COMPLIANCE COMMITTEE

CC/ERT/IRR/2008/6
9 May 2008

Report of the review of the initial report of Bulgaria

Note by the secretariat

The report of the review of the initial report of Bulgaria was published on 8 May 2008. 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/BGR, 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 Bulgaria

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 Bulgaria 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 Bulgaria, 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 15 to 20 October 2007 in Sofia, Bulgaria, and was conducted by the following team of nominated experts from the roster of experts: generalist – Mr. Manfred Ritter (Austria); energy – Mr. Amit Garg (India); industrial processes – Mr. Riccardo De Lauretis (Italy); agriculture – Mr. Donald R. Kamdonyo (Malawi); land use, land-use change and forestry (LULUCF) – Ms. Dominique Blain (Canada); waste – Mr. Faouzi Senhaji (Morocco). Mr. Manfred Ritter and Mr. Amit Garg were the lead reviewers. In addition the expert review team (ERT) reviewed the national system, the national registry, and the calculations of the Party's assigned amount and commitment period reserve (CPR), and took note of the LULUCF parameters. 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 Bulgaria, which, after having reviewed the draft report, had not made any comments.

B. Summary

1. Timeliness

3. Decision 13/CMP.1 requests Parties to submit the 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. The initial report was submitted on 25 July 2007, which is not in accordance with decision 13/CMP.1. In its initial report Bulgaria refers to its 2007 GHG inventory submission, which includes common reporting format (CRF) tables for 1988–2005 and the National inventory report (NIR) 2007 (submitted on 23 May 2007). Prior to the in-country visit, on 1 September 2007, Bulgaria submitted a set of revised CRF tables for 1988–2004, which is consistent with its 2007 inventory submission. The revised 2006 CRF tables and the NIR of the 2006 submission of 25 May 2006 were used as the basis for the review by the ERT.

4. In response to questions raised by the ERT during the course of the in-country visit, Bulgaria submitted revised emission estimates for the base year (1988) and 2004 on 31 November 2007. This report is based on these revised estimates. Where necessary the ERT also used the previous (2005) submission, additional information provided during the review and other information. The full list of materials used during the review process is provided in the annex to this report.

2. Completeness

5. Table 1 below provides information on the mandatory elements that have been included in the initial report and revised values for the assigned amount and the CPR provided by Bulgaria resulting from the review process. These revised values are based on revisions of methane (CH_4) emissions from solid waste disposal on land (see paragraph 108), inclusion of the nitrous oxide (N_2O) and carbon dioxide (CO_2) emissions from solvents and other product use (see paragraphs 80–83) and resulting in the revision of the calculation of the assigned amount (see paragraph 116) and revision of the calculation of the CPR (see paragraph 119). The revised GHG emissions estimates resulted in revision of the base year emissions from 132,676,003 tonnes CO_2 equivalent (eq.), as reported originally by the Party, to 132,618,658 tonnes CO_2 eq. (see paragraph 116).

6. The information in the initial report generally covers all elements as required by decision 13/CMP.1, section I of the decision 15/CMP.1, and relevant decisions of the Conference of the Parties

serving as the Meeting of the Parties (CMP). However, the description of the national system does not include information on archiving, the quality assurance and quality control (QA/QC) plan and the planned timeline for testing of the national registry.

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 1988 to the most recent year available 2004	Yes	Base year: 1988
Base year for HFCs, PFCs and SF_6	Yes	1995
Agreement under Article 4	No	not applicable
LULUCF parameters	Yes	Minimum tree crown cover: 10 % Minimum land area: 0.1 ha Minimum tree height: 5 m
Election of and accounting period for Article 3, paragraphs 3 and 4, activities	Yes	Bulgaria has decided not to elect any of the activities under Article 3, paragraph 4 and decided to account for each activity under Article 3, paragraph 3, for the entire commitment period
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8	Yes	610 309 614 tonnes CO_2 eq.
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8, revised value		610,045,827 tonnes CO_2 eq.
Calculation of the commitment period reserve	Yes	349 974 395 tonnes CO_2 eq.
Calculation of the commitment period reserve, revised value		353,544,400 tonnes CO_2 eq.
Description of national system in accordance with the guidelines for national systems under Article 5, paragraph 1	Yes	Limited description provided in the initial report. Additional information provided in the course of the review.
Description of national registry in accordance with the requirements contained in the annex to decision 13/CMP.1, the annex to decision 5/CMP.1 and the technical standards for data exchange between registry systems adopted by the CMP	Yes	Limited description provided in the initial report. Additional information provided in the course of the review.

3. Transparency

7. The initial report is generally transparent, but lacks transparency in the description of the national system, and in particular the description of how Bulgaria intends to ensure sufficient capacity for timely performance of the functions of the national system described in the Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol.

8. The ERT also found that the transparency of the inventory information contained in the NIR 2006 is limited. A comprehensive and precise methodological description in all sectors is not provided in the NIR, and notation keys are not used systematically in the CRF. During the in-country review the ERT identified the following areas for further improvement: more comprehensive and precise methodological descriptions in the NIR, more accurate use of notation keys, extended description of how Bulgaria will ensure sufficient capacity for timely delivery of the GHG inventory submissions.

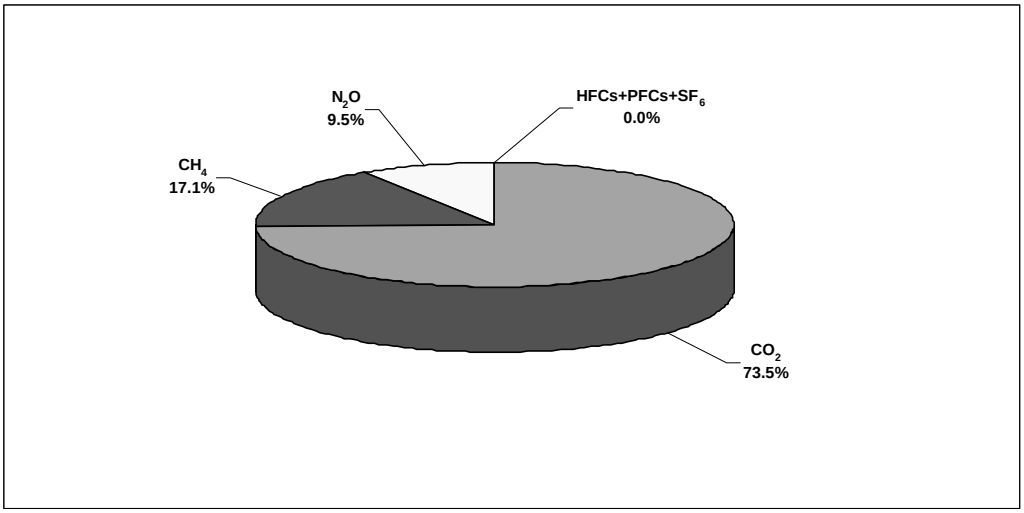
4. Emission profile in the base year, trends and emission reduction target

9. In the base year for CO_2, CH_4, and N_2O (1988), and the base year for fluorinated gases (hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6), further referred to as F-gases) (1995), the most important GHG in Bulgaria was CO_2, contributing 73.5 per cent to total[1] national GHG emissions expressed in CO_2 equivalents (CO_2 eq.), followed by CH_4 (17.1 per cent) and N_2O (9.5 per cent), see figure 1. HFCs, PFCs and SF_6 taken together contributed 4.22 Gg (gigagrams) CO_2 eq. (0.003 per cent) of the overall GHG emissions in the base year.

[1] In this report, the term total emissions refers to the aggregated national GHG emissions expressed in terms of CO_2 eq. excluding LULUCF, unless otherwise specified.

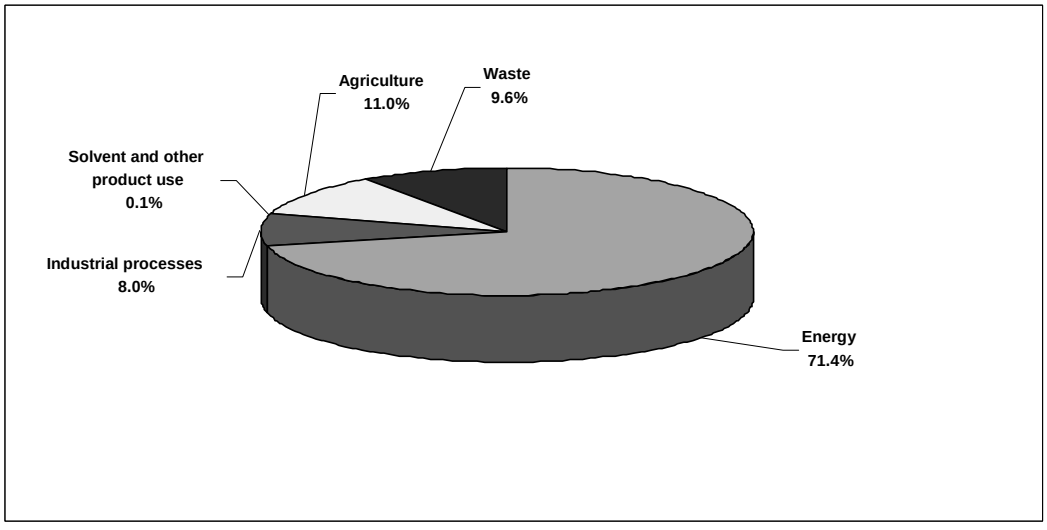
10. The energy sector accounted for 71.4 per cent of the total GHG emissions in the base year followed by agriculture (11.0 per cent), waste (9.6 per cent), industrial processes (8.0 per cent) and solvents and other product use (0.1 per cent), see figure 2. Total GHG emissions amounted to 132,618.66 Gg CO_2 eq. and decreased by 46.7 per cent from the base year to 2004. Trends seem reasonable, given the economic transition experienced by Bulgaria over the last 15 years. The ERT, however, noted the lack of interpretation of the emissions trends in the NIR and recommends that Bulgaria include in its future NIRs more information on emissions trends and the key drivers behind these trends, in particular economic development.

