COMPLIANCE COMMITTEE

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11 January 2008

Report of the review of the initial report of Iceland

Note by the secretariat

The report of the review of the initial report of Iceland was published on 10 January 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/ISL, 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 Iceland

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 Iceland 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 Iceland, 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 18 to 23 June 2007 in Reykjavik, Iceland, and was conducted by the following team of nominated experts from the roster of experts: generalist – Mr. Vlad Trusca (Romania); energy – Ms. Sumana Bhattacharya (India); industrial processes – Ms. Kristine Zommere (Latvia); agriculture – Mr. Paul Duffy (Ireland); land use, land-use change and forestry (LULUCF) – Mr. Zoltan Somogyi (Hungary); waste – Ms. Medea Inashvili (Georgia). Ms. Sumana Bhattacharya and Mr. Paul Duffy 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, and took note of the LULUCF parameters and the elected Article 3, paragraph 4, activities. The review was coordinated by Ms. Keryn Oude-Egberink (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 Iceland, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

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 of Iceland was submitted on 11 January 2007, which is not in compliance with decision 13/CMP.1 With the initial report Iceland submitted a greenhouse gas (GHG) inventory on 26 January 2007 which contained updated GHG emission estimates compared to its original 2006 GHG inventory submission of 26 July 2006. In response to questions raised by the ERT during the course of the in-country review Iceland officially resubmitted its GHG inventory including revised emission estimates on 11 September 2007.

2. Completeness

4. Table 1 below provides information on the mandatory elements that have been included in the initial report and the revised values for the assigned amount and commitment period reserve resulting from revisions of the estimates as a result of the review process. Revised estimates were provided for carbon dioxide (CO_2) from paint application (3.A), degreasing and drycleaning (3.B); chemicals products, manufacture and processing (3.C); and other (3.D) (see paragraphs 62–63); methane (CH_4), from enteric fermentation – other – fur animals (4.A.10) (see paragraph 72); CH_4 and nitrous oxide (N_2O) from manure management – other livestock (4.B.10) – fur animals (see paragraph 80); and N_2O emissions arising from subsequent animal manures under agricultural soils (4.D.1.2, 4.D.3.1 and 4.D.3.2), (see paragraphs 75 and 77).

5. These revisions changed the estimates of total GHG emissions, including base year emissions, from 3,355.44 Gg CO_2 equivalent (CO_2 eq.) as originally reported by the Party to 3,367.97 Gg CO_2 eq., an increase of 0.4 per cent.

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 1990 to the most recent year available (2004)	Yes	1990–2004 (CO_2, CH_4, N_2O)
Base year for HFCs, PFCs and SF_6	Yes	1990
Agreement under Article 4	No	Not applicable
LULUCF parameters	Yes	Minimum tree crown cover: 10% Minimum land area: 0.5 ha Minimum tree height: 2m
Election and accounting period for Article 3, paragraphs 3 and 4, activities	Yes	Article 3, paragraph 3, activities: Afforestation, reforestation and deforestation are to be accounted for the entire commitment period. Article 3, paragraph 4, activities: Revegetation is elected and is to be accounted for the entire commitment period
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8	Yes	18 454 893 tonnes CO_2 eq.
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8, revised estimate	Yes	18 523 847 tonnes CO_2 eq.
Calculation of the commitment period reserve	Yes	16 609 404 tonnes CO_2 eq.
Calculation of the commitment period reserve, revised estimate	Yes	16 671 462 tonnes CO_2 eq.
Description of national system in accordance with the guidelines for national systems under Article 5, paragraph 1	Partially	The ERT noted that some mandatory elements of the national system were not presented fully in line with Article 5, paragraph 1, of the Kyoto Protocol (see paragraph 6).
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	

6. The information in the initial report generally covers the 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 initial report did not include complete information on institutional and procedural arrangements for inventory planning, preparation and management; the roles and responsibilities of certain collaborating entities, in accordance with decision 13/CMP.1 (see paragraphs 14–16); a quality assurance and quality control (QA/QC) plan in accordance with decision 19/CMP.1 (see paragraphs 20–22); information on the national registry in accordance with decision 15/CMP.1 (see paragraph 109); and how the national system will identify land areas associated with afforestation (A), reforestation (R) and deforestation (D) activities in accordance with 16/CMP.1 (see paragraphs 118–120).

7. Following the review and in response to the ERT's recommendations, Iceland provided additional information, including: details on the formal arrangements between certain key agencies involved in the preparation of the inventory, a description of the official approval process of the inventory, and details on the establishment of the Icelandic registry. Iceland also provided to the ERT a QA/QC plan and identified the appointment of a QA/QC manager. A detailed discussion of the completeness of the national system and QA/QC procedures are provided in section II.A of this report.

3. Transparency

8. The initial report is generally transparent. However, for its next inventory submission under the Kyoto Protocol, Iceland is recommended to include in the national inventory report (NIR) more information on the national system (institutional and procedural arrangements and a description of its

QA/QC plan and activities); the national registry; and how areas of land subject to LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol would be identified. The ERT also raised a number of transparency issues related to the 2006 inventory. A detailed discussion of the transparency of the national system and the 2006 GHG inventory is provided in section II of this report.

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

9. In the base year (1990 for all gases), the most important GHG in Iceland was CO_2, contributing 64.1 per cent to total[1] national GHG emissions expressed in CO_2 eq., followed by CH_4, 12.3 per cent, and N_2O, 11.0 per cent (see figure 1). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6) taken together contributed 12.6 per cent of the overall GHG emissions in the base year. SF_6 emissions are reported as a constant value over the entire time-series at 5.4 Gg CO_2 eq. The energy sector accounted for 52.6 per cent of the total GHG emissions in the base year, followed by industrial processes (25.7 per cent), agriculture (17.1 per cent) and waste (4.2 per cent) (see figure 2). Total GHG emissions in the base year (excluding LULUCF) amounted to 3,367.97 Gg CO_2 eq. and increased by 10.4 per cent from the base year to 2004.

