COMPLIANCE COMMITTEE

CC/ERT/IRR/2007/16
15 November 2007

Report of the review of the initial report of Slovenia

Note by the secretariat

The report of the review of the initial report of Slovenia was published on 15 November 2007. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2), the report is considered received by the secretariat on the same date. This report, FCCC/IRR/2007/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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Report of the review of the initial report of Slovenia

According to decision 13/CMP.1, each Annex I Party with a commitment inscribed in Annex B to the Kyoto Protocol shall submit to the secretariat, prior to 1 January 2007 or one year after the entry into force of the Kyoto Protocol for that Party, whichever is later, a report (the 'initial report') to facilitate the calculation of the Party's assigned amount pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol, and to demonstrate its capacity to account for emissions and the assigned amount. This report reflects the results of the review of the initial report of Slovenia conducted by an expert review team in accordance with Article 8 of the Kyoto Protocol.

CONTENTS

I. Introduction and summary

A. Introduction

1. This report covers the in-country review of the initial report of Slovenia, coordinated by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 21 May to 26 May 2007 in Ljubljana, Slovenia, and was conducted by the following team of nominated experts from the roster of experts: generalist – Mr. Klaus Radunsky (Austria); energy – Mr. Christo Christov (Bulgaria); industrial processes – Ms. Sonia Petrie (New Zealand); agriculture – Mr. Marcelo Rocha (Brazil); land use, land-use change and forestry (LULUCF) – Mr. Walter Oyhantcabal (Uruguay); waste – Mr. Carlos Lopez (Cuba). Mr. Walter Oyhantcabal and Mr. Klaus Radunsky were the lead reviewers. In addition, the expert review team (ERT) reviewed the national system, the national registry, and the calculations of Party's assigned amount and commitment period reserve (CPR), and took note of the LULUCF parameters and of the LULUCF activities elected under Article 3, paragraph 4, of the Kyoto Protocol. The review was coordinated by Ms. Ruta Bubniene (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.

B. Summary

1. Timeliness

3. Decision 13/CMP.1 requests Parties to submit their initial report prior to 1 January 2007 or one year after the entry into force of the Kyoto Protocol for that Party, whichever is later. Slovenia submitted its initial report on 21 December 2006, which is in compliance with decision 13/CMP.1. Slovenia also submitted a greenhouse gas (GHG) inventory that had been revised compared to its original 2006 inventory submission of 19 January 2007.

2. Completeness

4. Table 1 below shows which of the mandatory elements have been included in the initial report and reflects the revised values provided by the Party in its response to the ERT's recommendations during the review process. These revised values are based on revisions of carbon dioxide (CO_2) emissions from combustion of natural gas (see paragraph 50), fugitive CO_2 emissions from coal mining and handling (see paragraph 52), estimation of CO_2 emissions from glass production (see paragraph 67), and nitrous oxide (N_2O) emissions from the cultivation of histosols (see paragraph 80), and resulted in estimated base year emissions being revised from 20,203,252 tonnes CO_2 equivalent (CO_2 eq.) as reported originally by the Party to 20,354.04 Gg CO_2 eq. (see paragraphs 112 and 113). In its responses to issues raised during the review, Slovenia also provided a complete set of common reporting format (CRF) tables for the years 1987, 1988 and 1989. The ERT welcomed the fact that Slovenia provided revised estimates in the course of the review and noted that these revisions should be fully incorporated in the next inventory submission.

5. The national registry system required under the Kyoto Protocol was not yet operational at the time of the in-country visit, and no independent assessment report (IAR) was yet available. The following documentation was also not available: the description of how the national registry conforms to the technical standards for data exchange between registry systems; the description of the procedures employed in the national registry to terminate transactions where a discrepancy is notified and to correct problems in the event of a failure to terminate the transactions; and the results of any test

procedures on the performance, procedures and security measures of the national register. The information in the initial report does not cover some of the elements required by decision 13/CMP.1, section I of decision 15/CMP.1, and relevant decisions of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP). The missing elements relate to the national registry system and, in particular, to the issues addressed in paragraphs 17, 19–22 and 44–48 of the annex to decision 13/CMP.1 and paragraph 32 (d), (e), (g), (i), (j) of the annex to decision 15/CMP.1. In the course of the review, Slovenia provided the missing elements related to the national registry system.

Table 1. Summary of the reporting on mandatory elements in the initial report

Item	Provided	Value/year/comment
Complete GHG inventory from the base year (1986) to the most recent year available (2004)	Yes	Base year (for CO_2, CH_4 and N_2O): 1986
Base year for HFCs, PFCs and SF_6	Yes	1995
Agreement under Article 4	No	Not applicable
LULUCF parameters	Yes	Minimum tree crown cover: 30 % Minimum land area: 0.25 ha Minimum tree height: 2 m
Election of and accounting period for Article 3, paragraphs 3 and 4, activities	Yes	Elected Article 3, paragraph 4, activities are forest management. The accounting period for Article 3, paragraphs 3 and 4, activities is the commitment period.
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8	Yes	92 934 961 tonnes CO_2 eq.
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8, revised value		93 628 593 tonnes CO_2.
Calculation of the commitment period reserve	Yes	83 641 465 tonnes CO_2 eq.
Calculation of the commitment period reserve, revised value		84 265 734 tonnes CO_2 eq.
Description of national system in accordance with the guidelines for national systems under Article 5, paragraph 1	Yes	The ERT identified some areas for further improvement.
Description of national registry in accordance with the requirements contained in the annex to decision 13/CMP.1, the annex to decision 15/CMP.1 and the technical standards for data exchange between registry systems adopted by the CMP	Yes	

3. Transparency

6. The initial report is generally transparent, with the exception of the inventory information contained in the CRF tables and the national inventory report (NIR). During the review the ERT identified the following areas where transparency needs to be further enhanced: the inclusion of references to the sources of data and methodologies (including parameters) used for estimating emissions; the provision of more comprehensive and precise methodological descriptions in the NIR; and the use of the notation keys throughout the CRF. During the in-country visit Slovenia provided very useful additional information (e.g. presentations), including information on the methodologies used.

4. Emission profile in the base year, trends and emission reduction target

7. Slovenia has defined its base year under the Kyoto Protocol as 1986 for CO_2, methane (CH_4) and N_2O, and 1995 for hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). In the base year, the most important GHG in Slovenia was CO_2, contributing 80.0 per cent to total national GHG emissions expressed in CO_2 eq., followed by CH_4 (11.7 per cent) and N_2O (6.7 per cent) (see figure 1). HFCs, PFCs and SF_6 taken together contributed 1.6 per cent of overall GHG emissions in the base year. The energy sector accounted for 78.8 per cent of total GHG emissions in the base year, followed by agriculture (11.5 per cent), industrial processes (6.5 per cent) and waste (2.8 per cent) (see

figure 2). Total GHG emissions (excluding LULUCF) in the base year amounted to 20,354.04 Gg CO_2 eq. and decreased by 1.4 per cent between the base year and 2004. Tables 2 and 3 show GHG emissions by gas and by sector, respectively.

Figure 1. Shares of gases in total GHG emissions, base year

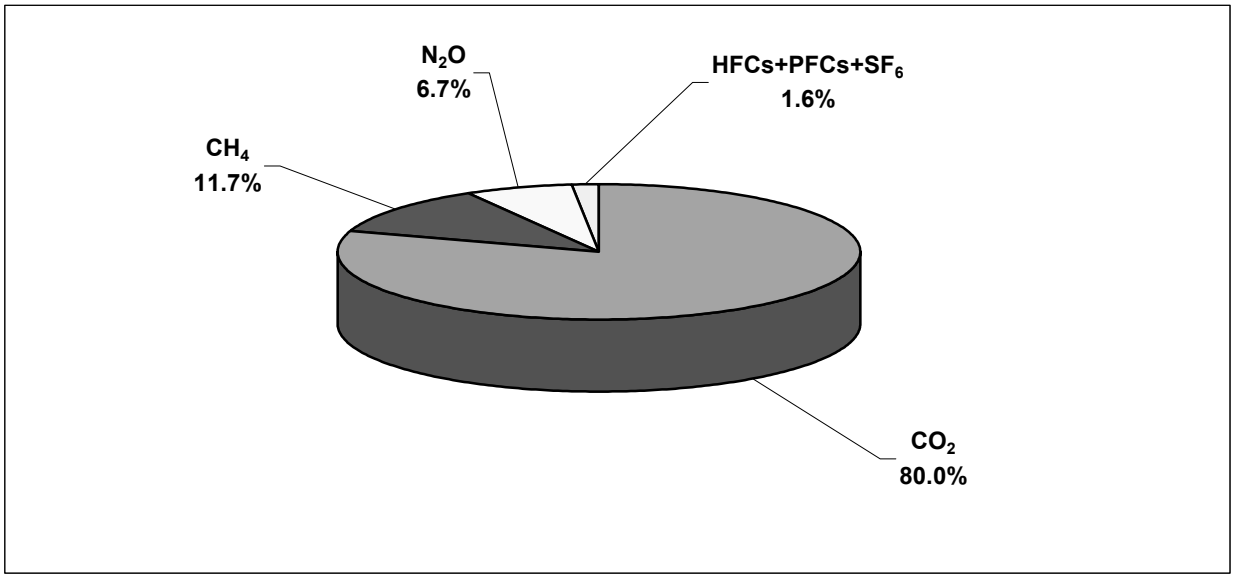
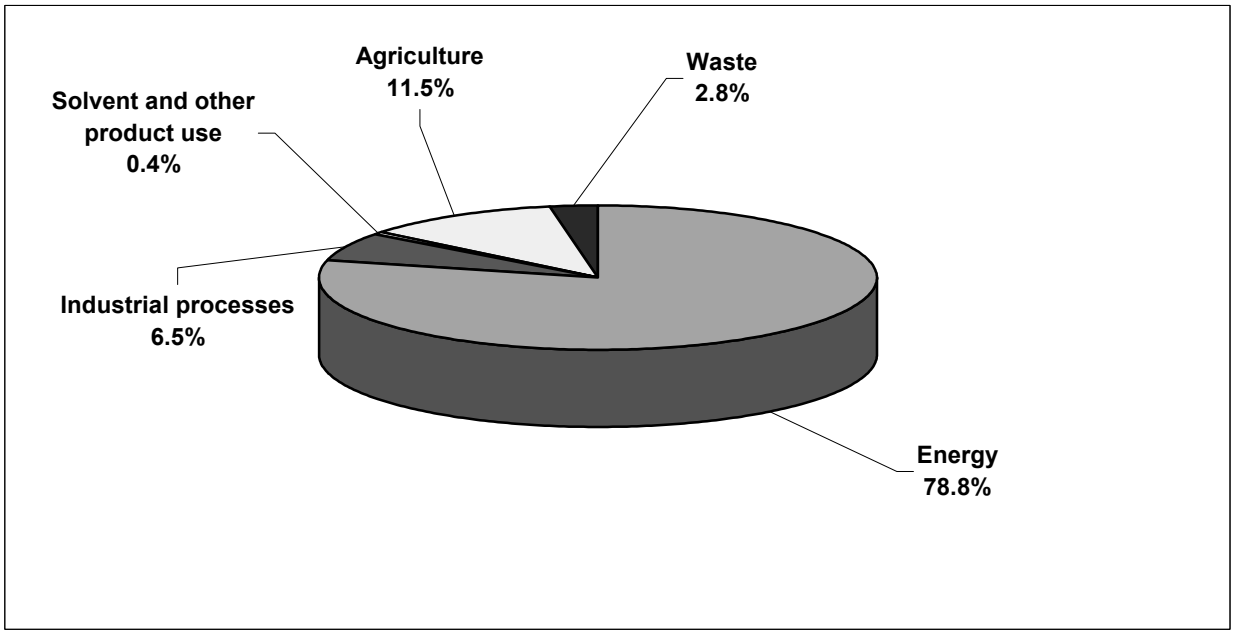