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



Note: Cumulative total F-gas emissions accounted for 0.003 per cent of the national total emissions in the base year.

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



11. Tables 2 and 3 show the GHG emissions by gas and by sector, respectively.

12. Bulgaria's quantified emission limitation is 92 per cent, as included in Annex B to the Kyoto Protocol.

Table 2. Greenhouse gas emissions by gas, base year, 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	98 815.11	86 246.41	66 339.65	50 463.21	52 098.84	49 256.99	53 859.70	53 268.11	–46.1
CH_4	21 684.96	19 914.64	14 920.60	11 708.41	10 723.28	10 667.60	11 334.91	12 780.38	–41.1
N_2O	12 114.37	10 449.56	5 837.85	4 918.47	4 577.45	4 453.71	4 446.11	4 439.41	–63.4
HFCs	2.95	NA,NE,NO	2.95	96.02	97.50	89.59	120.60	217.30	7 256.6
PFCs	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA
SF_6	1.26	NA,NE,NO	1.26	2.23	2.29	2.51	2.52	3.68	191.6

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

[a] Bulgaria submitted revised estimates for the base year and 2004 in the course of the review on 31 November 2007. These estimates differ from the Party's GHG inventory submitted in 2006.

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

Sectors	Gg CO_2 equivalent								Change BY–2004 (%)
	Base year[a]	1990	1995	2000	2001	2002	2003	2004[a]	
Energy	94 666.41	81 465.34	61 974.36	48 177.61	49 772.72	47 328.45	51 469.40	50 661.88	–46.5
Industrial processes	10 573.97	9 892.52	8 963.05	6 080.35	6 058.90	5 417.61	6 020.50	6 101.59	–42.3
Solvent and other product use	75.99	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	50.32	NA
Agriculture	14 559.02	12 953.23	5 935.33	5 394.07	4 540.66	4 859.32	4 832.73	5 081.04	–65.1
LULUCF	NA	–6 074.23	–7 343.67	–8 908.24	–9 381.16	–8 171.63	–6 908.07	–7 805.29	NA
Waste	12 743.27	12 299.53	10 229.57	7 536.31	7 127.08	6 865.01	7 441.20	8 814.06	–30.8
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (with LULUCF)	NA	110 536.39	79 758.65	58 280.10	58 118.20	56 298.76	62 855.76	NA	NA
Total (without LULUCF)	132 618.66	116 610.62	87 102.32	67 188.34	67 499.36	64 470.39	69 763.83	70 708.88	–46.7

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

[a] Bulgaria submitted revised estimates for the base year and 2004 in the course of the review on 31 November 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

13. The country's national system is generally prepared in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). However, Bulgaria has to formalize a QA/QC plan, establish an operational archiving system, further develop the description of the data collection and estimation preparing process, including the identification of key categories, and further enhance the capacity for timely delivery of GHG inventory submissions.

14. Table 4 shows which of the specific functions of the national system are included and 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. Additional information has been provided in response to the ERT request
Established process for approving the inventory*	Yes	See section II.A.1
Quality assurance/quality control plan*	Yes	See section II.A.2. An outline has been provided in response to the ERT request
Ways to improve inventory quality	Yes	See section II.B.3. Additional information has been provided in response to the ERT request.
Inventory preparation		
Key category analysis*	Partially	See section II.B.1, regarding issues related to the LULUCF sector.
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*	Partially	See sections II.B.2 and II.B.8. Additional information has been provided in response to the ERT request.
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	Yes	See section II.A.2
Basic review by experts not involved in inventory	Yes	See section II.A.2
Extensive review for key categories	Yes	See section II.A.2
Periodic internal review of inventory preparation	Yes	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. Additional information has been provided in response to the ERT request
Provide ERT with access to archived information*	Yes	See section II.A.3
Respond to requests for clarifying inventory information during the review process*	Yes	See section II.A.1

* Mandatory elements of the national system.

1. Institutional, legal and procedural arrangements

15. During the in-country visit, Bulgaria explained the institutional arrangements for preparation of the inventory. The Party explained that the national system for inventory preparation has been changed since early 2007. Two new orders were issued by the Ministry of the Environment and Water (MoEW) in January and June 2007 which define obligations and responsible bodies for Bulgaria's reporting under the United Nations Convention for Long Range Transboundary Air Pollution (UNECE/CLRTAP) and the UNFCCC for the submission of an inventory of the pollutants and GHG in 2007. These orders further define reporting requirements and responsible bodies for the implementation of the UNFCCC requirements through the EU emissions monitoring mechanism. The ERT took note of the new legal acts and considered them as sufficient basis for the preparation of the GHG inventories in the future.

16. These orders of the MoEW identify the Executive Environmental Agency (ExEA) as a single national entity with overall responsibility for the preparation of the GHG inventory. The ExEA has to fulfil this role in close cooperation with the National Statistical Institute (NSI) which supplies most of the background data (such as energy statistics and production data) as well as a major part of the CORINAIR calculations for the UNECE/CLRTAP emission inventory. The MoEW is overall responsible for the inventory process. During the review, the ERT took note of the framework agreement between the ExEA (represented by the MoEW) and the NSI for the exchange of information related to the GHG inventory.

17. Other organizations involved in the preparation of the GHG inventory are the Road Control Department within the Ministry of Internal Affairs, the statistics department within the Ministry of Agriculture and Food, and the Ministry of Economy and Energy and the State Forestry Agency (formerly the Forestry Board of the Ministry of Agriculture). Data are collected by the ExEA mainly through questionnaires to organisations, industries and other data suppliers. The ERT noted that there is no formal agreement with the organisations which responded to the questionnaires, but the data exchange between experts seems to work effectively in practice. The ERT encourages Bulgaria to extend the information on the national system for GHG inventory preparation and provide the description of relevant legal documents in the NIR of its next inventory submission.

18. Bulgaria has an established process for the official consideration and approval of the GHG inventory, including recalculations, prior to its submission to the UNFCCC secretariat. Also it could respond to any issues raised by the ERT during the in-country visit. The ExEA is responsible for providing the GHG inventory submissions to the MoEW, which is responsible for the official submissions to the UNFCCC secretariat.

19. The ERT was informed that up to 2007 the inventory compiler was a private joint stock company (The Energy Institute), contracted yearly by the MoEW. In 2006, the MoEW and the ExEA decided that from the 2008 submission onwards, the GHG inventory should be prepared by the ExEA. The ERT noted that there are plans to transfer existing knowledge and archives from the institution which currently compiles the inventories to the ExEA, but they are at different stages of implementation and the transfer has not yet been completed. The ERT also noted that the necessary elements of the national system for the transfer of knowledge to the ExEA exist in Bulgaria, but that sufficient capacity for a timely performance of the functions of the national system specified in decision 19/CMP.1 has yet to be ensured.

20. In response to the ERT’s request, Bulgaria provided a capacity assessment, including information on how Bulgaria intends to ensure a timely performance of the functions of the national system described in decision 19/CMP.1. This assessment assures the ERT that in the long term the MoEW and the ExEA will provide no fewer than four experts who will have responsibility for emission inventories (UNFCCC and UNECE/CLRTAP). In the short term (for the 2008 submission), the ExEA will be supported by an expert from the Bulgarian Academy of Science and will also receive additional support from the MoEW through the Air Protection Directorate and the Climate Change Policy Department. Bulgaria, moreover,

assured the ERT that the existing knowledge transfer has been completed, following the special training of the ExEA inventory team by the former inventory compiler. The ERT acknowledged Bulgaria's efforts in preparing the capacity assessment and encouraged Bulgaria to ensure sufficient capacity for timely submission of the GHG inventory.

21. In the LULUCF sector, Bulgaria estimates emissions and removals from forest land remaining forest land, cropland remaining cropland and wetland remaining wetland, but does not estimate emissions and removals from land-use change. The information obtained by the ERT during the in-country visit did not fully demonstrate that Bulgaria has in place the required capacity and/or institutional arrangements to provide information required by decision 16/CMP.1 on land areas subject to activities under the Kyoto Protocol Article 3, paragraph 3. In response to the ERT's request to provide a capacity assessment, Bulgaria provided a general description of forest inventory procedures, along with preliminary estimates of carbon (C) stock changes in the cropland and grassland subcategories, which had not been provided in the 2006 submission. However, the new estimates were not transparently documented, nor were they presented as the outcome of an improvement plan. The ERT also understood from the submitted material that forest conversion to other land categories, and land converted to forest land were not occurring ("NO"), although the 2006 submission referred to the lack of activity data (AD) to support the estimation procedure.

22. The ERT therefore recommends that Bulgaria further demonstrate its capacity to plan and prioritise improvements and to document estimates in its next inventory submission. This should include a description of planned improvements in order of priority, the existing capacity, planned institutional arrangements and proposed methods to monitor area change, and estimate associated C stocks changes and non-CO_2 emissions for afforestation, reforestation and deforestation under the Kyoto Protocol, article 3 paragraph 3.

