid waste disposal on land – CH₄

86. For the estimation of CH₄ emissions from solid waste disposal on land, the first-order decay (FOD) method (tier 2) was applied, using country-specific degradable organic carbon values based on a screening analysis of mixed municipal waste undertaken in 2005–2006. The AD on the amount of waste are derived from different sources: those for the period 1964–1994 are based on the number of people included in the municipal waste collection system and an assumption as to the per capita waste sent for disposal; those for the period 1995–2000 are based on data provided by SORS; and those for the period 2001–2008 are based on data from the Environmental Agency of the Republic of Slovenia. The previous ERT recommended that Slovenia provide more information on AD and demonstrate how time-series consistency is ensured. The ERT noted that additional information on AD was provided in the NIR but that time-series consistency was not addressed. The ERT recommends that Slovenia develop a model comprising all waste streams (i.e. total generated, sent to landfill, recycled and incinerated) and make extrapolations from this balance to improve the quality of the AD.

87. In addition, compared with the trend in waste generation per capita of other Parties, the ERT considers that Slovenia's waste per capita (470 kg/person/year), which is constant for the 1964–1994 period, might have been overestimated. The ERT recommends that Slovenia re-examine this value and make sure that it includes only municipal solid waste (MSW) and report on this issue in its next annual submission, or recalculate the time series, as appropriate.

88. Slovenia provided the ERT with a copy of its FOD model for review. The use of the model parameters was found to be appropriate and in line with IPCC methods, with the exception of the oxidation factor (OX). Usually, when a solid waste disposal site (SWDS) is managed (methane correction factor equal to one), the OX should be set to 0.1. Slovenia considers its SWDS to have been managed since 1986, but an OX of zero is used for until 2008. The ERT recommends that Slovenia review the OX factors used in the FOD model for the entire time series and either revise them or provide explanations for the assumptions made in its next annual submission.

89. The recovery of landfill gas was initiated in 2004 on the three largest SWDS in Slovenia, and the CH₄ recovered is used to generate energy. Although the NIR indicates that estimates of emissions of the landfill gas are included under public electricity and heat production under biomass, it is not clear what share of the landfill gas is used for energy generation and what share of the landfill gas is included in CRF table 1.A(a). The ERT

recommends that Slovenia provide more detailed information on this CH₄ recovery in its next annual submission.

90. The ERT noted that the term “waste generation rate” used as a column heading in tables 8.1.1–8.1.3 of the NIR is not correctly used in this context. The values in this column show the amount of MSW sent for disposal. Although in the past practically all generated waste was sent for disposal, a significant fraction of waste (30 per cent) is now diverted from landfills and reused or recycled. Therefore, the ERT recommends that Slovenia change this column name to “waste sent for disposal” in order to improve transparency.

Wastewater handling – CH₄ and N₂O

91. The IPCC default methodology was used to calculate estimates of CH₄ emissions from municipal and industrial wastewater handling. Estimated emissions from industrial wastewater handling were recalculated for the period 2004–2007, as estimated wastewater volumes were replaced with actual volumes derived from monitoring reports. For the period 1986–2003, wastewater volumes were derived from estimates of wastewater per unit of production. The ERT noted that there is a significant drop in the IEFs between 2003 and 2004, which indicates that the two methods may not have produced consistent estimates of wastewater volumes. The ERT recommends that Slovenia review the data for the period 1986–2003 and recalculate them, if necessary, using methods such as the surrogate method, as outlined in chapter 7 of the IPCC good practice guidance, to ensure a consistent time series. Any recalculations should be described in detail in the NIR.

92. In addition, the ERT noted that the recalculation of the estimated emissions from industrial wastewater handling was explained with new data presented in a research project by the National Institute of Chemistry from December 2009. The ERT recommends that Slovenia provide additional information on the study and its results in its next annual submission, in order to justify the new estimates.

93. The N₂O emissions from human sewage have been recalculated using the most recent data on protein consumption from the Food and Agriculture Organization of the United Nations (FAO). As the publication of protein consumption data on the statistical database of FAO (FAOSTAT) has a time lag of three years, the most recently available consumption rates are applied to the years for which data are not yet available. The ERT recommends that Slovenia update the time series annually, as the next year’s data become available on FAOSTAT.