Figure 2. Shares of sectors in total GHG emissions, base year



8. Slovenia's quantified emission limitation is 92 per cent of base year emissions as stipulated by Annex B to the Kyoto Protocol.

Table 2. Greenhouse gas emissions by gas, 1990–2004

GHG emissions (without LULUCF)	Gg CO_2 equivalent								Change BY–2004 (%)
	Base year [a]	1990	1995	2000	2001	2002	2003	2004[a]	
CO_2	16 281.84	14 732.98	14 951.80	15 195.84	16 158.04	16 233.89	16 036.29	16 484.02	1.2
CH_4	2 376.29	2 289.37	2 118.18	2 136.05	2 083.22	2 161.65	2 123.17	2 108.72	–11.3
N_2O	1 369.75	1 246.52	1 197.25	1 319.48	1 316.57	1 346.49	1 309.81	1 261.28	–7.9
HFCs	28.96	NA, NO	28.96	31.13	38.43	47.50	56.91	79.50	174.5
PFCs	285.68	257.44	285.68	105.61	105.61	116.44	118.99	120.01	–58.0
SF_6	11.52	10.30	11.52	15.74	16.11	17.33	17.92	18.31	58.9

Note: BY = Base year; LULUCF = Land use, land-use change and forestry; NA = Not applicable; NO = Not occurring.

[a] Slovenia submitted revised estimates for the base year and 1990–2004 in the course of the initial review on 28 June 2007. These estimates differ from the Party's GHG inventory submitted in 2006.

Table 3. Greenhouse gas emissions by sector, 1990–2004

Sectors	Gg CO_2 equivalent								Change BY–2004 (%)
	Base year [a]	1990	1995	2000	2001	2002	2003	2004[a]	
Energy	16 043.96	14 366.41	14 807.39	15 032.17	15 936.53	16 061.17	15 808.88	16 231.54	1.2
Industrial processes	1 327.69	1 292.16	1 109.47	970.14	1 017.46	1 028.27	1 104.65	1 147.84	–13.5
Solvent and other product use	81.90	43.40	17.25	42.73	36.37	36.53	33.33	39.25	–52.1
Agriculture	2 334.30	2 242.73	2 117.36	2 162.34	2 127.39	2 182.97	2 092.46	1 998.54	–14.4
LULUCF	NA	-3 185.75	-4 905.24	-5 175.16	-5 274.61	-5 495.68	-5 318.23	–5 643.72	NA
Waste	566.19	591.92	541.93	596.46	600.22	614.38	623.78	654.67	15.6
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (with LULUCF)	NA	15 350.87	13 688.16	13 628.69	14 443.37	14 427.63	14 344.87	14 428.11	NA
Total (without LULUCF)	20 354.04	18 536.61	18 593.40	18 803.85	19 717.98	19 923.31	19 663.10	20 071.83	–1.4

Note: BY = Base year; LULUCF = Land use, land-use change and forestry; NA = Not applicable.

[a] Slovenia submitted revised estimates for the base year and 1990–2004 in the course of the initial review on 28 June 2007. These estimates differ from the Party's GHG inventory submitted in 2006.

II. Technical assessment of the elements reviewed

A. National system for the estimation of anthropogenic GHG emissions by sources and sinks

9. Slovenia's national system is, in general, in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). However, the ERT identified the following areas where further improvements are encouraged: greater transparency in the reporting of the GHG inventories; further development of quality assurance/quality control (QA/QC) and archiving; and better documentation and transparency of the decision-making processes. Slovenia should also ensure that it allocates sufficient financial and human resources to the functions related to inventory planning, and timely preparation and management consistent with the decisions under the Kyoto Protocol. In the course of the review, Slovenia informed the ERT about its plans for significant further improvements in its national system relating to the documentation of procedures and archiving, as well as QA/QC activities, and it is also planning to provide more human resources for the development of its GHG emissions inventories in the near future. The next steps needed to improve the national system from 2007 to 2009 have been identified and described. This information was much appreciated by the ERT. The implementation of the steps indicated will make the national system coherent with the requirements according to the UNFCCC guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol.

10. Table 4 shows which of the specific functions of the national system are described in the initial report.

Table 4. Summary of reporting on the specific functions of the national system

Reporting element	Provided	Comments
Inventory planning		
Designated single national entity*	Yes	See section II.A.1
Defined/allocated specific responsibilities for inventory development process*	Yes	See section II.A.1
Established process for approving the inventory*	Yes	See section II.A.1
Quality assurance/quality control plan*	Yes	See section II.A.2
Ways to improve inventory quality	Yes	See section II.B.3
Inventory preparation		
Key category analysis*	Yes	See section II.B.1
Estimates prepared in line with IPCC guidelines and IPCC good practice guidance*	Yes	See section II.B.2
Sufficient activity data and emission factors collected to support methodology*	Yes	See section II.B
Quantitative uncertainty analysis*	Yes	See section II.B.2
Recalculations*	Yes	See section II.B.2
General QC (tier 1) procedures implemented*	Yes	See section II.A.2
Source/sink category-specific QC (tier 2) procedures implemented	No	See section II.A.2
Basic review by experts not involved in inventory	Yes	See section II.A.2
Extensive review for key categories	No	See section II.A.2
Periodic internal review of inventory preparation	No	See section II.A.2
Inventory management		
Archive inventory information*	Yes	See section II.A.3
Archive at single location	No	See section II.A.3
Provide ERT with access to archived information*	Yes	See section II.A.3
Respond to requests for clarifying inventory information during review process*	Yes	See section II.A.1

* Mandatory elements of the national system.

1. Institutional, legal and procedural arrangements

11. The Environmental Agency of the Republic of Slovenia (ARSO) is the designated single national entity for preparation of the inventory. Its tasks are described in the Environment Protection Act (ZVO-1) SOP-2004-01-1694, Article 105 (Environmental information system) dated 31 March 2004. Other agencies and organizations as well as individual experts are also involved in the preparation of the inventory and they have specific responsibilities for the inventory development process. The Environment Protection Act also obliges the providers of environmental data, for example, from national statistics, cadastres and public registers, to regularly forward to the Ministry of the Environment and Spatial Planning the data required for the operation of the environmental protection information system. The ARSO is responsible for the preparation of the inventory, for reporting and for QA/QC. In addition, the ARSO is obliged to provide data on emissions from fuel combustion under the category manufacturing industries and construction, and data on emissions from the industrial processes, solvent and other product use and waste sectors. The Ministry of Energy, the Energy Agency and the Statistical Office of the Republic of Slovenia (SORS) are responsible for the provision of data for the energy sector (stationary categories and fugitive emissions). The Ministry of Transport, the SORS and the Ministry of Internal Affairs are responsible for the provision of data for mobile categories, and the Agricultural Institute of Slovenia and the SORS are responsible for the provision of information on the agriculture sector. The Slovenian Forestry Institute and the SORS provide data for LULUCF, and the SORS and the ARSO provide data for the waste sector. Much of the activity data (AD) is either provided by or based on data from the SORS, for example, energy supply balances, energy demand structure and agricultural statistics (size of animal populations, annual harvest of cereals and pulses, annual fertilizer consumption, milk production).

12. The responsibility of the ARSO is specified by law and its agreements with the essential subcontractors (such as the SORS, the Agricultural Institute of Slovenia and the Slovenian Forestry Institute) are based on a memorandum of understanding which obliges these institutions to submit good-quality verified data to the ARSO in due time. Currently it is difficult for Slovenia to provide the necessary resources to fully implement all the requirements under the UNFCCC and the Kyoto Protocol and to ensure that its inventory complies fully with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance), for example, with regard to completeness, the transparency of the NIR, archiving, uncertainty estimates and QA/QC. In this context the ERT welcomes the information Slovenia provided in the course of the review because reaching the milestones identified and the increase in human resources that is planned should allow the Party to meet the requirements according to the IPCC good practice guidance.

13. In Slovenia there is an established process for the official consideration and approval of the inventory by the Ministry of the Environment and Spatial Planning before it is submitted. The ERT noted with interest that external reports are prepared at the ARSO using a quality control system under International Organization for Standardization (ISO) standard 9001. However, this process is neither described in the NIR nor well documented. The ERT encourages Slovenia to include a description of the approval process and to improve its documentation on its QC system in its next inventory submission.