2. Quality assurance/quality control

23. In its initial report, Bulgaria indicated that it has source-specific QC procedures in place, but yet has to elaborate and implement a QA/QC plan that is fully in accordance with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance), which would include general QC procedures (tier 1) as well as source/sink category-specific procedures (tier 2) for key categories and for those individual categories in which significant methodological and/or data revisions have occurred.

24. The initial report and the NIR state that source-specific QC procedures are performed regularly by the institutions involved in the GHG inventory preparation. The data are checked by experts and data providers are consulted by the inventory compilers. However, the documentation on quality checks was not available to the ERT. The ExEA is responsible for the drafting and implementation of the QA/QC plan. The ERT acknowledges that some elements of the QA/QC activities exist in Bulgaria. However, it considers that the absence of an overarching national QA/QC plan compromises the quality of the national GHG inventory and the functionality of the national system.

25. The Bulgarian initial report and the NIR describe the role of the Council for the Environment at the ExEA in approving the GHG inventory and allowing its submission to the UNFCCC secretariat. During the in-country visit, Bulgaria explained that the Council for the Environment is a body represented by approximately 30 experts from the ExEA, who review and officially approve the draft submissions of the GHG inventory. The ERT recommends that Bulgaria introduce extended documentation of its QC activities at all stages of inventory preparation, including this final review by the Council for the Environment and describe it in more detail in its next inventory submission.

26. The ERT requested Bulgaria to submit an outline of the QA/QC plan for the national inventory, detailing a list of tasks and institutional responsibilities. The outline should cover all the aspects of the

national inventory including inventory planning, preparation and management as outlined in the annex to decision 19/CMP.1 and elaborated in the IPCC good practice guidance.

3. Inventory management

27. In its initial report, Bulgaria has not described its inventory archiving system. During the review Bulgaria explained that all data are archived in the institutions that prepare and supply the information. Until 2007, the ExEA archived only the background data which it had provided to the inventory compiler, including dissaggregated emission factors (EFs), AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory.

28. During the review, the ERT could not ascertain whether the archived information also includes internal documentation on the QA/QC procedures, external and internal reviews, documentation on annual key categories and key category identification, and planned inventory improvements. The ERT therefore requested that the outline for the QA/QC plan also include details on the archiving system.

29. In response to the ERT's request to provide an outline of the QA/QC plan, Bulgaria submitted a comprehensive outline for the preparation of a QA/QC plan, including a timeline for data gathering and defining the experts responsible for quality checks. This outline also includes a plan to set up an archiving system ensures that all background data will be stored on a central network server. The ERT acknowledged the effort made in preparing an outline of the QA/QC plan and encouraged Bulgaria to implement it as planned.

B. Greenhouse gas inventory

30. In conjunction with its initial report, Bulgaria submitted a complete set of CRF tables for the years 1988–2005 and the NIR for 2007 on 23 May 2007. Prior to the in-country review visit, on 1 September 2007, Bulgaria submitted revised 2006 CRF tables for the years 1988–2004, which is consistent with its 2007 submission. The revised 2006 CRF tables and the NIR of the 2006 submission of 25 May 2006 were used as the basis for the review by the ERT. In response to questions raised by the ERT during the course of the in-country review visit, Bulgaria resubmitted its CRF tables for the base year and 2004 on 31 November 2007, and relevant background tables on 18 December 2007. Where necessary the ERT also used previous years' submissions.

31. During the review Bulgaria provided the ERT with additional information sources. These documents are not part of the initial report submission. The full list of materials used during the review is provided in the annex to this report.

1. Key categories

32. Bulgaria has reported a key category tier 1 and tier 2 analysis and both level and trend assessments as part of its initial report submission. Bulgaria has not included the LULUCF sector in its key category analysis. The secretariat's analysis indicates that forest land remaining forest land and wetlands remaining wetlands are key categories in the base year and 2004. This report follows the secretariat's key category analysis.

33. The key category analysis performed by the Party and the secretariat[2] produced similar results, but differ due to the fact that Bulgaria has not included the LULUCF sector in its key category analysis

[2] 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 Land Use, Land-use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF) for the base year or base year period, as well as the latest inventory year. Key categories according to the tier 1 trend assessment were also identified. Where the Party performed a key category analysis, the key categories presented

and has chosen a higher level of disaggregation in the energy sector. The ERT encourages Bulgaria to develop a key category analysis including LULUCF, following the IPCC good practice guidance, and report results in its next inventory submission.

2. Cross-cutting topics

34. The inventory is in line with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines) and the IPCC good practice guidance, and in general is in accordance with Article 7, paragraph 1 of the Kyoto Protocol and decision 15/CMP.1. However, the ERT noted that Bulgaria has yet to complete the implementation of the *IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF), as land-use change is not estimated ("NE"). The ERT further noted some cases where the methods and EFs used are not fully in line with the guidelines and guidance mentioned above. These cases are identified in the respective sectoral sections of this report. The ERT recommends that Bulgaria reflect these improvements in its future inventory submissions.

Completeness

35. The Bulgarian inventory covers all years and geographical coverage is complete. Bulgaria included all tables required with data of the relevant gases, sectors and main categories. Notation keys are used throughout the tables. The ERT noted that a complete set of CRF tables for the full time series was provided for the first time in the revised 2006 submission and 2007 submission.

36. Due to the lack of available AD Bulgaria does not estimate emissions from the conversion of forest land and grassland to other land use, the conversion of land to forest land, or emissions from solid fuel transformation (1.B.1.b) for the base year. Moreover, actual HFC emissions from the consumption of halocarbons are reported as "NE" for all years except 1995. The ERT encouraged Bulgaria to provide estimates for all categories where emissions occur and to estimate emissions/removals from all LULUCF categories following the IPCC good practice guidance for LULUCF, or to improve documentation of the non-occurrence of some of the LULUCF activities, in particular referred to the reporting under the Kyoto Protocol in 2010.

Transparency

37. Bulgaria has made a considerable effort to develop country-specific estimates and to improve the country-specific methodologies. The team which prepared emissions estimates in the sectors until 2007 was very experienced. During the review Bulgaria was able to supply further information which improved transparency of the inventory. During the in-country visit the ERT was also given access to confidential information on AD in the base year. The ERT commends Bulgaria for this effort.

38. However, data quality are not well reflected in the NIR of the 2006 submission. There is a lack of information on the general approach used for the inventory compilation, the underlying data and the values of the parameters used in estimation. The ERT noted that for all sectors information is not transparently provided in the NIR and recommends that Bulgaria improve the transparency of the inventory, especially for the key categories, by giving more information about data collection, methodologies, EFs, QA/QC and verification activities and that the Party use the appropriate notation keys (in particular, not applicable "NA" and not occurring "NO" in the LULUCF and waste sectors). Moreover, Bulgaria is encouraged to improve transparency with regard to reassessing the need for existing confidentiality and supplying all the relevant information in the NIR.

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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.

Consistency

39. The Bulgarian inventory is consistent, as defined in the UNFCCC reporting guidelines. The methods, EFs and AD used in the Bulgarian GHG inventory are consistent over the entire time series. During the in-country review Bulgaria provided an overview of the improvements made in its inventory methodology since its 2005 submission, which is reflected in the 2007 submission.

Comparability

40. The Bulgarian inventory is comparable with those of other Annex I Parties with economies in transition, as defined in the UNFCCC reporting guidelines. Methodologies and formats agreed by the Conference of the Parties for estimating and reporting inventories are used. The allocation of the source/sink categories follows the split in the Revised 1996 IPCC Guidelines and the IPCCC good practice guidance.

Accuracy

41. The Bulgarian inventory is accurate, as defined in the UNFCCC reporting guidelines. In as much as can be assessed, emissions are not systematically over- or underestimated.

42. During the in-country visit, the ERT identified two categories: (1) CO_2 emissions from manufacturing industries and construction, other (1.A.2.f), and (2) CH_4 emissions from solid waste disposal on land, where the methods, the AD or the EFs used were not fully in accordance with the IPCC good practice guidance and might lead to a potential overestimation of emissions in the base year or an underestimation of emissions in 2004. During the in-country visit, the ERT recommends that Bulgaria further justify or revise its estimates for these categories. After the in-country visit, Bulgaria provided revised and justified estimates for these categories for the base year and 2004, in accordance with the recommendations of the ERT. Further details are provided in the sectoral sections below.

Recalculations

43. The national system can ensure that recalculations of previously submitted estimates of GHG emissions by sources and removals by sinks are prepared in accordance with the IPCC good practice guidance.

44. The ERT noted that estimates recalculated from 1988 to 2003 are due to the changes of the methodologies applied. These recalculations are sufficiently justified and have resulted in improvement of the quality of the inventory. The impact of these recalculations on the trend is relatively small and the recalculations lead to 4.2 per cent lower 1988 emission estimates in the 2006 inventory submission compared to the 2005 inventory submission.

Uncertainties

45. The Party has provided an uncertainty analysis for each category and for the inventory in total, following the IPCC good practice guidance. A tier 1 approach is applied and the information provided is in line with the UNFCCC reporting guidelines, Part I.

3. Areas for further improvement identified by the Party

46. The NIR does not identify areas for improvement. After the in-country visit, in its response to the issues raised during the review, Bulgaria developed a plan for the further development of the available capacity and an outline of a QA/QC plan for the national inventory.

4. Areas for further improvement identified by the ERT

47. The ERT identified the following cross-cutting issues for further improvement:

(a) Implement the capacity development plan to ensure sufficient capacity of the national system for timely performance of the functions described in the guidelines for national systems;

(b) Implement the QA/QC plan as outlined, including the development of the archiving system;

(c) Improve the transparency of the estimates by providing in its NIR more precise descriptions of methodologies, EFs, data collection and processes for dealing with confidential information;

(d) Revise and improve the use of notation keys (including the notation key for confidential data);

(e) Provide a key category assessment, including LULUCF.