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

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

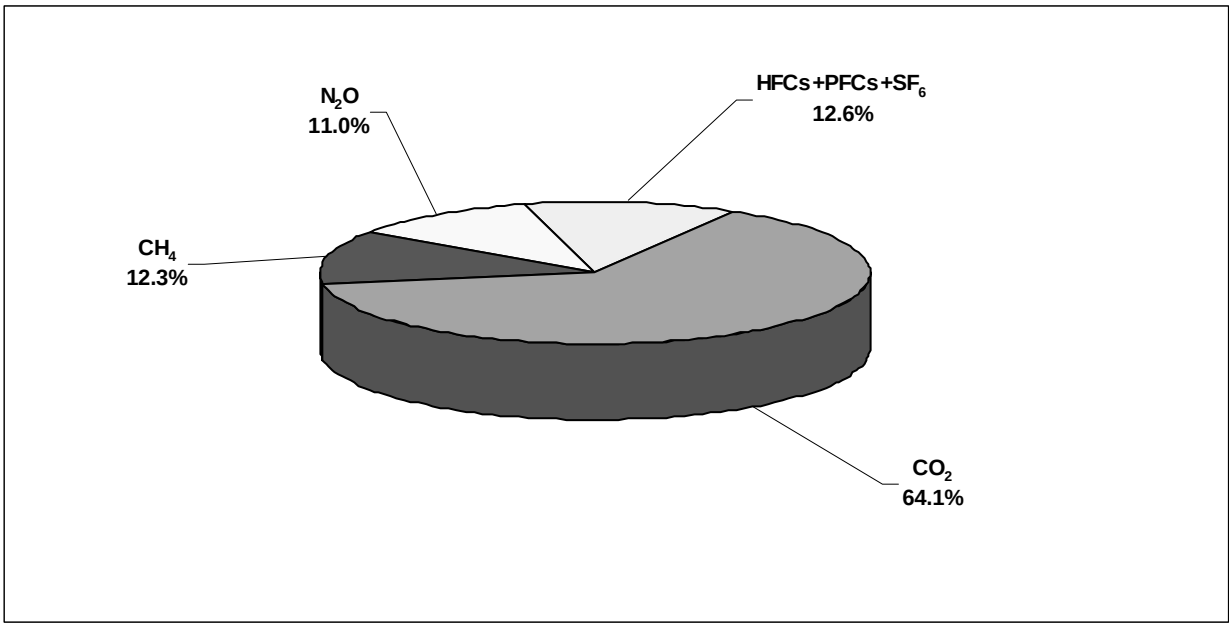
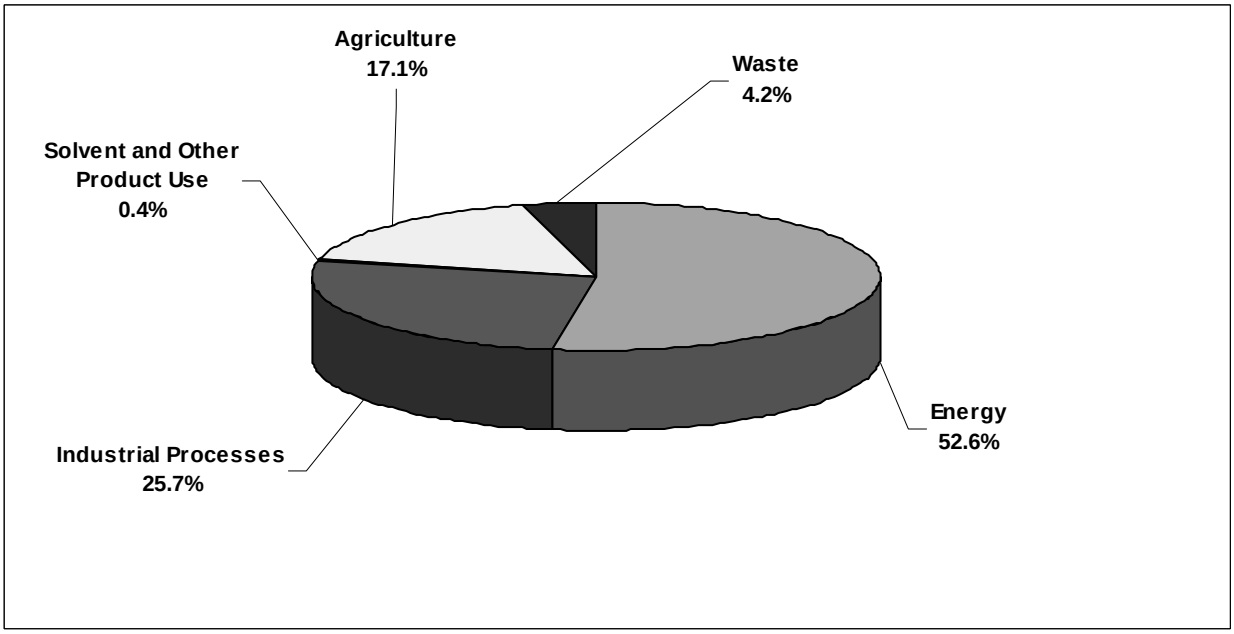


Figure 2. Shares of sectors in total GHG emissions, base year



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

11. Iceland's quantified emission limitation is 110 per cent as included in Annex B to the Kyoto Protocol.

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

GHG emissions (without LULUCF)	Gg CO_2 eq.								Change KP BY – 2004 (%)
	Base year (Kyoto Protocol)[a]	1990	1995	2000	2001	2002	2003	2004[a]	
CO_2	2 158.64	2 158.64	2 308.45	2 755.45	2 759.22	2 850.63	2 770.33	2 865.63	32.8
CH_4	413.95	413.95	407.53	424.67	428.74	431.53	417.31	416.53	0.6
N_2O	370.38	370.38	348.84	358.66	352.21	318.59	311.26	332.32	–10.3
HFCs	NA, NE, NO	NA, NE, NO	25.01	32.28	53.78	35.16	69.35	58.40	NA
PFCs	419.63	419.63	58.84	127.16	91.66	72.54	59.78	38.58	–90.8
SF_6	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	0.00

Note: BY = base year; KP = Kyoto Protocol; LULUCF = land use, land-use change and forestry; NA = not applicable; NE = not estimated; NO = not occurring.

[a] Iceland submitted revised estimates for the full time-series after the initial review on 11 September 2007. These estimates differ from Iceland's GHG inventory submitted in 2006.