2. Quality assurance/quality control

14. Slovenia has developed a QA/QC manual and a manual of procedures as part of a Global Environmental Facility project and both documents were published in December 2004. The ERT noted that the installation and use of the new database that is planned would significantly improve QA/QC, including verification. The ERT encourages Slovenia to update those documents and to start full implementation of the procedures. It also recommends that Slovenia identify a QA/QC coordinator to overview and manage QA/QC, and that it report on QA/QC at the ARSO as well as sector by sector, in addition to the information already included, in the NIR of its next inventory submission.

15. The SORS plans to use some of the emissions data under the European Union emissions trading scheme (EU ETS) for verification purposes in its future inventory submissions. Such independent assessment of emissions data contributes considerably to the quality of the data, and the ERT therefore suggests that Slovenia use independent assessment for all data that are not yet covered by such verification, consistent with the IPCC good practice guidance. In addition, the results of such verification should be reported in the NIR.

16. The draft inventory data are usually checked by ARSO experts before they are forwarded to the UNFCCC secretariat, and an additional review is carried out by the Ministry of the Environment and Spatial Planning, but these reviews are not well documented. The ERT suggests that the Party introduce better documentation of its quality control at all stages of inventory preparation, within the ARSO as well as for the other institutions/experts that contribute to inventory preparation.

3. Inventory management

17. Slovenia stores all data from external institutions on a network server at the ARSO. The ERT noted that complete data since the base year are not stored, that data are not well enough protected against overwriting and that hard copies are not systematically archived. Although some documentation (such as all final inventory data) is archived at the ARSO, some of the relevant background material (disaggregated emission factors (EFs), AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory) is archived at the institutions that are in charge of a particular sector (see paragraph 12). The ERT suggests that Slovenia strengthen the archiving function of the ARSO in order to create a more centralized archiving system, so that not only final data in the CRF format but also all underlying calculation sheets, as well as all the literature cited, are archived in a well protected and easily manageable location at the ARSO.

B. Greenhouse gas inventory

18. In conjunction with its initial report, Slovenia submitted a set of CRF tables for the years 1986 and 1990–2004. For the years 1987, 1988 and 1989 no CRF tables were submitted with the initial report, although the relevant data are available at the ARSO. However, after the in-country review Slovenia, upon the ERT's request, submitted the complete CRF tables for the years 1987, 1988 and 1989. Whereas the 2006 inventory submission included some improvements compared to previous years (see paragraphs 33 and 34), Slovenia has still not submitted CRF tables 7 (key categories), 9(b) (completeness) and 8(b) (recalculations). There are also reporting gaps in some of the sectoral tables (e.g. in the energy, industrial processes, agriculture and LULUCF sectors).

19. During the in-country review Slovenia provided the ERT with additional documents and other useful information (see annex I to this report, part B). These documents are not part of the initial report submission but are in some cases referenced in the NIR. Where needed the ERT also used the previous year's submission.

1. Key categories

20. Slovenia has reported a tier 1 key category analysis, for both level and trend assessment, as part of its 2006 submission for the years 1986 and 2004. It has not included the LULUCF sector in its key category analysis. The key category analyses performed by the Party and the secretariat[1] produced somewhat different results. Slovenia identified 27 key categories for the base year and 34 key categories

[1] The secretariat identified, for each Party, those source categories that are key categories in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC good practice guidance for LULUCF. Key categories according to the tier 1 trend assessment were also identified for those 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.

for 2004, whereas the secretariat identified 16 key categories in the base year and 22 in 2004. The key reasons for the differences are the non-inclusion of the LULUCF sector and a different level of aggregation in the key category analysis of Slovenia. The ERT encourages Slovenia to include the LULUCF sector in the analysis of key categories.

21. The ERT noted that Slovenia does not use the key category analysis as a tool to support and guide the improvement of its national GHG inventory, and suggests that it do so.

2. Cross-cutting topics

22. The inventory is generally in line with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines), the IPCC good practice guidance and the *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF). However, during the in-country visit the ERT found that the calculation of emissions in the base year was not complete as emissions data had not been reported for a range of categories. During the visit the ERT encouraged Slovenia to reconsider the calculations of emissions for the following categories: fugitive emissions of CO_2 from coal mining, CO_2 emissions from glass production, CH_4 and N_2O emissions from field burning of crop residues and N_2O emissions from cultivation of histosols. The ERT also noted that CO_2 emissions from combustion of natural gas were calculated using the same EF for the whole time series although country-specific EFs are available for each year since 1986. The ERT appreciated that Slovenia submitted calculations for some of the missing categories during the review as well as a recalculation of CO_2 emissions from the combustion of natural gas using country-specific EFs for each individual year. This report is based on these revised estimates, and the ERT therefore concludes that the figures as reflected in this review report are consistent with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance.

Completeness

23. The inventory submitted with the initial report covers the years 1986 and 1990–2004, and all sectors and gases including actual emissions of HFCs, PFCs and SF_6 (the fluorinated gases (F-gases)). The ERT noted several categories for which GHG emissions occur in Slovenia but for which no emissions have been estimated. The Party explained that in such cases either not enough information was available to calculate emissions or the emissions were only minor. There are reporting gaps in some of the sectoral tables (e.g. in the energy sector). The ERT encouraged the Party to provide estimates for all categories where emissions occur in the country, even if they are minor, by using simple but reasonable approaches, utilizing expert judgement as necessary. The ERT appreciated that Slovenia submitted calculations for most of the missing categories, as well as the CRF tables for the years 1987, 1988 and 1989, in the course of the review.

Transparency

24. The ERT encourages Slovenia to improve the transparency of the inventory by including additional information in the NIR with regard to the assessment of completeness, the identification of the EFs used, improved descriptions of individual sectors,[2] explanations of the selection of methodologies, and information on the sources of AD. The most relevant background material that is only available in Slovenian should be summarized in the NIR in English. The methodologies used for estimating emissions should be appropriately referenced, any country-specific data should be identified and referenced in the NIR, and rationales should be provided for the selection of specific default EFs. In addition, the methodological descriptions provided in the NIR should be more detailed.

[2] For a complete list of recommendations, the relevant sections of this report should be consulted.

25. The ERT found that in CRF table 9(a) Completeness – information on notation keys, only very limited information is provided to explain the use of the notation keys. Furthermore, the use of the notation keys is not consistent across all the CRF tables. The ERT encourages the Party to provide some explanation of the use of all the notation keys and to use them in a manner that is consistent 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 Part I).

Consistency

26. The ERT identified some discrepancies between the NIR and the initial report (e.g. with regard to emissions in the base year). The ERT suggests that the Party check the consistency of its submission in future as part of QA/QC.

Comparability

27. The ERT appreciated that Slovenia has made significant progress in making its inventory more easily comparable with those of other Parties – by improving completeness, by providing recalculations in the industrial processes, agriculture and waste sectors, by including a complete reallocation of emissions from some categories (between the energy sector and industrial processes) and by significantly improving the reporting of the LULUCF sector, in particular with respect to using the revised reporting format following decision 13/CP.9. The ERT noted, however, that comparability should be further improved, by providing a complete time series since the base year and by further improving completeness and transparency. The ERT acknowledged the efforts made by Slovenia during the review process (see also paragraph 34).

Accuracy

28. The ERT noted that the inventory might underestimate emissions because of the gaps in some categories, such as CO_2 emissions from glass production, fugitive emissions of CO_2 from coal mining, CH_4 and N_2O emissions from field burning of crop residues, N_2O emissions from cultivation of histosols and N_2O emissions from industrial wastewater handling. The ERT encourages the Party to prepare and report estimates for all the missing categories. The ERT appreciated Slovenia's submitting revised estimates for most of the categories identified above during the review process.

Recalculations

29. In its 2006 submission Slovenia reports recalculations for the energy, agriculture and waste sectors, but the ERT noted that it does not provide explanations for those recalculations in CRF table 8(b). The ERT also noted that the Party's recalculations of its base year's emissions between the first national communication (submitted in 2002) and the 2006 submission resulted in an increase in the estimates of total national GHG emissions by 0.6 per cent.

30. The ERT recommends that Slovenia report recalculations in a more transparent manner in its future NIRs and CRF tables. It emphasizes the need to establish a transparent and well documented process with regard to recalculations, and to report the recalculations comprehensively in the NIR.

Uncertainties

31. Slovenia has provided a tier 1 uncertainty analysis for most categories except the LULUCF sector and for the GHG inventory in total. The NIR does not explain how the uncertainty estimates have been made, information on correlations is missing, and units of values are not provided. The level of disaggregation seems to be too detailed, in particular in the energy sector. The ERT recommends that Slovenia follow the advice of previous reviews and revise the uncertainty assessment following the IPCC

good practice guidance more closely, as well as including information on the methods used and descriptions of the expert judgement applied.

3. Areas for further improvement identified by the Party

32. The NIR identifies several areas for improvement. These relate in particular to:

(a) Implementation of QA procedures, including independent peer review of the inventory;

(b) Revision of the uncertainty estimates;

(c) Preparation of CRF tables for the years 1987, 1988 and 1989;

(d) Further improvement of the AD and EFs in the LULUCF sector.

33. The ERT welcomed the following planned improvements to the national system which the Party identified in the course of the review:

(a) Documentation of procedures and archiving (updating of the manual of procedures by 2008);

(b) Improved implementation of QC procedures starting from 2008; and additional peer review sector by sector (one sector per year);

(c) The allocation of additional human resources (three experts will be assigned for inventory preparation at the beginning of 2008);

(d) A functional new database to be in place by 2009 (a test phase is planned in 2008).