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

5. Energy

Sector overview

49. In the base year, the energy sector accounted for 71.4 per cent of Bulgaria's total national GHG emissions. GHG emissions from fuel consumption accounted for 96.5 per cent, and fugitive CH_4 emissions for 3.5 per cent of GHG emissions from the sector. CO_2 accounted for 95.8 per cent of GHG emissions in the sector in the base year. The largest source in the energy sector's total GHG emissions was energy industries (46.0 per cent), followed by manufacturing industries and construction (26.2 per cent), transport (14.8 per cent) and other sectors (9.5 per cent). Between 1988 and 2004 GHG emissions from the energy sector decreased by 46.5 per cent.

50. Bulgaria bases its inventory on the AD provided by the NSI, which collects energy data from questionnaire-based surveys sent to all sectors of the energy industry. Bulgaria informed the ERT that these data are of high quality. The ERT was, however, not able to ascertain the quality of the data as the process of data collection is not transparently documented in the NIR. For example, the ERT was not able to verify the systems in place to ascertain the coverage of the energy balance through questionnaire surveys, the quality of the responses to these questionnaires, the changes in the accounting practice (for example, the definitions of domestic and international navigation) over the years, the changes in fuel net calorific values over the years and reasons for these, and the quality checks on data received through the questionnaires. The ERT recommends that Bulgaria improve transparency in documenting the collection, quality and archiving of data in its next inventory submission.

51. The ERT noted the lack of QA/QC of the AD in the energy sector. The ERT recommends that Bulgaria institutionalize system-level checks to minimize the risk of missing data in its future submissions. These QC checks should include an independent sectoral expert review of the AD, and cross-checking by the inventory-compiling agency's sectoral experts of the CRF tables and the NIR, for example, to explain the reasons for the large interannual variations in emissions from the key categories. QA should be improved by including specific questions in the annual energy surveys of the industry on additional data/information, for example, on the quantity of plastics being burned for energy purposes, and any other relevant background data.

52. Country-specific EFs have been used to estimate emissions from lignite and coal, which are the main fuels in Bulgaria. A detailed explanation of these EFs was not provided in the NIR, but was provided during the in-country review visit. The ERT recommends that Bulgaria improve documentation of these country-specific EFs in the NIR of its next inventory submission.

Reference and sectoral approach

53. CO_2 emissions from fuel combustion have been calculated using the reference approach and the sectoral approach. For the base year, the CO_2 emission estimates calculated using the reference approach are 0.48 per cent, and for 2004 – 0.49 per cent higher than those calculated by the sectoral approach. The NIR provides explanations for the fluctuations in the difference between the two approaches over the years.

International bunker fuels

54. Fuel consumption data allocation is not transparently explained in the NIR for navigation bunkers and domestic navigation. For example, it is not possible to ascertain what is included in the aggregated data of fuel consumed in marine bunkers, why fuel consumption decreases dramatically after 1989 (for domestic navigation) and after 1998 (for international bunkers) and how the methodology for estimation of the emissions has been changed over the years. This is illustrated by the fact that residual fuel oil consumption for bunkers dropped from 10,109 terajoules (TJ) in 1998 to 39 TJ in 1999 (99.6 per cent) and is reported as "NA" since 2002. Similarly, diesel fuel consumption dropped from 2,703 TJ (1998) to 294 TJ (1999) (89.2 per cent). The NIR explains that this is due to the absence of a deep-sea fishing fleet after 1999. This implies that Bulgaria accounts for fuel consumption for fishing in international waters in international bunker fuel consumption. This is not in line with the definition of international bunkers as per the IPCC good practice guidance.

55. Bulgaria's practice between 1988 and 1999, of allocating all fuels sold to ships with the Bulgarian flag in Bulgaria or abroad to marine bunkers, and allocating all fuels sold inside Bulgaria to ships with other international flags as fuel exported is not in line with the IPCC good practice guidance and the Revised 1996 IPCC Guidelines. After the in-country review visit, in response to the question raised by the ERT, Bulgaria ascertained that this does not result in any overestimation of CO_2 emissions from domestic navigation in the base year. The ERT recommends that Bulgaria strictly follow the IPCC good practice guidance in allocating fuels to domestic and international navigation.

Feedstocks and non-energy use of fuels

56. CO_2 emissions from use of fuels as feedstocks are reported under the energy sector and not under the industrial processes sector. Bulgaria uses the IPCC default factors for C storage fractions for energy carriers as feedstock, which is in line with the IPCC good practice guidance.

57. Bulgaria's energy balance includes consumption of blast furnace gas and coke oven gas, which are produced as intermediate products in the iron and steel industry from coking coal combustion. The emissions from them, however, are properly reported and there is no double-counting of the emissions.

Key categories

Stationary combustion: liquid, solid and gaseous fuels – CO_2

58. Reporting of the CO_2 emissions from manufacturing industries and construction – other (1.A.2.f), the largest contributor to CO_2 emissions from this sub-sector, is not transparent. During the review visit, the ERT was informed that this category covers 10−12 auto producers in various industries, which produce electricity and heat. Part of this electricity and heat is consumed on-site by the plants and the rest is sold to the other entities for further consumption. GHG emissions from heat sold to the other entities are reported under the category other (1.A.2.f), while emissions from heat consumed on-site are

reported under the respective sub-categories. The former is not in line with the IPCC good practice guidance. Some of the auto producers are registered as separate enterprises and their emissions from power and heat generation should therefore be reported under energy industries, public electricity and heat production (1.A.1.a) as per the IPCC good practice guidance. The ERT has, thus, questioned the methodology for the allocation of the emissions from auto producers.

59. In response to the ERT's questions raised during the in-country visit, Bulgaria collected additional data on energy consumption by auto producers from different independent information sources (the National Electricity Transmission Company and the Ministry of Economy and Energy). The data collected include total electricity and heat produced by plants and fuels used for this production, and the total fuel consumption and CO_2 emissions of the auto producers were calculated based on these. The calculation indicates that the total fuel consumed by auto producers for electricity and heat production is higher than the fuel reported in the energy balance for production of electricity and heat for sale by Bulgaria. This difference in fuel consumption is allocated to the relevant industrial sectors as final energy demand. The ERT analyzed the data and concluded that there is no double-counting of emissions from auto producers. However, the split in the emissions from auto producers among energy industries, public electricity and heat production (1.A.1.a) and manufacturing industries and construction, other (1.A.2.f), is not in line with the IPCC good practice guidance. The ERT recommends that Bulgaria report emissions for heat and electricity generation from all producers in a consistent manner following the IPCC good practice guidance.

Road transportation: liquid fuels – CO_2

60. In the base year, road transportation contributed 13,977.52 Gg CO_2 eq. emissions, which accounted for 10.5 per cent of total national GHG emissions. Fuel consumption in the road transportation category decreased by 61.2 per cent for gasoline and increased by 19.6 per cent for diesel oil during 1988–2004. Liquefied petroleum gas (LPG) has been introduced as a transport fuel and its share in road transportation fuel consumption rose to 17.3 per cent in 2004 from almost nil in 1988. The ERT was informed that the number of cars has almost doubled during 1988–2004. However, due to an increasing share of more energy-efficient used cars from western Europe, and a decreasing use of old cars, the emission efficiency of road transport has improved over the time series.

Non-key categories

Stationary combustion: liquid, solid and gaseous fuels – N_2O

61. The EFs for N_2O emissions from all fuel consumption decreased for most of the fuels, as identified in the NIR. The revised EFs are closer to the IPCC default values, but not exactly the same. The NIR does not transparently document the reasons for this change and the basis for arriving at the revised EFs. The ERT recommends that Bulgaria provide this explanation in its next inventory submission.

Road transportation: liquid fuels – CH_4 and N_2O

62. Bulgaria has used a simple excel-based model to estimate CH_4 and N_2O emissions from road transportation through allocation of fuels amongst various vehicle categories. Fuel consumption from this bottom-up approach is matched with fuel sold statistics, using multiple iterations for estimating mileage for each vehicle category. Although this is an improvement over previous years' submissions, the model is not precise.

63. The ERT noted large differences in some emission estimates, for example, nitrous oxides (NO_X) emissions from the transport sector in 2004 were 50.59 Gg, as reported under the UNFCCC and 112.65 Gg under the UN-ECE/CLRTAP. The latter uses a national aggregated level methodology and fuel-based EFs. The ERT recommends that Bulgaria combine capacities in estimating and verifying the

methodologies and models applied for the estimation of emissions from the road transportation sector in its reporting under the UNFCCC and the UNECE/CLRTAP.

Fugitive emissions: coal mining and handling – CH_4

64. Bulgaria has used average of the IPCC default EF value for all mining and post-mining activities throughout the time series, despite the changes in the mining profile over the years. This is in line with the IPCC good practice guidance. Fugitive emissions from oil and gas transmission are based on pipe length, which is also considered consistent with IPCC good practice guidance. The ERT commends Bulgaria for this effort.

6. Industrial processes and solvent and other product use

Sector overview

65. In the base year, the industrial processes sector in Bulgaria accounted for 8.0 per cent of total national GHG emissions. Activity data are collected by the NSI on the basis of international statistical collection rules and supplied officially to the inventory team. The ERT was given access to confidential information on all AD in the base year, which facilitated the review of these estimates and hence contributed to their transparency.