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

Sectors	Gg CO_2 eq.								Change KP BY – 2004 (%)
	Base year (Kyoto Protocol)[a]	1990	1995	2000	2001	2002	2003	2004[a]	
Energy	1 770.58	1 770.58	1 901.78	2 036.10	1 999.14	2 075.45	1 999.18	2 081.27	17.6
Industrial processes	866.64	866.64	559.12	949.96	971.41	936.31	959.77	949.33	9.5
Solvent and other product use	13.94	13.94	14.09	14.89	16.69	12.95	10.05	10.32	–25.9
Agriculture	575.75	575.75	527.04	532.96	529.50	506.38	492.23	503.55	–12.5
LULUCF[b]	NA	2 095.19	2 032.73	1 946.80	1 930.44	1 910.26	1 886.58	1 851.24	NA
Waste	141.06	141.06	152.02	169.71	174.25	182.75	172.18	172.38	22.2
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (with LULUCF)	NA	5 463.16	5 186.78	5 650.41	5 621.43	5 624.10	5 519.99	5 568.08	NA
Total (without LULUCF)	3 367.97	3 367.97	3 154.05	3 703.61	3 690.99	3 713.84	3 633.41	3 716.84	10.4

Note: BY = base year; LULUCF = land use, land-use change and forestry; KP = Kyoto Protocol; NA = not applicable.

[a] Iceland submitted revised estimates for the full time-series after the initial review on 11 September 2007. These estimates differ from Iceland's GHG inventory submitted in 2006.

[b] The GHG emissions estimate for the LULUCF sector does not include any CO_2 emissions from deforestation. Net CO_2 emissions and removals from deforestation are reported as "NE''.

II. Technical assessment of the elements reviewed

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

12. The national system of Iceland is broadly prepared in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The ERT identified the following areas for improvement: provision of complete information on institutional and procedural arrangements for inventory planning, preparation and management, in particular the roles and responsibilities of all necessary collaborating entities (see paragraphs 14–16); identification of a formal process for the approval and review of the inventory; description of a QA/QC plan and its implementation and management, in accordance with decision 19/CMP.1 (see paragraphs 20–22); and information on how the national system will identify land areas associated with afforestation (A), reforestation (R) and deforestation (D) activities in accordance with 16/CMP.1 (see paragraphs 118–120). 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*	Partially	See section II.A.1
Established process for approving the inventory*	No	See section II.A.1
Quality assurance/quality control plan*	No	See section II.A.2
Ways to improve inventory quality	Yes	See section II.B.3
Inventory preparation		
Key category analysis*	Yes	See section II.B.1
Estimates prepared in line with IPCC guidelines and IPCC good practice guidance*	Yes	See section II.B.2
Sufficient activity data and emission factors collected to support methodology*	Yes	See section II.B
Quantitative uncertainty analysis*	Yes	See section II.B.2
Recalculations*	Yes	See section II.B.2
General QC (tier 1) procedures implemented*	Yes	See section II.A.2
Source/sink category-specific QC (tier 2) procedures implemented	No	See section II.A.2
Basic review by experts not involved in inventory	No	See section II.A.2
Extensive review for key categories	No	See section II.A.2
Periodic internal review of inventory preparation	No	See section II.A.2
Inventory management		
Archive inventory information*	Yes	See section II.A.3
Archive at single location	Yes	See section II.A.3
Provide ERT with access to archived information*	Yes	See section II.A.3
Respond to requests for clarifying inventory information during review process*	Yes	See section II.A.1

*Mandatory elements of the national system.

1. Institutional, legal and procedural arrangements

13. The Environment and Food Agency (EFA) is the designated single national entity for preparation of the national inventory. A new law, Act no. 65/2007, on the emission of GHGs was passed by the Icelandic legislature in March 2007. This law was translated and provided to the ERT during the in-country review. The law specifies that the EFA, an agency under the Ministry for the Environment, is the responsible authority for the national inventory. The Agriculture University of Iceland (AUI), the National Energy Authority (NEA) and Statistics Iceland (SI) are also involved in the preparation of the inventory. The AUI together with the Soil Conservation Service of Iceland (SCSI), the Icelandic Forest Service (IFS) and the Icelandic Association of Farmers (IAF) are in charge of preparing the agriculture and LULUCF sectors. The NEA collects information on emissions from geothermal power plants and provides this information to the EFA along with activity data (AD) related to fuel combustion. SI provides general information to the EFA on solvents, fertilizers and imports/exports of fuels. Information is also provided by private companies. The EFA also collects various additional data directly. For example every year a questionnaire is sent out to the industry regarding imports, use of feedstock, and production and process-specific information. Importers of HFCs submit reports on their annual imports to the EFA. The EFA also estimates AD with regard to waste.

14. During the in-country review the ERT noted that while Iceland's national system is broadly in line with the guidelines on national systems under Article 5, paragraph 1, and the requirements under Article 7, a number of the general functions required by decision 19/CMP.1 have not been implemented by Iceland. These include: formal arrangements between the EFA and the necessary collaborating agencies involved in the preparation of the inventory to cover such responsibilities as data collection and methodologies, data delivery timelines and estimation of uncertainty estimates; and developing and implementing a QA/QC plan including the roles and responsibilities for managing QA/QC activities. The ERT also noted that a formal process for the official consideration and approval of the inventory was also required.

15. During the review the ERT recommended that Iceland establish formal agreements with the necessary organizations involved in the preparation of the inventory; provide a QA/QC plan; identify the roles and responsibilities for the management of the QA/QC programme; and develop and implement a formal process for the official consideration and approval of the inventory.

16. Following the review, and in response to questions raised by the ERT during the in-country review visit, Iceland provided the ERT with binding guidelines between the EFA, the NEA and the AUI, and agreements between the AUI and the IFS and the SCSI. Iceland further informed the ERT that responsibility to gather required information on emissions from geothermal activities is undertaken by the NEA and not Iceland GeoSurvey (ÍSOR), and advised the ERT that the role of the Agriculture Authority in the preparation of the national inventory is uncertain. Iceland also provided a QA/QC plan, and stated that a QA/QC manager had been assigned and provided details of the coordinating team responsible for the official review of the inventory, including its mandate. The coordinating team will have the role of officially approving and reviewing the emission inventory before submission to UNFCCC, as well as formulating proposals on further development and improvement of the national inventory system.

17. Iceland has elected to account for Article 3, paragraph 3, activities (afforestation, reforestation and deforestation) over the entire commitment period, and has elected the Article 3, paragraph 4, activity revegetation to be accounted over the entire commitment period. However, the Party does not have a system to identify relevant lands that is consistent with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF).

18. The ERT concludes that the additional information on the national system and the provision of a QA/QC plan submitted to the ERT after the in-country review along with information contained in the initial report is now in accordance with decision 19/CMP.1. The ERT recommends that the information submitted to the ERT after the in-country visit be provided in Iceland's next inventory submission.