4. Areas for further improvement identified by the ERT

34. The ERT identified the following cross-cutting issues for improvement. The Party should:

(a) Improve transparency by:

(i) Providing complete explanations of the use of the notation keys and using them in a more consistent manner;

(ii) Providing more detailed information on all data sources used;

(iii) Integrating relevant information requested by the ERT during the in-country visit into its future NIRs;

(b) Provide more precise descriptions of those methodologies that differ from the IPCC's, including summaries in English of background material that is only available in Slovenian;

(c) Improve the key category analysis by addressing the LULUCF categories;

(d) Assign a QA/QC coordinator;

(e) Improve quality control documentation at all stages of inventory preparation, and with regard to the improvement of the inventory;

(f) Improve completeness and robustness of record-keeping and archiving (e.g. by protecting the electronic database against changes and by introducing a library system for hard copies);

(g) Implement a documented process for official approval of the inventory;

(h) Develop an inventory improvement plan which will address the issues identified above;

35. Recommended improvements relating to specific source categories are presented in the relevant sector sections of this report.

5. Energy

Sector overview

36. In the base year, the energy sector accounted for 78.8 per cent of Slovenia's total national GHG emissions. Emissions from the sector have increased by 187.58 Gg CO_2eq. (1.2 per cent) since the base year. Between the base year and 2004, emissions from fuel combustion increased by 1.7 per cent, from 15,508.30 Gg CO_2eq. in the base year to 15,768.37 Gg CO_2 eq. in 2004, due to significant growth in emissions from transport (by 112.2 per cent) and the category other sectors (1.A.4) (by 19.5 per cent), offset by significant decreases in emissions from energy industries (by 6.2 per cent) and manufacturing industries and construction (by 46.3 per cent).

37. The level of disaggregation for the allocation of fuel consumption to individual end-use sectors in the manufacturing industries and construction and other sectors (1.A.4) categories is not in accordance with the Revised 1996 IPCC Guidelines and the UNFCCC reporting guidelines. Some data series are not always consistent with the IPCC emission subcategories. For example, the categories iron and steel and non-ferrous metals as reported by Slovenia include only metal production, while metal products are included in the category other (1.A.2(f)). Within the national statistics time series, data for specific categories have been moved to different statistical categories (e.g. the data for auto-producers have been moved from public electricity and heat production to manufacturing industries and construction). It was not always possible for the ERT to disaggregate and aggregate the mixed data in a transparent manner. Nevertheless, there is no double counting of emissions and the aggregated emission estimates are correct. However, the ERT noted that a potentially significant number of categories are reported as not estimated ("NE") (e.g. fugitive emissions from oil and natural gas venting and flaring) and included elsewhere ("IE") (e.g. emissions from navigation). In the course of the review, the Party justified that consistency of the time series is assured. Despite reporting under different categories in the national statistics, the emissions estimates are correct. The ERT encourages Slovenia to provide this justification in its next inventory submission.

38. Values for almost all AD before 2004 had been published by the Ministry of Energy of Slovenia, and the data reported for 2004 onwards were obtained from the SORS. These information sources are considered by Slovenia as the most appropriate for calculating the inventory estimates.

39. Significant discrepancies can be found when the data in the GHG inventory are compared to the data reported to the International Energy Agency (IEA). The specific fuel consumption reported in the CRF differs significantly from the data of the IEA for 1986 and 2004, with different, compensating errors. For example, the growth rate of total apparent energy consumption from 1986 to 2004 is reported as 14 per cent in the CRF and 17 per cent by the IEA; the imports of lignite reported in the CRF are 30 per cent lower than the imports reported by the IEA; the imports of residual fuel oil in 1986 reported in the CRF are three times larger than the data reported by the IEA; imports of coking coal and sub-bituminous coal in 1986 are reported by the IEA, but are not reported in the CRF; exports of crude oil are reported in the CRF and not reported by the IEA; and the production of lignite (equivalent to 38 per cent of total apparent consumption in 1986) is about 30 per cent higher in the CRF than the IEA data for all years up to 1996 (partly due to different net calorific values (NCVs)). Sub-bituminous coal production is not reported under a separate category in the CRF but under the category lignite.

40. The ERT encourages Slovenia to provide explanations for the differences between these data sets in its next inventory submission, to improve the coordination among its statistical agencies and to reconcile the data provided to the different international organizations.

41. The reporting of the energy sector estimates is transparent as the calculation methodologies are well documented in the NIR. Extensive studies have been carried out on the issues that were raised in previous review reports (e.g. on the AD of fugitive emissions from coal mining and handling) and the results are appropriately reflected in the GHG estimates. However, the NIR does not provide sufficient background information to make it possible to follow the calculations. The ERT encourages Slovenia to report the yearly national energy balance and the EFs used in annexes to the NIR of its future inventory submissions.

42. The changes in historical data that are due to errors in data collection or to the filling of data gaps are reflected as recalculations. However, the changes in historical activity data are not always reflected in recalculations for the entire time series either in the official documentation of the SORS or in the documentation of the other relevant sources of data.

43. As a result of the recalculations, the estimates of total sectoral emissions in 1986 have increased by 2.4 per cent. The reasons for recalculations were: the availability of improved AD (manufacturing industries and construction), accounting of a missing source (CO_2 emissions from coal mines) and the use of an improved EF (country-specific annual estimates for the CO_2 EF for natural gas). However, the recalculations are not well documented in the NIR or in the CRF. The ERT recommends that Slovenia improve the reporting of recalculations in its next inventory submission.

Reference and sectoral approaches

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

44. CO_2 emissions from fuel combustion were calculated using the reference approach and the sectoral approach. For the year 1986 there is a difference of –0.8 per cent in these emission estimates between the reference approach and the sectoral approach. A significant difference of 4.0 per cent in the annual apparent consumption of natural gas is reported in the reference and sectoral approaches due to non-energy use of natural gas for the production of methanol, while the difference in CO_2 emissions is –4.1 per cent. The ERT encourages Slovenia to explain this difference in its next inventory submission.

45. The ERT noted that the values of the fractions of carbon stored in produced oil and lubricants (0.5) and in produced methanol (1.0) applied for non-energy use in the reference approach are not in line with the IPCC good practice guidance. Slovenia is advised to apply the IPCC default carbon oxidation fraction (0.3) and to revise the estimates in its next inventory submission.

46. The carbon content for solid and liquid fuels for some years (e.g. lignite for the years 1986, 1990, 1991 and 2001) is reported taking the oxidation factor into consideration. In the next step of the estimation the default oxidation factor was applied again to the carbon content for almost every specific fuel. In the course of the review, Slovenia explained that there is no double counting of oxidation factors while estimating emissions from solid and liquid fuels as the calculations of emissions using the reference approach exclude oxidation factors. The ERT noted that the application of the country-specific NCV and the IPCC default carbon content and oxidation factors has led to different CO_2 IEF in the sectoral and reference approach. Slovenia may wish to provide a more detailed explanation of the reasons for this difference in its next inventory submission.

International bunker fuels

47. Slovenia has not reported international marine bunkers in 1986. It has only one international port and all ships are fuelled in international waters by foreign suppliers. The entire consumption of jet kerosene in Slovenia is counted as international aviation bunker fuel, since there are no commercial domestic flights. The entire consumption of aviation gasoline for piston-engine aircraft is counted as consumption and emissions within Slovenia, since it is assumed that this is fuel for small piston aircraft which fly between the smaller regional airports in the country. The Party is recommended to consider

whether it is possible to improve the data for aviation gasoline (as the first or last leg of international flights could be performed by smaller piston aircraft) and for jet kerosene (as small private jet aircraft could start flying between domestic airports).

Feedstocks and non-energy use of fuels

48. The use of coke as feedstock for the base year is reported together with energy use in the energy sector. The data from the industrial processes and energy sectors were cross-checked by the ERT and no double counting of emissions was identified.

Key categories

Stationary combustion: solid fuel – CO_2

49. The trend of the EF for CO_2 from lignite in public electricity and heat production fluctuates over the entire time series. A study conducted in 2004 analyses the data from regular fuel tests that were performed by accredited laboratories while mining was going on at the biggest underground mines and at the Šoštanj Power Plant over the period 1986–2003. The results of the study show that the quality of the lignite mined, its ash, moisture and carbon content and the NCV vary across a very wide range. As a result the EF of CO_2 varies across the entire time series. The NIR refers to the EFs and calorific values reported in the study. The ERT considers that the study provides convincing support for the inventory calculations for emissions from lignite for the whole time series.

Stationary combustion: gas – CO_2

50. A constant EF for CO_2 from natural gas combustion is used for the entire time series in energy industries and in manufacturing industries and construction. Its value (55.00 t/TJ) is 2 per cent lower than the IPCC default EF (56.1 t/TJ). However, the Party has all the data on natural gas (calorific value and carbon content by year and broken down by the two suppliers) that would be needed to enable it to calculate the annual weighted value of a country-specific EF. The ERT recommends that Slovenia apply country-specific EFs for each year. Following this recommendation, in the course of the review, Slovenia submitted revised estimates (1,468.24 Gg CO_2 eq.) for CO_2 from fuel combustion – gaseous fuels, which resulted in an increase in estimated base year emissions by 1.47 Gg CO_2 eq..

Fugitive emissions: coal mining and handling – CH_4

51. The implied emission factor (IEF) for the fugitive emissions of CH_4 from underground coal mines (2.59–2.68 kg/t) is well below the range of the IPCC default IEFs (4.5–16.75 kg/t). In the course of the review a national study was presented that reports results delivered by online measurements at the mines' ventilation systems. The results of this study are used directly for inventory preparation. The ERT considers that the study provides adequate justification for the use of the country-specific EF.

Non-key categories

Fugitive emissions: coal mining and handling – CO_2

52. CO_2 fugitive emissions from coal mining and handling are reported as "NE". Slovenia has carried out a special study on CO_2 emissions from this category. The results from the online measurements of the CO_2 content in the ventilation systems of the mines were analysed for all the mines in operation and show an almost constant concentration of CO_2 in the ventilation systems. The emissions are mine-specific and do not depend on the volume of coal production. Following the ERT's recommendation that it should report this category in the inventory, Slovenia provided estimates for the base year (120.24 Gg CO_2 eq.) in the course of the review.