66. Emissions from this sector had decreased by 42.3 per cent during the period 1988–2004. In the base year, CO_2 accounted for 76.3 per cent (mainly from iron and steel production and cement production), N_2O for 22.9 per cent, CH_4 for 0.8 per cent, and F-gases accounted for the remaining 0.04 per cent of the total GHG emissions from the industrial processes sector.

67. Most gases and categories are covered in the inventory, except for HFCs from consumption of halocarbons and SF_6, where actual emissions for HFCs are only estimated for 1995 while potential emissions are reported in the CRF trend and summary tables for the remaining time series. Emissions of CO_2 and N_2O were reported as "NE" in the solvents and other product use sector. The ERT encourages Bulgaria to estimate HFC emissions from the consumption of halocarbons and SF_6 for the complete time series, as well as CO_2 and N_2O from the solvents and other product use sector in its next inventory submission. After the in-country review visit, in response to this recommendation, Bulgaria provided some of the missing estimates (see paragraphs 80–83).

68. In response to the recommendations of the previous ERT, recalculations of CO_2 emissions were carried out for the entire time series for cement production and for limestone and dolomite use. Also, the average CO_2 EF for ammonia production was corrected and PFC emission estimates from primary aluminium production were revised. The ERT commends Bulgaria for these improvements.

69. Some QA/QC and verification activities have been developed especially for the key categories. QA/QC should be improved in this sector by, for example, systematically comparing the basic information collected for the preparation of the inventory with that collected and reported within the framework of the European Union emissions trading scheme (EU ETS), the European Pollutant Emission Register (EPER) registry and the Directive 2001/80/EC on limitation of emissions of certain pollutants into the air from large combustion plants.

Key categories

Cement production – CO_2

70. CO_2 from cement production is a key category on level and trend assessment, accounting for 1.5 per cent of total national base year emissions. In response to the previous (2005) review clinker production AD have been reconstructed for the years 1989–1998 and emissions estimates have been recalculated for the whole time series. Average EFs have been verified with the information supplied by

the plants in the framework of the EU ETS. The ERT acknowledges the efforts made by Bulgaria to review and improve the information used to estimate emissions. The ERT recommends that Bulgaria include more detailed information on the methodology and verification activities done, and in particular on the types of cement produced in the country and the composition of cement and clinker, in the NIR of its next inventory submission.

Lime production – CO_2

71. The tier 1 methodology has been used to estimate emissions from this key category. AD are supplied by the NSI and the IPCC default EF has been used. The ERT encourages Bulgaria, in its next inventory submission, to implement a tier 2 methodology taking into account the composition of lime in estimating the EF, in line with the IPCC good practice guidance.

Ammonia production – CO_2

72. CO_2 from ammonia production is a key category on level and trend assessment, accounting for 1.3 per cent of total national base year emissions. In response to the recommendation of the previous ERT, the EF for ammonia production has been recalculated on the basis of the application of the analytical method in which the expenditure standards of non-energy natural gas for ammonia production are reported. The ERT encourages Bulgaria to provide more detailed information on methodology used to estimate CO_2 emissions from ammonia production in the NIR of its next inventory submission.

Nitric acid production – N_2O

73. The NIR states that the method used to estimate N_2O emissions from this source is a country-specific methodology taking into consideration the technologies in use in Bulgaria. No detailed information is provided in the NIR. The ERT encourages Bulgaria to provide more detailed explanations of the methodology in order to increase transparency in the NIR of its next inventory submission.

74. For some years, the AD for nitric acid production is confidential; however, data are available for 1990–1999, 2001 and 2002. The ERT encouraged Bulgaria to reassess the need to treat the AD as confidential in the time series. If the AD continues to be confidential, the ERT encourages Bulgaria to report all the relevant information, thus facilitating the review.

75. Future improvements are possible on the basis of information collected in the framework of the EPER registry. Bulgaria is encouraged to use this information to validate, and if necessary, revise the EF value used.

Iron and steel production – CO_2

76. CO_2 from iron and steel production is a key category on level and trend assessment, accounting for 3.9 per cent of total national base year emissions. Emissions from the combustion of fossil fuels in external units, such as blast furnace cowpers and sinter furnace burners, are reported under the energy sector, while the emissions originating from the internal processes where C can act as a fuel and a reduction agent are allocated under the industrial processes sector. The EFs are determined by taking into account the steel production technologies (basic oxygen furnace and electric arc furnace) and analysis following the CORINAIR methodology. As this is a key category and the largest single contributor of emissions to the industrial processes sector, the ERT encourages Bulgaria to improve documentation of the methodology in the NIR in its next inventory submission, including basic information regarding methodology, the calculation of the EFs and the verification of activities.

77. AD are reported for steel production only for 1999, 2001 and 2004, and for pig iron and coke production only for 1999 and 2001; the AD are confidential for the other years. During the in-country review the confidential AD for the base year have been provided to the ERT. The ERT encourages Bulgaria to reassess the need for confidential information. The ERT also recommends that Bulgaria

report in the NIR all relevant information which could help the review if the AD continues to be confidential. The relevant information could include the number of plants, the production process and the total steel production capacity.

Non-key categories

Limestone and dolomite use – CO_2

78. In response to the recommendations of the 2005 ERT review report, emission estimates for limestone and dolomite use have been provided for the whole time series on the basis of a revision and actualization of AD for the whole period 1988–2004. The estimate includes the use of carbon as a reducing agent in the iron and steel industry. The ERT acknowledges Bulgaria's efforts in this respect.

Aluminium production – CO_2 and PFCs

79. Bulgaria reported AD for secondary aluminium production and reported "NO" for CO_2 and PFC emissions. CO_2 emissions were reported in the previous version of the 2006 inventory submission. During the in-country review visit, Bulgaria explained that this category was revised because only secondary aluminium is produced, that is, by casting of aluminium blocks for wire production, and no emissions occur from the process. The ERT recommends that Bulgaria report "NO" for AD and emissions in its next inventory submission.

Consumption of halocarbons and SF_6 – HFCs

80. Potential emissions for HFCs have been reported for the years from 1995 to 2004. Actual emissions for HFCs (HFC-134a) have been reported for the year 1995 only. Following the recommendation of the previous ERT and the IPCC good practice guidance Bulgaria added potential HFC emissions to the national total when actual emission data are not available, reporting them in the summary table and in the trend tables. The NIR does not provide a reference on how actual HFC emissions were estimated in 1995. In the course of the in-country review visit, Bulgaria explained that a bottom-up approach was applied to estimate these emissions. The method is consistent with the IPCC good practice guidance. The ERT encourages Bulgaria to make further efforts to estimate actual HFC emissions for the entire time series as this source is likely to become a key category in future, and to include an explanation of the estimation methodology in the NIR of its next submission.

Solvent and other product use – other – N_2O

81. In its original 2006 submission, Bulgaria reported the use of N_2O for the anaesthesia sub-category as "NE". After the in-country review visit, in response to the ERT's recommendations, Bulgaria submitted estimates of these emissions for the base year (0.08 Gg N_2O) and for 2004 (0.07Gg N_2O). The estimates are based on the assumption that 60 per cent of the operations that are reported for Switzerland are carried out in Bulgaria. The ERT agreed that this value is appropriate and that Bulgaria fully document the assumptions made in its next inventory submission.

82. In the original 2006 submission, Bulgaria reported N2O from the aerosol cans sub-category as "NE". After the in-country review visit, in response to the ERT's recommendations, Bulgaria submitted estimates of these emissions for the base year (0.09 Gg N2O) and for 2004 (0.1 Gg N2O). The estimates are based on the assumption that the intensity of using aerosols is the same as in Switzerland (10 grams per person per year of N2O emissions). The ERT agreed that this value was appropriate and that Bulgaria fully document the assumptions made in its next inventory submission.

83. In the original 2006 submission, Bulgaria reported CO_2 emissions from the pharmacy sub-category as "NE". After the in-country review visit, in response to the ERT's recommendations, Bulgaria submitted estimates of these emissions for the base year (0.32 Gg CO_2) and for 2004 (0.27 Gg CO_2). The estimates were derived based on the conversion of non-methane volatile organic compounds

(NMVOCs) applying the Swiss conversion coefficient (2,53 Gg CO_2/Gg NMVOCs). The ERT agreed that this value is appropriate and recommends that Bulgaria fully document the assumptions made in its next inventory submission.

84. In its original 2006 submission, Bulgaria reported the CO_2 emissions from the use of lacquers and solvents sub-category as "NE". After the in-country review visit, in response to the ERT's recommendations, Bulgaria submitted estimates of these emissions for the base year (22.74 Gg CO_2) and for 2004 (4.33Gg CO_2). These estimates are based on the Swiss conversion coefficient from NMVOCs to CO_2. The ERT agreed that this value is appropriate and that Bulgaria fully document the assumptions made in its next inventory submission.

7. Agriculture

Sector overview

85. In 1988, emissions from the agricultural sector in Bulgaria amounted to 14,559.02 Gg CO_2 eq., accounting for 11.0 per cent of total national GHG emissions. Agriculture was responsible for 26.5 per cent of total national CH_4 emissions and 72.8 per cent of total national N_2O emissions. The largest categories in the sector were N_2O emissions from agricultural soils (53.2 per cent of sectoral emissions), followed by CH_4 emissions from enteric fermentation (27.8 per cent of sectoral emissions) and CH_4 emissions from manure management (17.7 per cent of sectoral emissions).