2. Quality assurance/quality control

19. Under the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol, (decision 19/CMP.1) each Party included in Annex I (Annex I Party) shall elaborate an inventory QA/QC plan which describes specific QC procedures to be implemented during the inventory development process, facilitate the overall QA procedures to be conducted, to the extent possible on the entire inventory, and establish quality objectives.

20. Iceland has performed standard tier 1 QC procedures for several key categories, but no formal QA by independent experts has been undertaken due to a lack of resources. Furthermore, Iceland has not applied standard QC checks to the common reporting format (CRF) tables generated from the CRF Reporter software. Iceland in its 2006 GHG inventory submission neither elaborated nor implemented a QA/QC plan. The lack of a QA/QC plan was identified in the 2005 review. During the in-country review the ERT recommended that Iceland provide a QA/QC plan, and identify the role and responsibilities for the management of the QA/QC programme.

21. Following the in-country review and in response to the ERT's recommendations, Iceland provided a QA/QC plan and informed the ERT that the role of a QA/QC manager had been assigned. The ERT recommends that Iceland implement the QA/QC plan before its next submission in 2008 and that a QA/QC plan consistent with the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and pursuant to decision 19/CMP, be submitted in Iceland's next inventory submission for expert review. In particular the plan should include information on the roles and responsibilities for the management of QA/QC procedures, and details of QC activities.

22. Furthermore, for the next inventory submission Iceland should include descriptions of the QA/QC procedures in each sector in the NIR in accordance with the UNFCCC "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" (hereinafter referred to as the UNFCCC reporting guidelines). The Party is also recommended to develop and implement source-specific tier 2 QC procedures with a primary focus on key categories and/or categories which have been through a significant methodological and/or data revision.

3. Inventory management

23. Iceland archives disaggregated emission factors (EFs) and AD, including additional background documentation on emission calculations. The EFA is responsible for managing this archiving system, and archived information is stored in an Excel file. Data and information on agriculture and LULUCF are archived in the AUI. The responsibility to gather required information about emissions from geothermal activities lies with the NEA, based on information provided by ÍSOR. Information on QC procedures, external and internal reviews, documentation on key category identification, uncertainty of the estimates and planned inventory improvements, however, are not archived. During the review, the ERT was provided with access to the archived information (electronic and hard copies) stored in the EFA's database. The ERT recommends that Iceland improve the archiving system by establishing a centralised system, which also includes the storage of documentation on the planning and preparation of the inventory.

B. Greenhouse gas inventory

24. In conjunction with its initial report, Iceland has submitted a complete set of CRF tables for the years 1990–2004 and an NIR. In response to the questions raised by the ERT during the course of the in-country review, Iceland officially resubmitted its 2006 GHG inventory for the entire time-series, including revised estimates, on 11 September 2007. Where necessary, the ERT also used previous years' submissions, including the CRF tables. During the review Iceland provided the ERT with additional sources of information including documents and websites as well as databases. The full list of materials used during the review is provided in annex I to this report.

1. Key categories

25. Iceland has not reported a key category analysis for 1990 as part of its 2006 GHG inventory submission. The Party provided a tier 1 key category level and trend analysis for the 2004 inventory. The ERT noted that Iceland used the key category analysis to prioritize improvement in the inventory. The ERT recommends that Iceland develop a tier 2 key category analysis subject to the availability of AD and resources; include the LULUCF sector in this analysis; and include a key category analysis for 1990 in its next inventory submission.

2. Cross-cutting topics

26. The 2006 inventory is broadly 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. The inventory includes information on key categories, methods, EFs and uncertainty estimates, which is most of the relevant information needed to replicate the inventory. The ERT recommends that Iceland explore the use of the higher-tier method for key categories (e.g. aluminium production – CO_2; CO_2 from ferroalloys production; and N_2O – road transportation) on the basis that Iceland has sufficient AD and EFs to support this improvement. The ERT also recommends that Iceland improve the transparency of the inventory by improving documentation of expert judgement and cited literature.

Completeness

27. The inventory submitted in conjunction with the initial report covers all years from 1990 to 2004. It is complete in terms of geographical coverage, years and sectors; and it is generally complete in terms of categories and gases. Concerning the fluorinated gases, actual emissions of PFCs (CF_4 and C_2F_6) are reported. SF_6 emissions are held constant over the time-series, and importation of HFCs (e.g. HFC-125, HFC-134a and HFC-143a), as reflected by the inventory, only commenced in 1992. The ERT commends Iceland for submitting LULUCF tables in accordance with decision 13/CP.9 for the first time.

28. In its 2006 inventory the ERT identified incomplete CRF tables, including summary 3, recalculation table 8(b) and completeness table 9.

29. During the in-country review, the ERT recommended that Iceland provide estimates for "not estimated" ("NE") categories in the sectors of energy, solvent and other product use, and agriculture. In response to questions raised by the ERT during the in-country visit, Iceland submitted to the ERT estimates for a number of categories reported as "NE" in the solvent and other product use and agriculture sectors for its 2006 inventory (see paragraphs 62–63 and 69).

30. The ERT encourages Iceland to provide estimates in its next inventory submission for all categories where emissions occur in the country, even if they are minor, by using simple but reasonable approaches, utilizing expert judgement as necessary. If this is not possible, then the Party must use the appropriate notation key and explain the use of the notation key in CRF table 9(a). The ERT also recommends that Iceland develop a plan for the collection of AD so as to assist it in reporting estimates for important "NE" categories.

Transparency

31. The NIR and CRF tables provide sufficient transparency for the ERT to assess the data used and methodologies applied. However, the ERT noted that the transparency of the inventory can be improved by including in the NIR documentation on QA/QC and verification activities; more complete information on AD, EFs and rationale for methodological choices; and documentation of expert judgement and references to literature sources. The transparency of the inventory can also be significantly improved by reporting in the relevant CRF table the explanations for recalculations, the use of notation keys, methods and EFs.

Consistency

32. The ERT concluded that Iceland's inventory is broadly consistent with the UNFCCC reporting guidelines and the IPCC good practice guidance. Further improvements are required, however, to ensure greater consistency with the IPCC good practice guidance, subject to the availability of data and resources, for example the use of more advanced tier methods to estimate the key categories, and the provision of quantitative uncertainty estimates. The ERT noted that the LULUCF sector time-series is not completely consistent, including lack of consistency between the CRF and the NIR.