6. Industrial processes and solvent and other product use

Sector overview

53. In the base year (1986) the industrial processes and solvent and other product use sectors together accounted for 6.9 per cent (6.5 per cent and 0.4 per cent, respectively) of Slovenia's total national GHG emissions. CO_2 was the largest contributor in the industrial processes sector in the base year, accounting for 75.2 per cent of sectoral emissions. Actual emissions of F-gases contributed 24.6 per cent and CH_4 0.3 per cent of the industrial processes sector emissions. N_2O contributed 81.9 Gg CO_2 eq. to the solvent and other product use sector. Emissions from industrial processes decreased by 14.5 per cent between the base year and 2004. This decrease was largely due to reductions in PFC emissions from aluminium production (a reduction of 58.0 per cent) and in CO_2 from lime production (a reduction of 60.0 per cent).

54. Recalculations in the industrial processes sector have been performed for CO_2 emissions from lime production, HFC consumption in mobile air conditioning and SF_6 emissions from electrical equipment. These recalculations are the result of improvements to EFs and AD. The ERT commends Slovenia for these improvements to the inventory. The recalculations in the industrial processes sector resulted in a decrease of 2.7 per cent in the estimates of emissions in the base year compared with the 2005 submission. Recalculations have also occurred in the solvent and other product use sector. Slovenia could not substantiate the EF used for estimating CO_2 emissions from the oxidation of non-methane volatile organic compounds (NMVOCs) in its previous inventory submissions. These data were removed from the 2006 inventory submission. Recalculations in the solvent and other product use sector resulted in a 36.1 per cent reduction in the estimates of emissions in the base year compared with the 2005 submission. The ERT encourages Slovenia to provide explanations of recalculations in CRF table 8(b) as well as in the NIR of its future inventory submissions.

55. Estimates are provided for most categories and the notation keys are used where required. "NE" is reported for CO_2 from soda ash production, potential emissions for F-gases and NMVOC emissions for the solvent and other product use sector for the entire time series. As resources allow, the ERT encourages Slovenia to report emissions for these categories.

56. No formal QA/QC procedures are carried out in the industrial processes and solvent and other products used sectors. The ERT encourages Slovenia to carry out formal tier 1 QC checks on the data and where possible perform independent verification for all AD and EFs.

57. Uncertainty estimates are based on expert judgement but there is no reference in the NIR to indicate how this judgement was assessed. The ERT recommends that Slovenia carry out studies to provide the basis for sound uncertainty estimates, especially for key categories.

58. Transparency in the NIR has improved since the 2005 inventory submission. However, there are areas where transparency could be improved in the NIR and these are listed under the specific categories detailed below.

Key categories

Cement production – CO_2

59. The IEF for CO_2 from clinker production is 0.54 t CO_2/t clinker. This is higher than the IPCC default value (0.51 t CO_2/t clinker). Slovenia explains in the NIR that this is due to the presence of magnesium carbonate ($MgCO_3$) and that a cement kiln dust correction factor is not used in calculating these emissions because the dust is returned in the process in both cement plants. To increase transparency in the reporting of CO_2 emissions from cement production, the ERT recommends that Slovenia include a sentence in its next NIR explaining that the decrease in the production of clinker from 2001 to 2002 is due to the modernization of one of the cement plants.

Lime production – CO_2

60. The ERT commends Slovenia for updating the time series with the country-specific EF for lime production. The NIR does not describe the different types of lime produced in Slovenia but this information was provided during the in-country review. The ERT recommends that Slovenia include this information on the types of lime produced in Slovenia in its next inventory submission.

Aluminium production – CO_2, PFCs

61. The IEF of CO_2 from aluminium production has decreased over the time series 1986–2004 (from 2.01 to 1.74 t CO_2/t aluminium produced) due to the modernization of the aluminium plant. This is explained in the NIR.

62. Explanations of the PFC EFs used and how they were derived are not provided in the NIR, but additional information was provided during the in-country review. To increase transparency, the ERT recommends that Slovenia provide information in its next NIR explaining the methodology used and the EF used to calculate the PFC emissions in the base year (1995).

ODS substitutes – HFCs

63. The ERT commends Slovenia for improving its reporting of CHFs from refrigeration and air-conditioning equipment by using the appropriate notation keys rather than "0", as was reported in the previous (2005) submission. The ERT recommends that Slovenia enhance the transparency of its reporting for this category by indicating which EFs are based on country-specific research.

Solvent and other product use – N_2O

64. N_2O use in the solvent and other product use sector is a key category (by trend analysis) for Slovenia. Emissions have decreased by 52.1 per cent since 1986 but the reason for this decrease is not explained in the NIR. The ERT recommends that Slovenia provide some information explaining the factors influencing the trend in N_2O consumption over the time series.

65. The NIR explains that N_2O consumption was calculated from export and import data and was based on a 1999 study by the Chamber of Commerce and Industry of Slovenia. The NIR does not clearly explain how or where N_2O was produced in Slovenia. This information was provided during the review, although Slovenia indicated that some relevant data might be confidential. The ERT recommends that Slovenia provide the N_2O data and include some additional information explaining where the N_2O production data come from, if this is possible.

Non-key categories

Iron and steel production – CO_2

66. Slovenia explains in the NIR that pig iron was only produced in the base year and since 1990 steel production is based on the utilization of scrap iron and steel. The NIR explains that in 1986 it was impossible to disaggregate the amount of reducing agent used for reducing the iron and the amount used for energy combustion. Coke consumption is reported in the industrial processes sector under steel production. There is no double counting between the energy and industrial processes sectors. The notation keys used in the iron and steel category in the CRF are unclear for coke consumption. The ERT recommends that Slovenia either report emissions from coke consumption separately from steel production or use the notation key "IE" to indicate that all emissions are reported under steel production.

Production of glass – CO_2

67. In its 2006 submission, Slovenia reports CO_2 from the production of glass as "NE". However, the NIR explains that data on carbonate use in glass production are available. Following the ERT's

recommendation, in the course of the review, Slovenia provided an estimate of CO_2 emissions from glass production, which amounted to 0.23 Gg CO_2 eq. in the base year. The estimate has been calculated in line with the IPCC good practice guidance.

7. Agriculture

Sector overview

68. In the base year, emissions from the agriculture sector accounted for 11.5 per cent (2,334.30 Gg CO_2 eq.) of total national emissions. Emissions decreased by 14.4 per cent between 1986 and 2004. The main drivers of the decrease were economic developments and changes in agricultural and management practices.

69. The NIR is complete in the agriculture sector, with two minor exceptions: cultivation of histosols and field burning of agricultural residues. Compared to the 2005 inventory submission, Slovenia has improved the transparency of its reporting for the sector but there is still room for further improvement, especially regarding the collection of AD, documentation of the trends, and the provision of summaries in English of the references that are currently in Slovenian. There is "informal QA/QC" between the representative of the Agricultural Institute of Slovenia and the representative of the ARSO. The ERT recommends that Slovenia review the national QA/QC plan and prepare specific procedures for the agriculture sector, based on the already existing informal process. The ERT also recommends that Slovenia elaborate the institutional, legal and procedural arrangements between the Agricultural Institute of Slovenia and the ARSO to explain the time frame, their respective responsibilities, the methods to be used and the data to be provided.

70. Regarding uncertainties, all estimates (AD, EFs and combined uncertainty) are based on expert judgement. The ERT encourages Slovenia to provide more information regarding the use of expert judgement (e.g. assumptions, parameters).

71. The ERT acknowledged that Slovenia has made a significant improvement to its estimation of emissions from enteric fermentation and manure management as it has improved the tier 2 approach by disaggregating livestock into 18 categories according to the intensity of breeding. Other improvements that have been made are: the reallocation of emissions from suckler cows, which have been transferred to non-dairy cows; the application of methane conversion factors for liquid systems and for anaerobic digesters which are in line with the IPCC good practice guidance; and the harmonization of nitrogen excretion rates with the methodology used for ammonia (NH_3) emissions.

72. Due to these improvements the entire time series has been recalculated. For the base year, these recalculations led to a decrease of 2.6 per cent in the estimates of sectoral emissions (in CO_2 eq.), resulting mainly from decreases in N_2O emissions from liquid systems (–31.3 per cent); solid storage and dry lot (–28.7 per cent); animal manure applied to soils (–32.7 per cent); pasture, range and paddock manure (–29.1 per cent); atmospheric deposition (–26.6 per cent); and nitrogen leaching (–22.5 per cent). However, there were also increases in CH_4 emissions from manure management in dairy cattle (251.4 per cent), non-dairy cattle (247.9 per cent) and swine (35.6 per cent). The ERT recommends that in all the category subchapters of the NIR Slovenia should provide better descriptions of recalculations made and their impact.

73. Slovenia uses default EFs and a combination of country-specific and default parameters to estimate N_2O emissions from agricultural soils. The ERT recommends that Slovenia apply a tier 2 approach, taking into consideration the methodology for estimation of NH_3. The ERT also encourages Slovenia to explain in its next inventory submission how the AD were collected.

Key categories

Enteric fermentation – CH_4

74. In the base year, CH_4 emissions from this category amounted to 36.43 Gg and accounted for 32.8 per cent of total sectoral emissions and 3.8 per cent of Slovenia's national total emissions. Dairy cattle accounted for 56.1 per cent of CH_4 emissions from enteric fermentation, followed by non-dairy cattle (39.5 per cent) and swine (3.0 per cent). Dairy cattle emissions decreased by 38.6 per cent, non-dairy cattle emissions increased by 13.5 per cent and swine emissions decreased by 20.1 per cent between the base year and 2004. Emissions from enteric fermentation decreased by 14.6 per cent between 1986 and 2004.

75. A tier 2 method has been upgraded for dairy, non-dairy cattle and swine. A tier 1 method is used for all other livestock. This is in line with the IPCC good practice guidance. All the necessary data are obtained from the SORS. Disaggregation of dairy cattle is done on the basis of milk recording data, which are collected by the national cattle breeding service. The ERT recommends that Slovenia enhance the transparency of its reporting of this category by providing explanations about the fluctuations in the AD (e.g. the trends in animal population).