86. The ERT noted that Bulgaria has good disaggregated animal population data and that it provided complete livestock characteristics for all categories. This is in line with the IPCC good practice guidance. However, animal population numbers reported by the Food and Agriculture Organization of the United Nations (FAO) and those reported in the CRF differ. For example, the differences between FAO data and the CRF data with regard to mules and asses was 49 per cent in 2004, which was not explained in the NIR. During the in-country review, Bulgaria explained that the reason for this difference is the different classification used by the FAO and the UNFCCC. The ERT encourages Bulgaria to explain the differences in the NIR of its next inventory submission.

87. Also, the ERT noted high interannual variability in both the AD and emissions during the years 1991–94 and 2000–2001. Bulgaria explained that as irrigation was vastly reduced all agricultural activities depend heavily on rainfall. In dry years many animals are slaughtered to reduce the cost of feeding. The fluctuations of the market price for animals also affect animal populations because farmers tend to sell more animals when the prices are higher. The ERT recommends that Bulgaria include this information and clarify the causes of interannual variability in the trends of both the emissions and the AD in the NIR of its next submission.

88. The NIR lacks a detailed description of the methods and EFs applied for the calculation of emissions from some categories in the agriculture sector. The ERT also recommends that Bulgaria explain in more detail the methods and EF used.

89. Tier 1 methods and IPCC default EFs were applied to estimate emissions from enteric fermentation – CH_4 , direct emissions from soils – N_2O, indirect emissions from soils – N_2O, and emissions from pasture, range and paddock manure –N_2O, which is not in line with the IPCC good practice guidance for key categories. The ERT encourages Bulgaria to use higher-tier methods to estimate emissions from these key categories. During the in-country review visit, the ERT was informed that Bulgaria intends to do so as resources become available.

Key categories

Manure management – CH_4

90. Contributions to CH_4 emissions of the emissions from cattle, swine and sheep are the most significant among the animal population in Bulgaria. A tier 2 method was applied to calculate emissions from cattle and swine, but not from sheep. The ERT encourages Bulgaria to use a higher-tier methodology also for the third most significant animal category (sheep).

91. The same value of CH_4 producing potential (Bo) of 0.2 m^3 CH_4/kg volatile solids) has been used for both dairy and non-dairy cattle, while the IPCC default values for eastern Europe are 0.24 m^3 CH_4/kg volatile solids for dairy cattle and 0.17 m^3 CH_4/kg volatile solids for non-dairy cattle. The ERT recommends that Bulgaria use these IPCC default values to estimate emissions from dairy and non-dairy cattle separately in its next inventory submission.

Non-key categories

Rice cultivation – CH_4

92. The ERT noted that an EF of 40.27 g/m^2 is applied for the estimation of CH_4 emissions from rice cultivation. This EF is higher than the revised IPCC EF (20 g/m^2). The NIR explains that the EF is based on the expert assessment taking into consideration the water regime for the rice crops in Bulgaria, but no further justification for such expert assumptions is provided. During the in-country review, the ERT received some explanation and encourages Bulgaria to document the choice of the EF in its next inventory submission.

Field burning of agricultural residues – CH_4 and N_2O

93. Field burning of agricultural residues is banned in Bulgaria, but the activity still occurs illegally. The ERT noted that the accuracy of the AD is questionable. Bulgaria explained that emissions calculations are based on the actual data reported by the law-enforcing institutions (police, fire services, and municipalities). The ERT commends Bulgaria's efforts to continue to estimate and report this source and encourages Bulgaria to provide an explanation for this data collection in the NIR of its next inventory submission.

8. Land use, land-use change and forestry

Sector overview

94. In the base year, the LULUCF sector represented a net sink of 5,049 Gg CO_2 eq. The forest land category has an overriding influence on the sector, and accounted for removals of 5,137 Gg CO_2.

95. Bulgaria does not estimate non-CO_2 emissions, CO_2 emissions/removals from land-use change, or C stock changes in cropland and grassland soils and biomass. These omissions could potentially result in a significant bias (over- or underestimation) in the LULUCF sector. The ERT recommends that Bulgaria use a tier 1 approach to quantify the approximate contribution of C stock changes on cropland and grassland soils (at least for the most important crop- and grassland types), and biomass burning emissions, and to prioritize and report these improvements accordingly in its future inventory submissions.

96. In general, the NIR provides very limited information on the methodologies and AD used to estimate the emissions/removals in the LULUCF sector. The NIR does not explain how land categories as defined in the IPCC good practice guidance are implemented in Bulgaria. The ERT recommends that Bulgaria describe its land categories, methodologies and data collection in its next inventory submission.

97. During its in-country review visit the ERT noted that several experts from the State Forestry Agency (formerly the Forestry Board), the Energy Institute and the Agriculture Research Institute were directly or indirectly involved in method development, data collection, and to some extent QA/QC activities. The ERT encourages Bulgaria to establish formal institutional arrangements and procedures to draw on national science and expertise, and document the contribution of this expertise in the preparation and quality control of the LULUCF estimates.

98. Bulgaria did not present an improvement plan for the LULUCF sector. The ERT encourages Bulgaria to develop such a plan, prioritizing the justification and complete documentation of country-specific methodologies and EFs, especially for forest land, and identified gaps in its reporting.

Key categories

Forest land remaining forest land – CO_2

99. During the in-country visit, the ERT found that Bulgaria has very detailed forest inventory information; its development and maintenance are the responsibility of the State Forestry Agency. For the 2006 submission, the State Forest Agency provided, as requested by the ExEA, a single increment value of 15 million m^3 in 2004, and a volume of cut wood of 7.618 million m^3. The ERT noted discrepancies in stock and harvest volumes between the values provided in NIR chapters 2 and 7 (growing stock of 530 and 591 million m^3 respectively, and harvest of 6.83 against 76.18 million m^3, although Bulgaria clarified the order of magnitude error in chapter 7 during the in-country review visit).

100. Chapter 7 of the NIR explains that volume increments are recalculated every five years when the forest inventory is updated. However, the ERT noted that the request form submitted by the ExEA to the Forestry Board does not allow for the entering of recalculations. The ERT strongly recommends that for each inventory submission the State Forest Agency provide estimates of annual volume increments for the full time series, if possible disaggregated by major forest regions, and indicate where and why recalculations have occurred.

101. During the review the ERT was informed that the Energy Institute uses a single average biomass density of 0.6 t dry matter/m^3 for all the forests in Bulgaria. The volume increment and the average biomass density are multiplied to estimate gross removals; these two values therefore have a large influence on total sinks. The calculation procedures, and especially the calculation of a volumetric increment of total aboveground biomass, appear to be specific to Bulgaria; however, there is no written description of this estimation procedure, although there seem to be extensive background data on standing tree volumes. The ERT believes that the lack of a description of the procedure used creates a transparency issue. The ERT recommends that Bulgaria prepare for its next inventory submission a detailed methodological report providing a rationale for method and data selection, describing the approach, calculations and data used, discussing observed trends in terms of the main drivers and assessing sources of uncertainty.

102. Direct CO_2 and non-CO_2 emissions from forest fires – which are known to occur – are reported as "NE", although the effect of stand mortality on age-class distribution is considered. The ERT recommends that Bulgaria, in its next inventory submission, estimate direct fire emissions and include them in total C stock changes, following the guidance in chapter 3 of the IPCC good practice guidance for LULUCF.

103. Wherever the "NE" and "NO" notation keys are used in the CRF – notably in net C stock change in dead organic matter and forest area with organic soils – the ERT recommends that Bulgaria use the documentation box to refer to appropriate explanations in the NIR in its next inventory submission.

Wetlands remaining wetlands – CO_2

104. The approach and EFs from Annex A 3.3 of the IPCC good practice guidance have been used to estimate CO_2 emissions from all lakes, rivers, reservoirs and marshes in Bulgaria, which are reported as a negative C stock change in the biomass pool. The ERT notes that this reporting is optional and commends Bulgaria's efforts.

9. Waste

Sector overview

105. In the base year, the waste sector in Bulgaria contributed 9.6 per cent (12,743.27 Gg CO_2 eq.) to total national CH_4 emissions. Sectoral GHG emissions decreased by 30.8 per cent from the base year to 2004, notably as a result of the decrease of the population and of the waste generation rate.

Key categories

Solid waste disposal on land – CH_4

106. In the base year, CH_4 emissions from solid waste disposal on land contributed 8.0 per cent to total national emissions. They accounted for 85.2 per cent of sectoral CH_4 emissions. The IPCC tier 2 method has been used for the first time in Bulgaria to estimate these emissions. The ERT commends this improvement.

107. The waste generation rate (kg per capita per day), the fraction of waste landfilled and the population are provided in the NIR for 1988 and 1990–2004. During the in-country review the ERT could not reproduce the amount of waste using the waste generation rate and the population figures. The ERT noted that the waste generation rate decreases from 2.36 kg of waste per capita per day in 1988 to 1.09 kg of waste per capita per day in 2004, with a maximum of 2.59 in 1991 and 1992. This value is very high in the first years of the time series compared to the regional value for the Eastern European countries described in the IPCC good practice guidance and to those of other Eastern European countries. The ERT recommends that Bulgaria justify the waste generation rate and, if necessary, revise it, and improve documentation of the waste generation rate and explanations of the interannual variations.

108. The composition of landfilled waste has been provided for the years 2000–2004, but it has not been used for the estimation of CH_4 emissions from solid waste disposal on land. CH_4 generation potential (L0) of the landfilled waste and the CH_4 generation rate constant (k), are not provided in the NIR. During the in-country review, the inventory compiler provided these values, namely 104.5 m_3 CH_4 per tonne of waste for L0 and 0.2 per year for k. The other parameters applied in the first order decay (FOD) model used by Bulgaria are the IPCC default values. The k value used is higher than the IPCC default value and higher compared to the values applied in the other Eastern European countries. The ERT considered that the k value used is too high, which could lead to an overestimation of the CH_4 emissions from solid waste disposal on land in the base year. The ERT recommends that Bulgaria either justify the values used in the FOD model, calculate k and degradable organic carbon (DOC) values based on the waste composition, or use the IPCC default values and recalculate the CH_4 emissions estimates for the whole time series. Sound statistical methods should be used to fill in the missing data for waste composition.