Comparability

33. Iceland's inventory is comparable with those of other Annex I Parties, as defined in the UNFCCC reporting guidelines. The allocation of source and sink categories follows the allocation in the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. Comparability of the inventory (methods and EFs) could be enhanced through reporting of CRF summary 3.

Accuracy

34. In accordance with the UNFCCC reporting guidelines, Iceland has not overestimated base year emissions in its 2006 submission. During the in-country visit, the ERT noted that emissions in the base year may be underestimated for the following categories: CO_2, CH_4 and N_2O emissions from food processing, beverages and tobacco – biomass (1.A.2.e); CO_2 and CH_4 emissions from the distribution of oil products (1.B.2.a.v) (see paragraph 44); CO_2 emissions from paint application (3.A), degreasing (3.B), chemical products, manufacture and processing (3.C) and other (3.D) (see paragraphs 62–63); CH_4 emissions from enteric fermentation – other – fur animals (4.A.10) (see paragraph 72); CH_4 and N_2O emissions from manure management – other livestock (4.B.10) – fur animals (see paragraph 80); and N_2O emissions arising from subsequent animal manures under agricultural soils (4.D.1.2, 4.D.3.1 and 4.D.3.2) (see paragraphs 75 and 77).

35. The ERT recommended that the Party submit revised estimates for the above mentioned categories. This report is based on the revised estimates provided by Iceland. The ERT recommends that Iceland improve the accuracy of the inventory by incorporating all the improvements identified as necessary by the ERT in its next inventory submission.

Recalculations

36. The national system ensures 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. Recalculations are due to improvements to methodologies, revisions of AD and EFs, inclusion of new sources and correction of calculations. The effect of the recalculations is to increase estimates of total GHG emissions for the base year by 2.24 per cent (excluding LULUCF). The ERT recommends that Iceland document the major changes and the rationale for recalculations in chapter 10 of the NIR, and improve explanations for recalculations in CRF table 8(b) in its next submission.

Uncertainties

37. The ERT acknowledges that Iceland, in response to a recommendation from the 2005 review, has provided for the first time a quantitative tier 1 uncertainty analysis for the national inventory as a whole, as well as at a category level (except for the LULUCF sector). The overall uncertainty of the inventory is estimated at 7.4 per cent. As presented in the initial report the uncertainty of the LULUCF sector is presently qualitative.

38. The ERT noted that the uncertainty analysis generally follows the IPCC good practice guidance; however, it is mostly based on expert judgements. The ERT recommends that Iceland improve the uncertainty analysis by including all source/sink categories, documenting in the NIR the data and assumptions, and ensuring that improvements in the inventory are prioritized based on this analysis. In addition the ERT also encourages Iceland to develop a tier 2 uncertainty analysis for key categories in line with the IPCC good practice guidance, subject to the availability of data and resources.

3. Areas for further improvement identified by the Party

39. The NIR identifies several areas for improvement. These include: introducing a QA/QC plan; preparation of the national energy balance; improving completeness of reporting and quality of AD; further implementation of the IPCC good practice guidance; improving the transparency and consistency of the NIR; estimating actual emissions of HFCs and SF_6; developing a system to identify land areas under LULUCF; and improving estimates of forest land area, carbon stock changes and revegetation.

4. Areas for further improvement identified by the ERT

40. The ERT identified the following issues for further improvement. The Party should:

(a) Allocate sufficient resources towards implementing the QA/QC plan and further developing the plan in accordance with the IPCC good practice guidance and pursuant to decision 19/CMP.1. The ERT also recommends that this plan be submitted in Iceland's next inventory submission for expert review. Iceland should also include descriptions of QA/QC procedures and activities in each sector section of the NIR in accordance with the UNFCCC reporting guidelines;

(b) Provide in its next NIR greater information on the institutional arrangements underpinning the national system, namely details on the specific roles and responsibilities of the organizations involved in inventory planning, preparation and management, and the improvements implemented as a result of this review report. Iceland should also provide information on the coordinating team, including EFA representation and the mandate of the team, in its next inventory submission;

(c) Establish a centralized archiving system;

(d) Allocate sufficient resources for inventory planning, preparation and management to ensure timely provision of a high-quality inventory, including expertise to develop and implement higher-tier methods and for general improvement and QC of the inventory;

(e) Improve the inventory by: including LULUCF in the key category analysis; ensuring time-series consistency (e.g. in the LULUCF sector); enhancing transparency (methods and EFs) and completeness of the inventory; and improving uncertainty analysis in its next submission;

(f) Improve transparency, through complete documentation information on AD, recalculations, EFs and selected methods, particularly for key categories. In addition the

ERT also recommends that Iceland improve the documentation of expert judgements and references to literature sources;

(g) Improve completeness by addressing the calculation of categories currently reported as "NE" by estimating the missing emissions when AD or methodologies are available, and by ensuring complete transfer of data to CRF Reporter;

(h) Improve accuracy in future inventory submissions through the use of higher-tier methods for the estimation of key categories in line with the recommendations of the IPCC good practice guidance, subject to the availability of data and resources;

(i) Improve uncertainty analysis through providing more details on the rationale for the selection of uncertainty levels, and the documentation of expert judgement in its next submission. In addition, Iceland is also encouraged to use a tier 2 uncertainty analysis in future submissions;

(j) Provide information on how Iceland's national system will ensure the identification of land areas associated with the reporting of activities under Article 3, paragraphs 3 and 4, in its next inventory submission under the Kyoto Protocol.

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

5. Energy

Sector overview

42. In the base year, GHG emissions from the energy sector accounted for 52.6 per cent of the total national GHG emissions. Other sectors (1.A.4) was the most important category in the base year, contributing 39.4 per cent to total sector emissions, while transport (1.A.3) and manufacturing industries and construction (1.A.3) contributed 34.4 and 21.3 per cent, respectively. CO_2 is the dominant GHG, contributing 98.2 per cent to GHG emissions from the energy sector. Total energy emissions increased by 17.6 per cent between the base year and 2004.

43. The reporting of the energy sector in the NIR is generally complete, accurate, time-series consistent, and comparable. The ERT identified some completeness issues in the CRF tables; for example, some of the cells for the base year were not filled in, such as 1A(a).s2 and 1A(a).s3. The ERT, however, acknowledges the efforts being made by Iceland to generate AD in the form of a national energy balance for future submissions, and recommends that Iceland continue to progress this work.