Manure management – CH_4

76. In the base year, CH_4 emissions from this category accounted for 21.8 per cent of total sectoral emissions and 2.5 per cent of Slovenia's total national emissions. Swine accounted for 45.6 per cent of total CH_4 emissions from manure management, followed by dairy cattle (32.8 per cent) and non-dairy cattle (18.3 per cent). Swine emissions decreased by 29.9 per cent, dairy cattle emissions decreased by 22.6 per cent, non-dairy cattle emissions increased by 46.2 per cent and GHG emissions from manure management decreased by 14.7 per cent between 1986 and 2004.

77. A tier 2 approach is applied for estimating CH_4 emissions from cattle and swine manure management and tier 1 is applied for CH_4 emissions from other livestock. This approach is consistent with the IPCC good practice guidance. Slovenia uses country-specific or default EFs and AD. The ERT encourages Slovenia to enhance the transparency of its reporting by providing further explanations about the collection of AD.

Manure management – N_2O

78. In the base year, N_2O emissions from manure management accounted for 11.5 per cent of total sectoral emissions and 1.3 per cent of Slovenia's total national emissions. They decreased by 39.3 per cent between 1986 and 2004. In the base year, solid storage and dry lot accounted for 96.6 per cent of the N_2O emissions from manure management.

79. A tier 2 approach is applied to estimate N_2O from manure management. Nitrogen excretion rates for cattle and swine are harmonized with the methodology for NH_3 emissions. Emissions are allocated to different animal waste management systems according to the data of the agriculture censuses (1991 and 2000) and following expert judgement. The ERT recommends that Slovenia improve the transparency of its reporting of this category by providing better explanations of the collection of AD and the methodology used for NH_3 accounting (e.g. by providing summaries in English for the relevant references).

Direct soil emissions – N_2O

80. In the base year, direct N_2O emissions from soils amounted to 1.40 Gg and accounted for 18.6 per cent of total sectoral emissions and 2.1 per cent of Slovenia's total national emissions. Since the base year, these emissions have decreased by 9.2 per cent. The ERT noted that Slovenia does not estimate ("NE" is reported) nitrogen inputs due to the cultivation of organic soils as the associated N_2O

emissions are assumed to be negligible. However, the NIR reports cultivation of 4,320 ha in 1998. During the review the ERT recommended that Slovenia estimate N_2O emissions from the cultivation of organic soils. Following that recommendation, Slovenia provided an estimate, of 28.86 Gg CO_2 eq. for the base year. This estimate is in line with the IPCC good practice guidance.

Indirect soil emissions – N_2O

81. In the base year, indirect N_2O emissions from soils amounted to 1.1 Gg and accounted for 14.3 per cent of total sectoral emissions and 1.6 per cent of total national emissions. These emissions decreased by 9.1 per cent between 1986 and 2004. Slovenia recognizes the need to make further improvements in estimating emissions by considering a higher leaching and run-off factor for big farms, and by differentiating between areas with intensive and non-intensive livestock production. The ERT commends Slovenia's intention, and encourages it to make this improvement in its future inventory submissions.

Non-key categories

Pasture, range and paddock manure – N_2O

82. In the base year, N_2O emissions from pasture, range and paddock manure amounted to 0.08 Gg and accounted for 1.0 per cent of the total sectoral emissions and 0.1 per cent of Slovenia's total national emissions. Between 1986 and 2004 emissions increased by 111.2 per cent, and this increasing trend is not explained in the NIR. Slovenia may wish to elaborate on this trend in its future inventory submissions.

Field burning of agricultural residues – CH_4, N_2O

83. In the 2006 submission, CH_4 and N_2O emissions from field burning of agricultural residues are reported as "NE". Field burning of agricultural residues is illegal in Slovenia, but, as the Party explained during the in-country visit, some burning may occur. The ERT recommends that Slovenia account for the emissions for those crop fields where burning occurs and use the notation key "not occurring" ("NO") for those crop fields where burning does not actually occur (e.g. rice).

8. Land use, land-use change and forestry

Sector overview

84. In Slovenia, 62 per cent of the total surface area of the country (2,027,000 ha) is covered by forest and the LULUCF sector plays a very significant role in its GHG inventory. In 1986 only forest land remaining forest land is reported, and it represented a net sink of 1,589.25 Gg CO_2 eq., corresponding to 7.8 per cent of total national emissions. Estimated removals in the base year were appreciably higher according to the 2005 GHG submission (where they were reported as 2,950.39 Gg); however, no explanation of any recalculations is provided in the NIR. In the period 1986–2004 removals by the sector increased by 255.1 per cent and this increase in removals influenced the trend of total national GHG emissions. The removals have increased throughout the time series; however, the increase is not clearly explained in the NIR. During the in-country review Slovenia clarified that a reduction in harvest rates and increases in forest biomass and forest area are the main drivers of the trend. The ERT recommends that Slovenia explain the trend in its next inventory submission.

85. The only LULUCF category for which removals have been estimated is forest land remaining forest land. Removals under the other categories have not been estimated, and AD and EF are reported as "NE" or "IE". Emissions from limestone are estimated in the NIR, but in the corresponding table of the CRF "NE" is reported. The ERT encourages the Party to complete the CRF tables, even if land-use conversions are not very significant, in order to enhance completeness and transparency.

86. The land-use statistics combine different information sources, resulting in inconsistent data. The information provided on the areas of different land uses is incomplete or not reliable due to problems in the statistical sources (e.g. land area converted to forest land may be lower than reported, according to information gathered during the in-country review). The ERT considers that developing a better system for tracking land-use changes represents an opportunity to improve the quality of the Party's data in this sector. Another opportunity for improvement is the generation of some country-specific key data and factors for the calculation of biomass stocks (e.g. biomass expansion factors (BEFs) and wood densities).

87. Slovenia has not yet fully developed and implemented a QA/QC plan for the LULUCF sector. In addition, it does not provide information on the areas of different land uses in a summary table, as part of the section on QA/QC. This may lead to omissions or to double counting of estimates or removals. The ERT encourages Slovenia to prepare specific procedures for QA/QC in this sector and to continue working on the implementation of a QA/QC plan following the recommendations of the IPCC.

88. The uncertainties of the estimates of removals at the beginning of the time series are high due to the use of methods that are not accurate. In order to reduce the uncertainties, Slovenia is to undertake a new national forest inventory (NFI) in 2007–2008, starting in July 2007. The time series for forest areas has been recalculated for 2004 (table 7.2.1 of the NIR). However, in the CRF recalculations are not properly documented. The ERT noted that similar issues were also reported by other Parties and the ERT recommends using a revised version of the software tool in the future. Uncertainties are addressed in the NIR in a very brief, incomplete and non-transparent way. Several estimates of EFs (e.g. annual growth of trees) are based on expert judgement. The ERT encourages Slovenia to better document the methods used for calculations of forest parameters in its future inventory submissions and to further improve the consistency of the time series.

89. One major improvement compared to Slovenia's 2005 inventory submission is the use of the CRF tables as required by decision 13/CP.9. However, the NIR reports categories used in the 2005 submission which are not consistent with the CRF of the 2006 submission. The ERT recommends that Slovenia update the methodologies in the NIR for LULUCF in its next inventory submission following the IPCC good practice guidance for LULUCF.

90. Planned improvements include the implementation of a new NFI and research to produce more reliable key data (e.g. country-specific BEFs and wood densities). The Party acknowledges that its forest inventory methods are not in line with the IPCC good practice guidance for LULUCF and that unreliable data (for growing stock) have been used. Slovenia intends to improve data quality by using the outcomes of the large-scale NFI 2007 and some specific research to be undertaken by the Slovenian Forestry Institute.

91. As the contribution of the LULUCF sector to total national GHG emissions and removals is large, and forest land remaining forest land is the second-largest key category by level assessment, the ERT recommends that Slovenia give priority to improving the estimation of removals and emissions by this sector.

Key categories

Forest land remaining forest land – CO_2

92. Carbon stock changes are calculated using the gain–losses method. However, the documentation on the estimates of annual increase of dry matter (in section 7.2.1 of the NIR) is not transparent. Growth rates are explicitly provided in the CRF but they are implicit in the NIR (2.4 Mg C/ha). Living biomass is the only pool estimated, due to lack of data. In order to enhance the transparency and accuracy of its reporting, the ERT encourages the Party to report carbon stock changes due to land-use conversion under the appropriate category, to document the EFs explicitly used for the calculation and to include all carbon pools in its next inventory submission.

93. According to the NIR, the implicit average growth rate is 9.6 m^3/ha, based on the data of the Slovenian Forestry Service. The NIR states that recalculation is necessary for the period 1986–1995, and that the NFI 2007 will provide more robust data to enable it to estimate the annual growth rate. This could mean that the base year removals could be recalculated in future. The ERT encourages Slovenia to make a major effort to reduce the uncertainties of the annual growth rates.

94. Slovenia applies default parameters to calculate removals by forests. As Slovenia's forests are mixed, with few species dominant, it would not be very difficult to develop country-specific forest parameters such as BEFs, wood densities, and root and shoot ratios. The ERT recognizes Slovenia's intention to generate this information and encourages it to complete this task as soon as possible in order significantly to improve accuracy and reduce uncertainty.

Non-key categories

Land converted to forest land – CO_2

95. The NIR reports in section 7.2.2 the "regrowth of abandoned managed lands" and estimates that it has 69,501 ha of areas under natural conversion from other uses to forest. Annual growth attributed to these areas under natural regeneration to forest is estimated to be 3.5 m^3/ha/y, based on one individual expert judgement. This value is about 50 per cent lower than the IPCC default value for a similar type of forest and climatic region. It is also only 36.5 per cent of the implicit value used for the calculation of the growth of forest land remaining forest land (9.6 m^3/ha/yr). The ERT recommends that Slovenia check and revise this figure, if needed, in its next inventory submission.