3. Non-key categories

Waste incineration – CO₂

94. Slovenia has, for the first time, estimated emissions from the incineration of biogenic, clinical, hazardous and municipal solid waste for the period 1990–2008. AD were obtained from the Environmental Agency of the Republic of Slovenia. The default EFs from the IPCC good practice guidance were used to estimate the emissions. The ERT welcomes the inclusion of these estimates and recommends that Slovenia further develop the relevant section in the NIR by including more information on the method applied and the data used.

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

95. Slovenia has provided general, land-specific and activity-specific information on KP-LULUCF activities in line with the requirements of the annex to decision 15/CMP.1.

96. Slovenia reported deforestation under Article 3, paragraph 3, of the Kyoto Protocol and forest management is reported under Article 3, paragraph 4, of the Kyoto Protocol. Afforestation/reforestation (A/R) is reported as “NO”. Slovenia has elected to account for the KP-LULUCF activities at the end of the commitment period. The definition of forest chosen by Slovenia is: minimum land area of 0.25 ha; minimum tree crown cover of 30 per cent; and minimum tree height of 2 m.

97. Slovenia reports that information on deforestation is maintained by the Slovenian Forest Service (SFS), which issues permission for the conversion of forest land to other land uses. However, the Party does not provide any details on how this ensures that all conversions of Slovenian forest land are geo-referenced by SFS, as is indicated to be done in the NIR. The ERT recommends that the Party provide details on how forest land conversions are geo-referenced and recorded, describing particularly the methods used, in its next annual submission.

98. The methods adopted by the Party for reporting GHG emissions and removals under the Kyoto Protocol are tier 2, based on the IPCC good practice guidance and largely on country-specific EFs derived from the NFIs. The methods, according to the Party’s NIR, are similar to those used for its reporting under the Convention. To improve transparency, the ERT recommends that Slovenia provide more details on the sources of AD and EFs used for the estimation of GHG emissions and removals from KP-LULUCF.

99. Slovenia does not report carbon stock changes in the litter pool for the category deforestation. The ERT recommended that Slovenia either provide data on the omitted pool, or otherwise provide sufficient verifiable information, as required by paragraph 6(e) of the annex to decision 15/CMP.1, that demonstrates that the pool is not a net source. In response to the recommendation of the ERT, Slovenia indicated that calculations related to the litter pool are under examination and will be included in its next annual submission. The ERT appreciates the efforts of the Party to carry out fieldwork which will enable more reliable estimates to be provided for the litter pool in the future.

100. Slovenia did not report on uncertainty assessments or specific QA/QC procedures applied in relation to KP-LULUCF. The ERT noted that Slovenia did not correctly identify all the key categories for KP-LULUCF activities (see para. 14 above). The ERT recommends that Slovenia correct these issues in its next annual submission.

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

Afforestation and reforestation – CO₂

101. Slovenia reports that natural afforestation of abandoned agricultural land does occur in the country. As Slovenia is unable to identify direct human-induced A/R separately from natural afforestation, it has chosen to report A/R as “NO”. Any increase in forest area is therefore covered under forest management. The ERT acknowledges that this is a conservative approach and will not have resulted in an overestimation of removals. The ERT encourages the Party to try to report A/R in its future annual submissions.

Deforestation – CO₂

102. Slovenia does not provide the methods or sources of data used to estimate changes in carbon stock in living biomass in the NIR. The NIR states only that IPCC default data are used to calculate the annual increase in carbon stock in biomass due to growth. The ERT recommends that the Party provide details of the methods used and the sources of EFs. The increase in above-ground biomass for the subdivision forest land converted to cropland perennial is reported to be 29.9 Mg carbon(C)/ha or equal to nearly 60 t biomass/ha. This value seems very high for a perennial crop. The ERT recommends that Slovenia check the value and either justify it or make the necessary recalculations for its next annual submission.

103. In CRF table 5(KP-I)A.2, Slovenia is expected to report changes in carbon stock for the inventory year for all the geographical locations that encompass units of land subject to deforestation. The reported net carbon stock changes in above-ground biomass are in the range of 40.07 to 69.09 Mg C/ha. The ERT considers it unlikely that all of the 7.46 ha of deforested lands lose above-ground biomass in the range of 40.07 to 69.09 Mg C/ha during the inventory year. The ERT recommends that Slovenia check the AD and EFs used and revise the estimates and reporting thereof for its next annual submission.