44. The ERT noted that emission estimates of CO_2, CH_4 and N_2O from food processing, beverages and tobacco – biomass (1.A.2.e), and CO_2 and CH_4 from the distribution of oil products (1.B.2.a.v) are reported as "NE". During the in-country review the ERT recommended that Iceland provide estimates for these categories. Iceland informed the ERT that according to the Icelandic Association of Fishmeal Manufacturers that there was minor usage of fish oil in the fishmeal industry during the period 1991–2003. For transparency it is recommended that Iceland provide further explanation of this category (1.A.2.e) in its next NIR. Iceland also informed the ERT that emissions from distribution of oil products would be estimated in the future. The ERT encourages Iceland to provide estimates in its next inventory submission for all categories in the energy sector where emissions occur in the country, even if they are minor, by using simple but reasonable approaches, utilizing expert judgement as necessary. If this is not possible, then the Party must use the appropriate notation key and explain the use of the notation key in CRF table 9(a).

45. The ERT also recommends that Iceland improve the transparency of the energy sector by improving the documentation on methodologies, AD and EFs, particularly for the key categories in both

the NIR and the CRF tables, for example: CO_2 emissions from the extraction of geothermal energy, international bunker fuels (fuel allocation), road transportation (the allocation of vehicle type by fuel type, i.e. diesel and gasoline), liquid fuels (iron and steel) and the allocation of fuel (liquid) between energy industries and the residential sector.

Reference and sectoral approaches

46. Iceland has calculated CO_2 emissions from fuel combustion using the IPCC reference approach and the sectoral approach for all years of the time-series. For the base year, there is a difference of 0.32 per cent in the CO_2 emission estimates from fuel consumption between the reference approach and the sectoral approach, which is within the threshold defined by the Revised 1996 IPCC Guidelines. The ERT noted that with the absence of an energy balance, the difference in the two approaches could not be verified. The ERT reiterates the recommendation from the previous (2005) review that Iceland continue to progress the work of preparing an energy balance.

International bunker fuels

47. Fuel consumption by international aviation and international marine bunkers, as reported in CRF table 1.C, corresponds to the data reported to the International Energy Agency for most years. The ERT reiterate the previous (2005) review recommendation, that the split in fuel consumption data between domestic and international bunkers for both marine and aviation purposes be documented in the Party's NIR. This allocation should be compiled using the definitions given in the Revised 1996 IPCC Guidelines and the IPCC good practice guidance.

Feedstocks and non-energy use of fuels

48. As identified in the previous (2005) review the ERT considers that the methodologies for estimating feedstocks in the 2006 inventory are still not transparent. The ERT recommends that Iceland document the methods used for estimating the feedstocks in a transparent manner in its next submission.

Key categories

Manufacturing industries and construction: liquid fuels – CO_2

49. The ERT could not assess from the NIR whether Iceland has considered the types and characteristics of construction equipment under other (1.A.2.f), including the EFs used, based on the allocation between road and off-road construction machinery. The ERT recommends that Iceland make this assessment and document it in its next submission.

Other: liquid fuels – CO_2

50. Between 1990 and 2004, CO_2 emissions from combustion of liquid fuels – other (1.A.5) increased by 13,106.7 per cent, and is the highest amongst reporting Parties. The ERT acknowledged that the significant increase in GHG emissions from this category is likely to be the result of inaccurate reporting by the oil companies. The ERT encourages Iceland to make efforts for the appropriate allocation of liquid oil consumption to the categories energy industries (1.A.1), manufacturing industries and construction (1.A.2), transport (1.A.3), other sectors (1.A.4) and other (1.A.5), and to reflect this in its next submission.

Manufacturing industries and construction: solid fuels – CO_2

51. CO_2 emissions associated with coal combustion in the cement industry make this a key category, therefore the determination of the net calorific value (NCV) used for coal is a critical factor. Iceland has used an EF for CO_2 of 2.6 t CO_2/t of coking coal, which corresponds to an NCV of 28.05 TJ/kt of coking coal, whereas the IPCC good practice guidance recommends an NCV of 29.01 TJ/kt for Iceland. The ERT reiterates the recommendation of the previous (2005) review that Iceland in its next submission

identify the source of coal used in the single cement plant and give details of the NCV of that coal to justify the CO_2 implied emission factor (IEF).

Transport: liquid – N_2O

52. The N_2O IEF for gasoline from the road transport sector (1A.3.b) in CRF table (1.A(a)s3) increased by more than 674.3 per cent between 1990 and 2004. The assumptions used by Iceland on the distribution of gasoline consumption across the different types of vehicles are not clearly explained in the NIR, including the assumption that the ratio of cars, light duty vehicles and heavy duty vehicles are held constant over the time series. The ERT recommends that Iceland clearly document the assumptions made for distributing the vehicle fleet under the different categories, taking into account the number/category/age of vehicles, type and quantity of fuel consumed and engine technologies.

Non-key categories

Navigation: liquid – CO_2, CH_4 and N_2O

53. The ERT notes that in the 2006 inventory submission Iceland does not distinguish between refuelling of fishing vessels within and outside the national territory. Any refuelling outside the national territory should be reported separately under marine bunkers (see paragraph 47). As identified in the previous (2005) review, the ERT encourages Iceland to address such reporting through development of its QA/QC plan and to improve reporting on navigation fuel use when a national energy balance becomes available.

Fugitive emissions from oil, natural gas and other sources: oil – CO_2 and CH_4

54. In the base year, CO_2 emissions from geothermal energy extraction accounted for 2.0 per cent (66.63 Gg CO_2 eq.) of total GHG emissions from Iceland. Between 1990 and 2004 emissions increased by 86.2 per cent to 124.08 Gg CO_2 eq. Iceland in the 2006 inventory submission reports CO_2 emissions from geothermal extraction under sector 7 – other. As CO_2 emissions from geothermal extraction are fugitive in nature the ERT recommended during the in-country review process that Iceland reallocate CO_2 emissions from geothermal extraction from sector 7 – other to sector 1 – fugitive emissions from oil, natural gas and other sources – other (1.B.2.d). Following the review and in response to the ERT's recommendations Iceland reallocated CO_2 emissions from geothermal energy extraction to the category fugitive emissions from oil, natural gas and other sources – other (1.B.2.d).