109. After the in-country review visit, in the response to this ERT request, Bulgaria revised the k value from 0.2 to 0.105, calculated the DOC and L0, revised the CH_4 estimates from solid waste disposal on land and provided some background documentation. The revisions resulted in a reduction of CH_4 emissions from solid waste disposal on land by 0.7 per cent in the base year (10,587.86 Gg CO_2 eq. compared to the original estimate of 10,661.98 Gg CO_2 eq.) and an increase by 26.5 per cent in 2004 (7,431.05 compared with the original estimate of 5,872.37 Gg CO_2 eq.). The ERT agrees with the revised figures.

110. Bulgaria uses the value of the oxydation factor (OX) = 0, which is lower than the default value (0.1) recommended in the IPCC good practice guidance for industrialized countries. The ERT encourages Bulgaria to justify the choice of the oxidation factor or to apply the IPCC default value in its next inventory submission.

Wastewater handling – CH_4

111. In the base year, CH_4 emissions from wastewater handling accounted for 14.8 per cent of sectoral CH_4 emissions. Bulgaria has used the IPCC tier 1 method for this key category which is not in line with the IPCC good practice guidance. The AD, EFs and emissions are provided in the CRF, however, detailed information on methods and parameters applied as well as sources of data used are not provided in the NIR. The ERT recommends that Bulgaria provide this information in the NIR of its future submissions, including an explanation of trends, and use a higher-tier estimation for this key category.

112. The ERT noted that CH_4 emissions from sludge are reported separately while separation and use of this sludge is not reported in the NIR. The non-use of sludge in agriculture should be specified in the NIR. In case of non-separation of the sludge from wastewater, CH_4 emissions should be estimated respectively for domestic wastewater and for industrial wastewater. The ERT also noted that combustion of sludge has been reported in the NIR, in the energy sector, but not in the CRF under the waste sector. The ERT recommends that Bulgaria improve the transparency of reporting by providing clarifications with regard to sludge generation and usage in its next inventory submission.

Non-key categories

Waste incineration – CO_2 and N_2O

113. Waste incineration is reported as "NO" for the entire time-series. The ERT was informed that incinerators in Bulgaria were closed in 2006 for not complying with the environmental regulations, except for two medical incinerators in Sofia, for which data was provided for the year 2004. The ERT recommends that Bulgaria amend the notation key in the corresponding CRF table from "NO" to "NE" and provide estimates for this category for the years where data for estimations are available.

C. Calculation of the assigned amount

114. The assigned amount pursuant to Article 3, paragraphs 7 and 8, is not calculated in accordance with the annex to decision 13/CMP.1.

115. Bulgaria's base year is 1988 and the Party has chosen 1995 as base year for HFCs, PFCs and SF_6. Bulgaria's quantified emission limitation is 0.92 as included in Annex B to the Kyoto Protocol.

116. Based on Bulgaria's original base year emissions – 132,676.00 Gg CO_2 eq. – and its Kyoto Protocol target of 92 per cent, the Party calculates its assigned amount to be 610,309,614 tonnes CO_2 eq. The ERT disagrees with this figure as Bulgaria included the potential emissions, not the actual emissions of F-gases in 1995, in the calculation of the base year.

117. In response to inventory issues identified during the review, Bulgaria submitted revised estimates of its base year inventory (132,618.64 Gg CO_2 eq.) which resulted in a recalculation of the assigned amount (610,045,753 tonnes CO_2 eq.). The ERT disagrees with this figure and calculates the base year emissions to be 132,618,658 tonnes and the assigned amount to be 610,045,827 tonnes CO_2 eq. The slight difference in the assigned amount is due to the rounding up of the estimates of F-gas emissions and the 1988 emissions at the disaggregated level.

D. Calculation of the commitment period reserve

118. The calculation of the required level of the CPR is not in accordance with paragraph 6 of the annex to decision 11/CMP.1.

119. Based on its national emissions in the most recently submitted inventory of 2005 (submission 2007) – 69,994.88 Gg CO_2 eq. – Bulgaria calculates its CPR to be 349,974,395 tonnes CO_2 eq. The ERT disagrees with this figure, as the most recently reviewed inventory of 2004 (submission 2006) should have been used.

120. In response to inventory issues identified during the review, Bulgaria submitted revised estimates of its most recently reviewed (2004) inventory – 70,708.88 Gg CO_2 eq. – which resulted in a recalculation of the CPR. Based on the revised estimates, Bulgaria calculates its CPR to be 353,544,400 tonnes CO_2 eq. The ERT agrees with this figure.

E. National registry

121. Bulgaria has provided some information on the national registry system, as required by the reporting guidelines under Article 7, paragraphs 1 and 2, of the Kyoto Protocol (decision 15/CMP.1). The provided information is transparent to some extent and broadly follows the requirements of these reporting guidelines.

122. The ERT visited the premises of the registry and after discussions with the national expert responsible for the registry and the national focal point, concluded that the implementation of the registry is at a very early phase. The hardware is in place, the software is under installation, the documentation pack is under preparation, however, the initialization tests have not been taken and arrangements for subsequent regular maintenance of the registry have not been finalized. Bulgaria uses the GRETA software which was installed at the ExEA by the Danish Environmental Protection Agency on a private contract.

123. The ERT noted that Bulgaria has not yet allocated sufficient resources for the development, operation and maintenance of the national registry under the Kyoto Protocol and has not yet officially nominated a registry administrator at the time of the in-country review visit. Moreover, the timeline for the completion of the initialization process and the date when the national registry will be fully operational has not yet been defined.

124. During the in-country visit, the ERT was provided with the additional and updated information on the national registry and was informed about outsourced installation of the national registry. The ERT was also informed that the internal operational test of the registry for network connection has not yet begun. The ERT requested that Bulgaria develop a plan which includes a time schedule for the implementation of the national registry following the annex to decision 13/CMP.1. The ERT recommended that Bulgaria accelerate, as far as practical, the implementation schedule for the registry in order to comply with the relevant requirements of the Kyoto Protocol.

125. In response to the questions identified by the ERT, Bulgaria provided a time schedule for the implementation of the national registry following the annex to decision 13/CMP.1. Following the time schedule, the initialisation process is expected to be completed by February 2008 and the registry to be fully operational four weeks after the CITL is available. Ms. Gergana Dimova, the ExEA, has been named as the registry administrator. Information on the registry, however, is not yet publicly available.

126. The ERT was informed of the procedures and security measures to minimize discrepancies, terminate transactions and correct problems, and minimize operator error. These procedures and security measures include access restrictions to the registry via username and password and applying validation to all user inputs. The ERT acknowledges the effort made by Bulgaria to put in place these procedures and security measures. The ERT gained the overall impression that Bulgaria attached some importance, and allocated some resources, including human resources, to the development, operation and maintenance of the registry.

127. 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 independent assessment report (IAR) that was forwarded to the ERT by the administrator of the international transaction log (ITL), pursuant to decision 16/CP.10, on 10 April 2008.

128. The ERT reiterated the main findings of this report, including that the registry has fulfilled all its obligations regarding conformity with the data exchange standards (DES). 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.

129. Table 6 summarises the information on the mandatory reporting elements on the national registry system, as stipulated by decisions 15/CMP.1, which describes how its national system performs functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1.

Table 5. Summary of information on the national registry system

Reporting element	Provided in the initial report	Comments
Registry administrator		
Name and contact information	Yes	Has been named during the review − Ms. Gergana Dimova, the ExEA
Cooperation with other Parties in a consolidated system		
Names of other Parties with which Bulgaria cooperates, or clarification that no such cooperation exists.	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	Covered in the Independent Assessment Report (IAR)[a]
Conformity with data exchange standards (DES)		
Description of how the national registry conforms to the technical DES between registry systems	Yes	Covered in the IAR
Procedures for minimizing and handling of discrepancies		
Description of the procedures employed by the national registry to minimize discrepancies in the transaction of Kyoto Protocol units	Yes	Covered in the IAR
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	Covered in the IAR
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	Covered in the IAR
User interface of the national registry		
A list of the information publicly accessible by means of the user interface to the national registry	Yes	Covered in the IAR
The Internet address of the interface to Bulgaria's national registry	Yes	http://www.etr.moew.government.bg Covered in the IAR
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	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	Covered in the IAR

[a] Pursuant to decision 16/CP.10, once registry systems become operational, the administrator of the ITL is requested to facilitate an interactive exercise, including 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 be also included in its annual report to the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol.

130. Based on the results of the technical assessment, as reported in the IAR report, the ERT concluded that Bulgaria's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 5/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

131. Table 7 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	10 %	
Minimum land area	0.1 ha	
Minimum tree height	5 m	
Elections for Article 3, paragraphs 3 and 4, activities		
Article 3.3 activities	**Election**	**Accounting period**
Afforestation and reforestation	Mandatory	Commitment period
Deforestation	Mandatory	Commitment period
Article 3.4 activities		
Forest land management	Not elected	Not applicable
Cropland management	Not elected	Not applicable
Grazing land management	Not elected	Not applicable
Revegetation	Not elected	Not applicable

132. The parameters chosen for the definition of forest are within the agreed values in decision 16/CPM.1 and are consistent with what Bulgaria has reported to the FAO.