Activities under Article 3, paragraph 4, of the Kyoto Protocol*Forest management – CO₂*

104. In Slovenia, all forest area covered by forest management plans is considered to be subject to forest management. Data for estimating carbon stock changes in living biomass and dead organic matter come from the NFIs. The NIR states that carbon stock changes in dead organic matter are estimated using the tier 2 method. No details are provided for soil carbon. The litter and soil carbon pools are reported as “NA”. The ERT recommends that Slovenia include the relevant estimates or notation keys in the relevant CRF tables in its next annual submission.

2. Information on Kyoto Protocol unitsStandard electronic format and reports from the national registry

105. Slovenia 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.

106. 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 generally consistent with that contained in the national registry and with the records of the international transaction log (ITL) and the clean development mechanism registry and meets the requirements set out in paragraph 88(a–j) of the annex to decision 22/CMP.1. The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. There were some discrepancies identified by the ITL relating to transactions initiated by the

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.

Party. Slovenia has not provided documentation on any actions and/or changes that were undertaken to address these discrepancies, which were minor and not recurring. The ERT recommends, however, that Slovenia, in its next annual submission, submit information on any discrepancies in the national registry and provide more detailed descriptions of actions and/or changes that were carried out to address them. No non-replacement has occurred.

National registry

107. 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.

Calculation of the commitment period reserve

108. Slovenia has reported its commitment period reserve in its 2010 annual submission. Slovenia reported that its commitment period reserve has not changed since the initial report review (84,265,734 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

109. Slovenia reported that there have been no changes in its national system since its previous annual submission. The ERT concluded that Slovenia'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

110. Slovenia provided information in the NIR on changes in its national registry since its previous annual submission, including functional changes to the registry, an upgrade in the software, changes in the contact information and a change in the development and support company. In addition, there were changes made to the publicly accessible information, following the recommendation of the previous ERT.

111. 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). However, the ERT noted that the Party reported an upgrade in the software, from version 3.0.84 to version 4.1, without providing information on test plans and test results. The ERT recommends that Slovenia provide more detailed information in its next annual submission on any changes in the national registry, including updates to the national registry readiness documentation related to any changes, test plans and test results in the case of an upgrade in software.

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

112. Slovenia 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.

113. The reported information is incomplete and not sufficiently transparent in terms of the specific details of the activities being undertaken. During the review, the Party provided the ERT with additional information on the considerations related to the implementation of the commitments under Article 3, paragraph 14, within the framework of the EU Action Plan on Climate Change in the Context of Development Cooperation, which includes projects and programmes dealing with issues such as the promotion of energy efficiency and renewable energy and the conservation of natural areas. The ERT recommends that Slovenia improve transparency and completeness by including in its next annual submission more information on how the activities being undertaken will minimize adverse social, environmental and economic impacts on developing countries.

III. Conclusions and recommendations

114. Slovenia made its annual submission on 15 April 2010. The CRF tables were resubmitted on 17 May and 25 October 2010 and the NIR was resubmitted on 24 June 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.

115. The ERT concludes that the inventory submission of Slovenia has been prepared and the information reported in accordance with the UNFCCC reporting guidelines. The inventory submission is complete and the Party has submitted a complete set of CRF tables for the years 1986–2008 and an NIR; these are complete in terms of geographical coverage, years and sectors, as well as generally complete in terms of categories and gases. The following categories, for which methodologies for estimating emissions are available in the Revised 1996 IPCC Guidelines and the IPCC good practice guidance, were reported as “NE”: emissions of SF₆ from the filling of soundproof windows for the period 1995–1997 and N₂O emissions from the application of sewage sludge to agricultural soils. During the review, Slovenia submitted estimates of N₂O emissions from agricultural soils for the period 2004–2008. For the LULUCF sector, Slovenia provided estimates of N₂O emissions from disturbance associated with land-use conversion to cropland in the NIR but did not report these emission estimates in the CRF tables.

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

117. The Party’s inventory is generally in line with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF. There are minor deviations from the guidelines in terms of the allocation of emissions from military fuel combustion and the reporting of the reference approach, as well as some minor issues in relation to time-series consistency.