55. The ERT recommends that in its next submission Iceland include more details in the NIR about CO_2 emissions from geothermal energy, such as the number, location and production capacity of the geothermal power plants, parameters influencing CO_2 emissions, CO_2 flux measurement details, such as methodology and trends of diurnal, seasonal and annual flux, and the methodology for estimating CO_2 emissions on an annual scale.

56. AD, IEFs and emission estimates of CO_2 and CH_4 emissions from the distribution of oil products (1.B.2.a.v) are reported as "NE". While the ERT acknowledges that this is not likely to be a significant source, and that no IPCC default methodology is available, Iceland is encouraged to estimate these emissions or provide information on this category in future submissions. Iceland informed the ERT that emissions from distribution of oil products would be estimated in the future.

6. Industrial processes and solvent and other product use

Sector overview

57. In the base year GHG emissions from the industrial processes sector contributed 25.7 per cent to the total national GHG emissions in Iceland, and solvent and other product use contributed 0.4 per cent. CO_2 emissions contributed 45.3 per cent to the total GHG emissions from the industrial processes sector, and PFCs 48.4 per cent. Importation of HFCs began in 1992 and increased up to 1998. No actual emissions from HFCs are reported by Iceland. SF_6 emissions are held constant over the whole time-series.

58. The main category within the industrial processes sector is metal production (2.C), accounting for 87.7 per cent of the sector's GHG emissions. Within the industrial processes sector, aluminium production (2.C.3) accounted for 64.2 per cent of GHG emissions, while ferroalloys production (2.C.2) contributed 23.5 per cent. In the base year Iceland reported under chemical industry – other (2.B.5), N_2O emissions from fertilizer production (which ceased in 2001) and CO_2 emissions from silicon production (which ceased in 2004). These categories accounted for 5.6 per cent of Iceland's total GHG emissions in the industrial processes sector.

59. To improve the transparency of key categories the ERT recommends that Iceland provide more detailed information on aluminium and ferroalloys production, including process description, AD and EFs, in its next submission.

60. Iceland indicates that insufficient data are available to estimate actual emissions of SF_6. Potential emissions of HFCs are estimated based on imports. The ERT encourages Iceland to estimate actual emissions of SF_6 and halocarbons for its next submission and/or prepare a plan for data collection.

61. In the 2006 GHG inventory submission, CO_2 emissions from the sector solvent and other product use (3 A-D) are reported as "NE". During the in-country review the ERT recommended that Iceland estimate CO_2 emissions from this sector in the same manner as non-methane volatile organic compounds (NMVOC) emissions are estimated. In response to the ERT's recommendation Iceland provided estimates of CO_2 emissions for a number of "NE" categories (see paragraphs 62–63). The total CO_2 eq. emissions from solvent and other product use, changed from 6.00 Gg CO_2 eq. originally reported in the 2006 inventory submission to 13.94 Gg CO_2 eq., resulting in an increase of 132.3 per cent.

Solvent and other product use – CO_2

62. Iceland has reported NMVOC emissions from solvent and other product use; however, CO_2 emissions are reported as "NE". During the in-country review the ERT recommended that Iceland estimate CO_2 emissions from the following categories: CO_2 from paint application (3.A), degreasing and dry cleaning (3.B), chemical products, manufacture and processing (3.C), and other (3.D). In response to this recommendation, Iceland submitted to the ERT revised estimates. The new estimates provided by Iceland are: paint application, 3.60 Gg CO_2 eq.; degreasing and dry cleaning, 0.67 Gg CO_2 eq.; and other, 3.67 Gg CO_2 eq. Emissions of NMVOC from the category chemical products, manufacture and processing are reported as "included elsewhere" ("IE"). The ERT assumed that Iceland has estimated CO_2 emissions from this category but no notation key was provided in CRF table 3. The ERT recommends that Iceland provide the correct notation key for this category for CO_2 in future submissions.

63. The CO_2 estimate submitted by Iceland for the "NE" categories in this sector for the base year is 7.94 Gg CO_2 eq. This revised estimate increased CO_2 eq. emissions from solvent and other product use in the base year from 6.00 Gg CO_2 eq. to 13.94 Gg CO_2 eq., representing an increase of 132.3 per cent.

Key categories

Aluminium production – CO_2

64. Iceland estimates CO_2 emissions using the IPCC tier 1 method based on the quantity of electrodes used in the process and EFs from the Revised 1996 IPCC Guidelines. Data on consumption of carbon cathode electrodes are collected by Iceland directly from industry. The ERT recommends that Iceland use a higher-tier method in line with the IPCC good practice guidance. It also recommended that the Party provide in its next submission more transparent and complete information by including a description of processes and all relevant information used in the emission calculation.

Aluminium production – PFCs

65. EFs are calculated according to the IPCC tier 2 slope method. The default coefficients, 0.14 for CF_4 and 0.018 for C_2F_6, are taken from the IPCC good practice guidance using the Centre Worked Prebaked Technology. To improve transparency the ERT reiterates the recommendation from the previous (2005) review that Iceland provide more detailed information on aluminium production processes in its next inventory submission, including the AD and anode effect data. Iceland informed the ERT that this was included in the 2007 inventory submission.

Ferroalloys production – CO_2

66. CO_2 emissions from ferroalloys production (2.(I).C.2) are calculated according to the IPCC tier 1 method, which is based on the consumption of reducing agents, such as coal, coke and carbon electrodes. CO_2 EFs are based on the carbon content of the reducing agents and electrodes. EFs are taken from the Revised 1996 IPCC Guidelines and values for the NCV are provided by the National Energy Agency. The EFA directly collects data on the consumption of coal and coke, as reducing agents, and carbon electrodes from Iceland's single operating ferroalloys production plant. The ERT recommends that Iceland introduce a tier 2 approach and provide more details on ferroalloys production in its next inventory submission.

Cement production – CO_2

67. Iceland uses a tier 2 method. AD are plant specific data and are collected on clinker production, the CaO content of the clinker (63 per cent) and cement kiln dust (CKD) (7.5 per cent). The corrected EF for CO_2 from clinker production is 0.495 instead of the previously used EF 0.4402 t CO_2 /t cement. Data on clinker production are only available for the years 2003 and 2004. Historical clinker production data are calculated as 85 per cent of cement production according to the IPCC good practice guidance. The ERT recommends that Iceland provide more transparent and complete information in the NIR, including the description of processes and all relevant information used in the emission calculation, in its next submission.