9. Waste

Sector overview

96. In the base year, the waste sector contributed 2.8 per cent to total national emissions. Total emissions from the sector increased by 15.6 per cent over the period 1986–2004. This increase was caused by the growth in emissions of CH_4 from solid waste disposal on land (by 39.1 per cent), which was the result of the growth in the amount of municipal waste disposed. Emissions from wastewater handling decreased by 10.6 per cent mainly due to a decline in industrial production and the recovery of gas in wastewater treatment plants. Of the total emissions from the waste sector, 52.8 per cent come from solid waste disposal on land and 47.2 per cent from wastewater handling. CH_4 contributes 89.6 per cent and N_2O 10.4 per cent of the emissions from the sector. The main contribution of CH_4 comes from solid waste disposal on land (58.9 per cent) and the rest from wastewater handling (41.1 per cent). Emissions of N_2O come solely from wastewater handling.

97. In the waste sector, Slovenia has introduced several improvements in this inventory submission compared to the 2005 submission, in several cases following recommendations made by the ERTs in previous reviews. However, there are also other issues identified in previous reviews that have not yet been addressed because of the lack of information needed for estimating emissions (e.g. emissions from industrial waste are "NE" due to the lack of data on its composition).

98. The NIR and the CRF in the waste sector are generally complete. Emissions have been estimated in most of the categories, except for managed waste disposal on land, where emissions of CO_2 and precursors are reported as "NE" because of the lack of methodologies for estimating this category in the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. The same applies for the estimating of N_2O emissions from industrial wastewater.

99. From the information provided, both in the CRF and in the NIR, the ERT was able to replicate the emission estimates in this sector. In several categories, expert judgement is used for selection of parameters. The ERT recommends that Slovenia make more use of the methodological criteria for expert judgement following the IPCC good practice guidance. The information provided in the documentation

boxes under all CRF tables of the sector is limited. The ERT recommends that Slovenia provide information in the documentation boxes.

100. The NIR explains the recalculation in solid waste disposal on land for all the years of the time series. The estimates have been recalculated because emissions from industrial waste have been included. The result is a reduction in the estimates of base year emissions by 159.9 Gg CO_2 eq.. The ERT encourages Slovenia to consider using the techniques recommended in the IPCC good practice guidance to reconstruct the data on industrial waste composition. Slovenia may also wish to consider using the default method included in the latest reviewed scientific literature, which suggests incorporating regional default values for the composition of industrial and municipal waste.

101. Slovenia has not yet fully developed and implemented a QA/QC plan for the waste sector. There is no information on QA/QC procedures for the sector, and the ERT therefore encourages Slovenia to continue working on the implementation of the QA/QC plan developed in 2005.

102. Slovenia's 2006 submission does not provide calculations of combined uncertainty. The method used to estimate uncertainty used previously is under revision and the combined uncertainty estimates for the base year using the tier 1 method and level assessment (16.0 per cent), obtained from the 2005 submission, are reported in the 2006 NIR. The ERT encourages Slovenia to continue improving the uncertainty assessment, according to the IPCC good practice guidance, in its next submission.

Key categories

Solid waste disposal on land - CH_4

103. For the estimation of CH_4 emissions the first order decay (FOD) method (tier 2) has been used. The AD used are country-specific and the NIR includes references to the reports and data sources used. The parameters of the method are specified in the NIR and the CRF and are basically default values from the IPCC good practice guidance. Slovenia adopts an extension of 22 years for the time lag. This seems rather short with respect to the value used for methane generation rate (k) and could mean that emissions for the base year are underestimated.

104. The lack of information on the amount and composition of waste for the period 1964–2000 has led to the use of constant values during those years (since 2001, annual data on waste amount and composition have been collected by the SORS). The use of the same degradable organic carbon (DOC) value for the whole period 1964–2000 cannot accurately represent the actual evolution of the composition of solid waste. If the FOD method is used, it is recommended to use different degradable organic carbon dissimilated (DOC_f) values for wastes with different half-lives, and such detailed information on waste composition is not available in Slovenia. The ERT encourages Slovenia to do further work on estimating emissions from solid waste generation and composition in order to improve the quality of the data before 2000.

105. Sludge from wastewater handling is often disposed on solid waste disposal sites on land. Emissions from this sludge should therefore be included under solid waste disposal on land. According to the information provided by Slovenia, they are reported under wastewater handling. The ERT recommends that Slovenia correct this misallocation and report these emissions under solid waste disposal on land in line with the IPCC good practice guidance.

Wastewater handling – CH_4

106. CH_4 emissions from domestic and commercial wastewater handling have been estimated using the IPCC methodology; however, the "check method" provided in the IPCC good practice guidance, which would assist in validating the factors used and results obtained, has not been applied. The ERT recommends that Slovenia apply the "check method" for estimating CH_4 emissions from wastewater handling in its next inventory submission.

107. CH_4 emissions from industrial wastewater have been calculated with a large output of wastewater and a high content of degradable organic component, which is in line with the Revised 1996 IPCC Guidelines. The emissions in the period 1986–2004 mainly follow the trends of industrial production. The greater part of emissions arises from sludge treatment.

Non-key categories

Wastewater handling – N_2O

108. N_2O emissions from discharge of human sewage to the aquatic environment have been estimated for the total population following the Revised 1996 IPCC Guidelines and using the default emission parameters. Data on protein consumption per capita from the Food and Agriculture Organization of the United Nations (FAO) database have been used.

Waste incineration – CO_2, CH_4, N_2O

109. According to the NIR, Slovenia has no waste incineration plant as yet. The emissions are reported as "NO" in 1986 and as "IE" in 2004 because a small amount of waste was combusted in cement plants and reported under the energy sector. Certain quantities of clinical waste and waste from international flights (the composition of which is similar to the composition of domestic waste) may also have been incinerated in combustion facilities. The ERT encourages Slovenia to estimate emissions from the incineration of these wastes and thus enhance the completeness of its reporting.

C. Calculation of the assigned amount

110. The assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP.1.

111. Slovenia's base year is 1986 and the Party has chosen 1995 as the base year for HFCs, PFCs and SF_6. Its quantified emission limitation is 92 per cent of base year emissions as defined in Annex B to the Kyoto Protocol.

112. Based on Slovenia's base year emissions as originally calculated – 20,203.25 Gg CO_2 eq. – and its Kyoto Protocol quantified emission reduction commitment (92 per cent), in the initial report dated December 2006 Slovenia calculated its assigned amount to be 92,934,961 tonnes CO_2 eq..

113. In response to the inventory issues identified during the review Slovenia submitted revised estimates of its base year inventory – 20,354.04 Gg CO_2 eq. – which resulted in recalculation of the assigned amount. Based on this revised estimate, Slovenia calculates its assigned amount to be 93,628,593 tonnes CO_2 eq.. The ERT has reviewed the calculation and confirms that the assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP.1.

D. Calculation of the commitment period reserve

114. The calculation of the required level of the CPR is in accordance with paragraph 6 of the annex to decision 11/CMP.1.

115. In its initial report, Slovenia calculated its CPR to be 83,641,465 tonnes CO_2 eq.. In response to inventory issues identified during the review, Slovenia revised its emission estimates for several categories and revised the calculation of the CPR. The revision resulted in a CPR value of 84,265,734 tonnes CO_2 eq., which is calculated as 90 per cent of the proposed assigned amount. The ERT has reviewed the calculation and confirms that the CPR has been calculated in accordance with paragraph 6 of the annex to decision 11/CMP.1.

E. National registry

116. In general, Slovenia has provided all the information on the national registry system required by the reporting guidelines under Article 7, paragraphs 1 and 2, of the Kyoto Protocol (decision 15/CMP.1) in its initial report. Slovenia provided additional information on its national registry to the ERT during the review process, and this additional information has also been considered in this report. The information provided is transparent. Table 5 shows which of the mandatory reporting elements on the national registry system, as stipulated by decisions13/CMP.1 and 5/CMP.1, are provided or referenced in the initial report of Slovenia.

117. The ERT noted that to minimize discrepancies in the transaction of Kyoto Protocol units, Slovenia refers to the registry system used in Slovenia for the EU ETS. The following additional Kyoto Protocol functionalities have been identified by the EU ETS registry that would need to be developed for the Slovenian national registry and tested against the independent transaction log (ITL) test system: replacement of temporary certified emission reductions (tCERs) or long-term certified emission reductions (lCERs), carry-over, expiry date change (for t-CERs and l-CERs), and the ITL notices (and the notification log). Slovenia informed the ERT that the developers of the EU ETS registry intend to develop these functionalities in future releases of the registry in order to meet the timetable required under the Kyoto Protocol.

118. As regards the user interface of the national registry, the ERT was informed that the Slovenian registry administrator intends to display and update publicly available information on the public area of the registry's website in accordance with annex XVI of European Commission Regulation (EC) 2216/2004 of 21 December 2004 for a standardized and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council, and Decision 280/2004/EC of the European Parliament and of the Council.

119. Slovenia has not provided a description of the test results during the in-country visit. The ERT encouraged Slovenia to carry out the initialization testing early enough, and in any case before November 2007, in order to allow it to be considered by the ERT and included in this report in time.

120. The ERT gained the general impression that Slovenia assigns high importance, and allocates sufficient resources, including human resources, to the decisions on and the operation and maintenance of the registry.

121. The ERT noted that a thorough technical review of the national registry as stipulated by the review guidelines under Article 8 of the Kyoto Protocol, part V: Review of national registries, paragraph 115, will be undertaken in the context of the initialization of the national registry of Slovenia.

122. The ERT took note of the results of the technical assessment of the national registry, including the results of standardized testing, as reported in the IAR that was forwarded to the ERT by the administrator of the international transaction log, pursuant to decision 16/CP.10, on 25 October 2007.

123. The ERT reiterated the main findings of this report, including that the registry has fulfilled all of its obligations regarding conformity with the Data Exchange Standards. These obligations include having adequate transaction procedures; adequate security measures to prevent and resolve unauthorized manipulations; and adequate measures for data storage and registry recovery.