118. Slovenia has elected to account for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol at the end of the commitment period. In its reporting on these activities, the Party has followed the requirements of paragraphs 5 to 9 of the annex to decision 15/CMP.1. The KP-LULUCF inventory has been prepared generally in line with the IPCC good practice guidance for LULUCF. Slovenia reports that natural afforestation of abandoned agricultural land does occur in the country. As Slovenia is unable to identify direct human-induced A/R separately from natural afforestation, it has chosen to report A/R as “NO”. The Party does not identify the units of land subject to A/R under Article 3, paragraph 3, of the Kyoto Protocol, thus not meeting the requirements of paragraph 6 of the

annex to decision 15/CMP.1. The Party did not report estimates of emissions from the litter pool for the category deforestation or provide information to demonstrate that the pool is not a net source. During the review, the Party indicated that estimates will be provided for this pool in its next annual submission.

119. Slovenia 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.

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

121. 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.

122. Slovenia 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 information was provided on 15 April 2010. The information provided in the NIR was not considered sufficiently transparent and complete.

123. In the course of the review, the ERT formulated a number of recommendations relating to the completeness and transparency of the information presented in Slovenia's annual submission and to the Party's QA/QC activities and uncertainty assessment. The key recommendations are that Slovenia:

(a) Continue to improve the completeness of the inventory (e.g. by including estimates of emissions of SF₆ from the filling of soundproof windows for the period 1995–1997 and providing estimates of potential emissions of HFC and SF₆ for the entire time series);

(b) Report estimates of direct and indirect N₂O emissions from the application of sewage sludge to agricultural soils for the entire time series;

(c) Continue to improve transparency by providing more detailed descriptions of country-specific methodologies and data sources, analysis of trends and explanations for recalculations;

(d) Improve the basic QC procedures for checking the NIR and the CRF tables to ensure that accurate and consistent data are presented and that the appropriate notation keys are used. The ERT also encourages Slovenia to implement tier 2 category-specific QC checks and a peer review (QA) for key categories, where possible;

(e) Revise its uncertainty assessment and include in the NIR information on the methods used in the uncertainty assessment and descriptions of the expert judgement applied. The ERT also recommends that Slovenia undertake an uncertainty analysis for KP-LULUCF;

(f) Report the key categories, including for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, following the guidance provided in the IPCC good practice guidance for LULUCF;

(g) Improve its reporting of all KP-LULUCF pools or provide information in the NIR which demonstrates that a pool which is not reported is not a net source;

(h) Provide more detailed information on how deforestation is geo-referenced and recorded, describing particularly the methods used;

- (i) Provide more detailed information on discrepancies in the national registry and on actions and/or changes carried out to address these discrepancies;
- (j) Provide more detailed information on any changes in the national registry, including updates to the national registry readiness documentation related to any changes;
- (k) Provide further details on its actions taken to minimize adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol.

IV. Questions of implementation

124. 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. *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/gp/lulucf/gp/lulucf.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 Slovenia 2010.

Available at <<http://unfccc.int/resource/docs/2010/asr/svn.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/SVN. Report of the individual review of the annual submission of Slovenia submitted in 2009. Available at

<<http://unfccc.int/resource/docs/2010/arr/svn.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 Ms. Tajda Mekinda-Majaron (Environmental Agency of the Republic of Slovenia), including additional material on the methodologies and assumptions used.

Annex II

Acronyms and abbreviations

A/R	afforestation/reforestation
AD	activity data
C	carbon
CH ₄	methane
CKD	cement kiln dust
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CRF	common reporting format
EF	emission factor
ERT	expert review team
EU	European Union
EU ETS	European Union emissions trading scheme
F-gas	fluorinated gas
FOD	first-order decay
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
ITL	international transaction log
IPCC	Intergovernmental Panel on Climate Change
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
kg	kilogram (1 kg = 1,000 grams)
LULUCF	land use, land-use change and forestry
Mg	megagram (1 Mg = 1 tonne)
N	nitrogen
NA	not applicable
NE	not estimated
NO	not occurring
N ₂ O	nitrous oxide
NIR	national inventory report
PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
SEF	standard electronic format
SF ₆	sulphur hexafluoride
SIAR	standard independent assessment report
SORS	Statistical Office of the Republic of Slovenia
UNFCCC	United Nations Framework Convention on Climate Change