133. The ERT noted the absence of land-use change information in Bulgaria's annual inventory. As it has been mandatory during the commitment period to report on afforestation, reforestation and deforestation activities since 1990, the ERT strongly recommends that Bulgaria invest appropriate resources in identifying the relevant expertise and resources to meet this reporting requirement.

III. Conclusions and recommendations

A. Conclusions

134. The information in the initial report generally covers the elements required by 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. Additional information on all elements of this report was provided to the ERT during the in-country review.

135. Bulgaria's national system is generally prepared in accordance with the guidelines for national systems under Article 5, paragraph 1 of the Kyoto Protocol (decision 19/CMP.1) and reported in accordance with the guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol (decision 15/CMP.1). During the in-country review the ERT noted that the presentation of some of the mandatory elements of the national system is not fully in line with Article 5 paragraph 1 of the Kyoto Protocol and requested Bulgaria to provide additional information. After the in-country

visit, Bulgaria provided the required additional information and the ERT concluded that the national system is in line with the guidelines for national systems.

136. Bulgaria has provided its GHG inventory data for the years 1988–2004, and has included most of the tables required with data on all relevant gases and categories. Bulgaria's GHG inventory is in general consistent with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. During the in-country review the ERT identified a few categories where methods or EFs used were not fully in accordance with the IPCC good practice guidance and this might lead to overestimation of emissions in the base year or underestimation of emissions in the most recent years. The ERT recommends that Bulgaria revise its estimates for these categories. After the in-country review, Bulgaria provided revised estimates for these categories for the base year and 2004 in accordance with the recommendations of the ERT and in line with the IPCC good practice guidance. These revisions resulted in the revision of the base year emissions, the assigned amount and the CPR.

137. The ERT did not recommend any adjustments to Bulgaria's GHG inventory, and noted that the assigned amount and CPR, as calculated to incorporate the revised estimates submitted during the review and, after slight amendment by the ERT, are in accordance with the modalities for the accounting of assigned amounts under Article 7, paragraph 4 of the Kyoto Protocol (decision 13/CMP.1) and decision 11/CMP.1. The ERT confirms that Bulgaria's assigned amount is 610,045,827 tonnes CO_2 eq. based on its base year emissions (132,618,658 tonnes CO_2 eq., including the revised estimates provided). Bulgaria's CPR is 353,544,400 tonnes CO_2 eq. based on its 2004 emissions (70,708.88 Gg CO_2 eq., including the revised estimates provided). The ERT agrees with these figures.

138. Bulgaria has also identified all the required information on parameters and elections for LULUCF under Article 3, paragraph 3, of the Kyoto Protocol in accordance with decision 16/CMP.1. This includes a minimum tree crown cover of 10 per cent, minimum land area of 0.1 hectares and a minimum tree height of 5 metres. Bulgaria has chosen to account for Article 3, paragraph 3, activities for the entire commitment period and has not elected any activities for Article 3, paragraph 4.

139. Bulgaria has provided some 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). During the initial review visit, the ERT was provided with additional and updated information on the national registry.

140. Based on the results of the in-country review visit and the technical assessment, as reported in the IAR, the ERT concluded that Bulgaria's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 5/CMP.1, noting that the registry does not have an obligation regarding operational performance or public availability of information prior to the operational phase.

B. Recommendations

141. In the course of the review, the ERT formulated a number of recommendations relating to the completeness and transparency of Bulgaria's information presented in the initial report. Most of the recommendations were implemented during the review process, including those relating to the national system, and the potential problems that could have led to overestimation of emissions in the base year have been resolved. The key remaining recommendations[3] are that Bulgaria should:

(a) Implement the capacity development plan to ensure sufficient capacity of the national system for timely performance of the functions described in the guidelines for national systems;

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

(b) Further demonstrate its capacity to plan and prioritise improvements and to document emissions and removals from land-use change;

(c) Implement the QA/QC plan as outlined, including the development of the archiving system.

142. The ERT also formulated a number of recommendations relating to Bulgaria's GHG inventory submission, the key of these are that Bulgaria should:

(a) Improve the transparency of the estimates by providing in its NIR more precise descriptions of methodologies, EFs, data collection and processes for dealing with confidential information;

(b) Revise and improve the use of notation keys, including the notation key for confidential data;

(c) Provide a key category assessment including LULUCF.

C. Questions of implementation

143. No questions of implementation have been identified by the ERT during the initial review.

Annex I

Documents and information used during the review

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. Bulgaria: Report of the individual review of the greenhouse gas inventory submitted in the year 2005. FCCC/WEB/ARR/2005/BGR. Available at: <http://unfccc.int/resource/docs/2006/arr/bgr.pdf>.

UNFCCC secretariat. Bulgaria: Independent assessment report of the national registry of Bulgaria. Reg_IAR_BG_2008_1. Will be available at <www.unfccc.int>.

Additional information provided by the Party

Responses to questions during the review were received from Mr. Stefan Dishovsky, Ms. Maria Grozeva Sokolovska (Ministry of Environment and Water), Ms. Detelina Petrova, Mr. Valery Serafimov, Mrs. Eva Nikolova, Ms. Gergana Dimova (Executive Environment Agency), Mr. Christo Christov, Mr. Christo Vassilev, Ms. Violeta Christova (Energy Institute). Mr. Stefan Tzonev, Ms. Stoyanka Mastikova, Mr. Petar Petrov (National Statistical Institute), Mr. Nikolai Tashev, Ms. Mustafa Sevginar (Ministry of Agriculture and Food), Mr. Nikolay Vasilev, Mr. Nikolai Ionov, Mr. Ilia Angelov, Mr. Vladimi Hadzhiyski (National Forestry Agency), including additional material on the methodology and assumptions used.

Council of Ministers. Decision No 7. Rules and procedures. 19 January 2007.

Danish Environmental Protection Agency. Ministry of Environment and Water. Implementation of Commission Regulation (EC) 2216/2004 on a Standardized Transaction Registry in Bulgaria. Project proposal on Registry project. May 2005.

Danish Environmental Protection Agency. Ministry of Environment and Water. Implementation of the EU Directive 2003/87 and the EU Decision 280/2004/EC in Bulgaria. Project proposal for the registry. May 2005.

Executive Environmental Protection Agency. A description of the national GHG inventory system in Bulgaria, provided during the review visit.

Executive Environmental Agency. 2006. Technical specification of the agreement for the preparation of the GHG inventory.

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Ministry of Environment and Water. Minutes of the meeting regarding the change of the responsibilities of the inventory preparation process of 11 January 2006. (in Bulgarian)

References used in the energy sector

National Statistics of Bulgaria. 1997. Annual yearbook. Elementary analysis of coal and other fuels and calorific values.

References used in the industrial processes sector

Bulgarian GHG emission inventory of fluorinated gases included in the Kyoto Protocol (included in "GHG emission inventory prepared for the 3rd national communication in the framework of the UNFCCC convention", Energoproekt). August 2000. (in Bulgarian)

Consumption estimate of fluorinated gases for 2005 distinguished by gas as collected by the Air Protection Department of the Ministry of Environment and Water. (in Bulgarian)

Emission Inventory data reporting under the UNECE Convention (NFR) for 2005. (excel file)

References used in the agriculture sector

Ministry of Agriculture and Forestry, 2005. Agricultural census in Bulgaria 2003 results, Sofia, Agro Statistics.

Ministry of Agriculture and Forestry. 2006. Structure of agricultural holdings in Bulgaria's crop year 2004/2005. Final results. September 2006.

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

Kristanov Kr., Raikov R., Handbook for dendrobiometrics, 2004. Bulprofor. Sofia. 2004.

Library of Congress of the USA. National study to address climate change of Bulgaria. 1996. (in Bulgarian)

Library of Congress of the USA. Country profile: Bulgaria. October 2006.

References used in the waste sector

Total amounts of medical waste incinerated at 2 incinerators in Sofia for 2004 per waste type. Table.

Annex II

Acronyms and abbreviations

AD	activity data
C	carbon
CH_4	methane
CITL	Community international transaction log
CMP	Conference of the Parties serving as the Meeting of the Parties
CO_2	carbon dioxide
CO_2 eq.	carbon dioxide equivalent
CORINAIR	a programme to establish an inventory of emissions of air pollutants in Europe. It was a part of the Corine (Coordination of information on the environment) work programme at the European Council of Ministers.
CPR	commitment period reserve
CRF	common reporting format
DES	data exchange standards
DOC	degradable organic carbon
EC	European Community
EF	emission factor
ERT	expert review team
EU	European Union
EU ETS	European Union emissions trading scheme
EPER	the European Pollutant Emission Register
ExEA	the Executive Environmental Agency
FAO	Food and Agriculture Organisation of the United Nations
F-gas	fluorinated gas
FOD	first order decay
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
Gg	gigagrams
HFCs	hydrofluorocarbons
IAR	Independent Assessment Report
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ITL	International transaction log
(L0)	CH_4 generation potential
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
m^3	cubic metre
MoEW	the Ministry of the Environment and Water
NA	not applicable
NCV	net calorific value
NMVOCs	non-methane volatile organic compounds
NSI	National Statistical Institute
N_2O	nitrous oxide
NE	not estimated
NIR	national inventory report
NO	not occurring
OX	oxydation factor
PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
SF_6	sulphur hexafluoride
TJ	terajoule (1 TJ = 10^{12} joule)
UNFCCC	United Nations Framework Convention on Climate Change
UNE-CE/CLRTAP	United Nations Convention for Long Range Transboundary Air Pollution

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