Table 5. Summary of reporting on the national registry system

Reporting element	Provided/ referenced	Comments
Registry administrator		
Name and contact information	Yes	Environmental Agency of the Republic of Slovenia
Cooperation with other Parties in a consolidated system		
Names of other Parties with which Portugal cooperates	Yes	No such cooperation exists
Database structure and capacity of the national registry		
Description of the database structure	Yes	
Description of the capacity of the national registry	Yes	
Conformity with data exchange standards (DES)		
Description of how the national registry conforms to the technical DES between registry systems	Yes	Covered in the independent assessment report (IAR)[a]
Procedures for minimizing and handling of discrepancies		
Description of the procedures employed in the national registry to minimize discrepancies in the transaction of Kyoto Protocol units	Yes	
Description of the steps taken to terminate transactions where a discrepancy is notified and to correct problems in the event of a failure to terminate the transaction	Yes	
Prevention of unauthorized manipulations and operator error		
An overview of security measures employed in the national registry to prevent unauthorized manipulations and to prevent operator error	Yes	Covered in the IAR
An overview of how these measures are kept up to date	Yes	
User interface of the national registry		
A list of the information publicly accessible by means of the user interface to the national registry	Yes	A list of the information publicly accessible is referred the requirements under the EU ETS. Covered in the IAR.
The Internet address of the interface to Portugal's national registry	Yes	Production registry website: <http://rte.arso.gov.si> Testing registry website: <http://rtest.s5.net>
Integrity of data storage and recovery		
A description of measures taken to safeguard, maintain and recover data in order to ensure the integrity of data storage and the recovery of registry services in the event of a disaster	Yes	Characteristics of web and application server, database server, backup tool, data archiving, disaster recovery plan are described in detail and covered in the IAR.
Test results		
The results of any test procedures that might be available or developed with the aim of testing the performance, procedures and security measures of the national registry undertaken pursuant to the provisions of decision 19/CP.7 relating to the technical standards for data exchange between registry systems.	Yes	Not available at the time of the in-country review. Test results are covered in the IAR

[a] Pursuant to decision 16/CP.10, the administrator of the international transaction log (ITL), once registry systems become operational, is requested to facilitate an interactive exercise, including with experts from Parties to the Kyoto Protocol not included in Annex I to the Convention, demonstrating the functioning of the ITL with other registry systems. The results of this exercise will be included in an independent assessment report (IAR). They will also be included in the annual report to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol.

124. Based on the results of the technical assessment, as reported in the IAR, the ERT concluded that Slovenia's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 15/CMP.1, noting that registries do not have obligations regarding operational performance or public availability of information prior to the operational phase.

F. Land use, land-use change and forestry parameters and election of activities

125. Table 6 shows the Party's choice of parameters for forest definition as well as elections for Article 3, paragraphs 3 and 4, activities in accordance with decision 16/CMP.1.

Table 6. Selection of LULUCF parameters

Parameters for forest definition		
Minimum tree cover	30%	
Minimum land area	0.25 ha	
Minimum tree height	2 m	
Elections for Article 3, paragraphs 3 and 4, activities		
Article 3, paragraph 3 activities	**Election**	**Accounting period**
Afforestation and reforestation	Mandatory	Commitment period
Deforestation	Mandatory	Commitment period
Article 3, paragraph 4 activities		
Forest land management	Elected	Commitment period
Cropland management	Not elected	Not applicable
Grazing land management	Not elected	Not applicable
Revegetation	Not elected	Not applicable

126. Slovenia's choice of the parameters to define forest is within the range specified by decision 16/CMP. The ERT noted that the forest categories and definitions used by Slovenia to report to the FAO do not correspond to the definition of forest to be reported under the Kyoto Protocol. The difference was not explained in the initial report, but relevant information was provided in the course of the review. The ERT encourages Slovenia to explain this in its next inventory submission under the Kyoto Protocol.

III. Conclusions and recommendations

A. Conclusions

127. The ERT concluded that the information provided by Slovenia is generally complete and submitted in accordance with the relevant provisions of paragraphs 5, 6, 7 and 8 of the annex to decision 13/CMP.1, section I of the annex to decision 15/CMP.1, and relevant decisions of the CMP; that the assigned amount pursuant to Article 3, paragraphs 7 and 8, is calculated in accordance with the annex to decision 13/CMP.1, and is consistent with the revised inventory estimates as submitted and reviewed; and that the calculation of the required level of the CPR is in accordance with paragraph 6 of the annex to decision 11/CMP.1, and the LULUCF definitions are within the agreed range.

128. The national system of Slovenia is functional and the ERT considers it to be broadly consistent with the guidance for national systems (decision 19/CMP.1).

129. Slovenia has provided a full set of CRF tables for the years 1986–2004 and an NIR. The ERT considers the inventory submission to be broadly consistent with the UNFCCC reporting guidelines, the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF. Areas for further improvement relate to: the identification of key categories; the reporting of emissions for some missing categories; greater transparency in the reporting on methodologies and data sources; the calculation of uncertainties in line with the IPCC good practice guidance; the implementation of QA/QC procedures; and further improvements in consistency as between the NIR and the CRF.

130. The ERT confirms that the assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP.1. It amounts to 93,628,593 tonnes CO_2 eq.. The ERT also confirms that the value of the CPR (84,265,734 tonnes CO_2 eq.) calculated by Slovenia is in accordance with paragraph 6 of the annex to decision 11/CMP.1.

131. Based on the results of the in-country review visit and technical assessment, as reported in the IAR, the ERT concluded that Slovenia's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 15/CMP.1.

132. Slovenia has defined forests and chosen forest management as an additional activity under Article 3, paragraph 4, of the Kyoto Protocol in accordance with decision 16/CMP.1

B. Recommendations

133. In the course of the review, the ERT formulated a number of recommendations relating to the completeness and transparency of Slovenia's information presented in the initial report. The key recommendations[3] are that Slovenia:

(a) Make all efforts to complete the development of the national registry under the Kyoto Protocol and to put this registry into operation as soon as possible;

(b) Provide updated information on the national system in its next submission under the Kyoto Protocol. This should include the information that was provided to the ERT during the review and should reflect the improvements in QA/QC, archiving, the completeness of the inventory, recalculations and transparency;

(c) Estimate missing emissions in its next inventory submission. In order to enhance the completeness of the inventory within the limits of the available resources, the ERT suggests that Slovenia use only already available country-specific data, including uncertainties;

(d) Ensure consistency of the time series if further improvements to the inventory have been made related to the use of higher-tier methods.

134. The ERT appreciated the efforts Slovenia has made to revise its estimates of emissions for the category CO_2 emissions from the combustion of natural gas and to provide estimates for the categories fugitive emissions of CO_2 from coal mining and handling, CO_2 emissions from glass production and N_2O emissions from the cultivation of histosols. The ERT believes that this effort has notably improved the robustness of the estimates of emissions in the base year, and therefore the calculation of the assigned amount and the CPR.

135. The ERT also noted the great efforts Slovenia has made to establish its national registry in time and encourages Slovenia to provide updated information on the national registry system in its next inventory submission under the Kyoto Protocol.

[3] For a complete list of recommendations, the relevant sections of this report should be consulted.

C. Questions of implementation

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

Annex I

Documents and information used during the review

A. Reference documents

IPCC. Good practice guidance and uncertainty management in national greenhouse gas inventories, 2000. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

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UNFCCC secretariat. Slovenia: Independent assessment report of the national registry of Slovenia. Reg_IAR_SVN_2007_1. Will be available at <www.unfccc.int>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Tajda Mekinda-Majaron, Ms. Zorana Komar, Ms. Alenka Fritzel (Environmental Agency of the Republic of Slovenia), Mr. Matej Gasperič (Ministry of the Environment and Spatial Planning), Mrs. Nike Krajnc, Mr. Mitja Piškur (Slovenian Forestry Institute), and Mr. Jože Verbič (Agricultural Institute of Slovenia), including additional material on the methodology, data and assumptions used.

Environmental Agency of the Republic of Slovenia. Timetable for implementation of Slovenian GHG emissions registry. Draft, May 2007.

Mekinda-Majaron T. 2006. *The Republic of Slovenia, Final Report. Capacity Building for Improving the Quality of Greenhouse Gas Inventories* (Europe/CIS region) (REM/01/G31), UNDP GEF project.

Ministry of Environment and Spatial Planning and Energy. Slovenia's first national communication under the UN Framework Convention on Climate Change. 2002.

References used in the energy sector

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Environmental Agency of the Republic of Slovenia. CO_2 emissions from glass production, calculation spreadsheets for 1986–2003.

Environmental Agency of the Republic of Slovenia. N_2O emissions from solvents, calculation spreadsheets for 1986–2004.

References used in the agriculture sector

Environmental Agency of the Republic of Slovenia. CH_4 emissions from poultry, calculation spreadsheets for 1985–2005.

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References used in the land use, land-use change and forestry sector

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References used in the waste sector

Environmental Agency of the Republic of Slovenia. GHG emissions from clinical waste, calculation spreadsheets for 1986, 2003–2005.

Annex II

Acronyms and abbreviations

AD	activity data
ARSO	Environmental Agency of the Republic of Slovenia
BEF	biomass expansion factor
CH_4	methane
CO_2	carbon dioxide
CO_2 eq.	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
EC	European Community
EF	emission factor
EIT	economy in transition
ERT	expert review team
ETS	emissions trading scheme
EU	European Union
F-gas	fluorinated gas
FAO	Food and Agriculture Organization of the United Nations
FOD	first order decay
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
GJ	gigajoule (1 GJ = 10^9 joule)
GWP	global warming potential
HFCs	hydrofluorocarbons
IAR	independent assessment report
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
ITL	independent transaction log
kg	kilogram (1 kg = 1 thousand grams)
kgoe	kilograms of oil equivalent
LULUCF	land use, land-use change and forestry
m^3	cubic metre
Mg	megagram (1 Mg = 1 tonne)
Mt	million tonnes
Mtoe	millions of tonnes of oil equivalent
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NFI	national forest inventory
NH_3	ammonia
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
ODS	ozone-depleting substances
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joule)
QA/QC	quality assurance/quality control
SF_6	sulphur hexafluoride
SO_2	sulphur dioxide
SORS	Statistical Office of the Republic of Slovenia
Tg	teragram (1 Tg = 1 million tonnes)
TJ	terajoule (1 TJ = 10^{12} joule
UNFCCC	United Nations Framework Convention on Climate Change

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