7. Agriculture

Sector overview

68. In the base year, GHG emissions from the agriculture sector accounted for 17.1 per cent of total national GHG emissions (575.75 Gg CO_2 eq.). CH_4 emissions from agriculture contributed 71.0 per cent to the total national CH_4 emissions, while N_2O emissions from agriculture contributed 76.1 per cent to national N_2O emissions. Enteric fermentation, agricultural soils and manure management are the only categories reported, contributing 46.9 per cent, 42.9 per cent and 10.2 per cent, respectively, to the total GHG emissions from this sector. Between 1990 and 2004, GHG emissions from the agriculture sector decreased by 12.5 per cent, reflecting falling dairy cattle and sheep populations and a reduction in synthetic fertilizer use during this period.

69. In response to the ERT's recommendations, Iceland submitted revised estimates to the ERT for previously "NE" categories, including: CH_4 from enteric fermentation – other – fur animals (4.A.10) (see paragraph 72); CH_4 and N_2O from manure management – other – livestock – fur animals (4.B.10) (see paragraph 80); and N_2O emissions arising from subsequent animal manures under agricultural soils (4.D.1.2, 4.D.3.1 and 4.D.3.2) (see paragraphs 75 and 77). The total impact of these revised estimates increased the total sector emissions in the base year by 4.59 Gg CO_2 eq. (+0.80 per cent), from 571.16 Gg CO_2 eq. to 575.75 Gg CO_2 eq.

70. Iceland's agricultural inventory is generally complete. To improve transparency the ERT recommends that Iceland include a livestock and crop characterization in its next submission. Improvements in documentation in the NIR in the agriculture sector are welcomed by the ERT, in particular for manure management. However, the ERT encourages Iceland in its next submission to provide more information on methodological choices for enteric fermentation, manure management and agricultural soils.

71. Iceland has identified three key categories from agriculture: CH_4 from enteric fermentation (4.A), N_2O from direct agricultural soils (4.D.1), and N_2O from indirect agricultural soils (4.D.3). The ERT notes that Iceland included N_2O emissions from pasture range and paddock manure (4.D.2) in direct soil emissions (4.D.1) in its key category analysis. The ERT recommends that Iceland further disaggregate categories 4.D.1 and 4.D.2 in its future key category analysis.

Key categories

Enteric fermentation – CH_4

72. Iceland estimates CH_4 emissions from this key category using an IPCC tier 1 method and Western European default EFs. The ERT notes that Iceland plans to develop a tier 2 method. The ERT reiterates the recommendation from the previous (2005) review that Iceland develop a tier 2 method for key species, in particular dairy cattle and sheep, for future submissions and assess the applicability of Western European default EFs for native Icelandic livestock species. During the in-country review Iceland provided estimates of the previously "NE" category, CH_4 from enteric fermentation – other – fur animals (4.A.10), which increased emissions from enteric fermentation by 0.10 Gg CO_2 eq. to 270.02 Gg CO_2 eq. (+0.04 per cent).

Direct emissions from agricultural soils – N_2O

73. Iceland uses a tier 1b methodology and IPCC default EFs to estimate emissions from this key category. The ERT recommends that Iceland includes synthetic fertilizer data in future submissions and elaborate on the choice of methodology used. The ERT encourages Iceland to improve transparency of reporting by providing the appropriate IPCC good practice guidance equations used and a nitrogen balance in its next NIR.

74. The ERT further recommends that Iceland assess the appropriateness of the default fraction of the synthetic nitrogen fertilizer applied to soils that volatilizes as NH_3 and NO_x ($Frac_{GASF}$) used in its N_2O emission estimates, and that it develop a country-specific value based on the type of synthetic fertilizer used in Iceland. In addition the ERT requests that Iceland provide AD in CRF table 4.D for nitrogen inputs for crop residues (category 4.D.1.4) and elaborate on the methodology used in its next NIR.

75. During the in-country review Iceland provided an estimate for the previously "NE" category agricultural soils – direct emissions – animal manure applied to soils (4.D.1.2), which increased direct emissions of N_2O from agricultural soils by 1.08 Gg CO_2 eq. to 98.2 Gg CO_2 eq.

Indirect emissions from agricultural soils – N_2O

76. Iceland uses a tier 1 method with IPCC default EFs and volatilization rates to estimate emissions from the following indirect sources: atmospheric deposition, leaching and run-off. The ERT recommends that Iceland provide a nitrogen balance to show inputs from volatilized nitrogen sources and the choice of equations used from the IPCC good practice guidance in future submissions in order to improve transparency.

77. During the in-country review Iceland provided emission estimates of the previously "NE" categories, agricultural soils – indirect emissions – atmospheric deposition (4.D.3.1) and agricultural soils – indirect emissions – nitrogen leaching (4.D.3.2), which increased indirect N_2O emissions from agricultural soils by 0.22 Gg CO_2 eq. and 0.81Gg CO_2 eq. respectively (i.e. a total increase of 1.03 Gg CO_2 eq.).

78. The total impact in N_2O emissions arising from subsequent animal manures under agricultural soils (4.D.1.2, 4.D.3.1 and 4.D.3.2) was an increase of 2.11 Gg CO_2 eq. (+0.86 per cent) to 247.26 Gg CO_2 eq.

Non-key categories

Manure management – CH_4 and N_2O

79. Iceland estimates emissions of CH_4 from manure management using an IPCC tier 1 method and EFs from the Revised 1996 IPCC Guidelines for the Western European cool climate region. Iceland reports in its NIR that these factors may be overstated for native Icelandic livestock, in particular sheep and horses. The ERT recommends that Iceland further assess the appropriateness of these factors in future submissions by undertaking national research in this area, subject to the availability of resources. The ERT recommends that Iceland report percentages of allocations of manure in CRF table 4.B(a)s2 in its next submission.

80. During the in-country review Iceland provided estimates of previously "NE" categories including CH_4 emissions and N_2O emissions from manure management. The estimate for the category CH_4 emissions – other livestock (4.B.10) – fur animals increased emissions from manure management by 0.42 Gg CO_2 eq. to 23.80 Gg CO_2 eq. (+1.80 per cent); while estimates of N_2O from the category manure management – other livestock (4.B.10) – fur animals increased emissions from manure management by 1.96 Gg CO_2 eq. to 34.67 Gg CO_2 eq. (+5.99 per cent). Total GHG emissions from manure management increased by 2.38 Gg CO_2 eq.

8. Land use, land-use change and forestry

Sector overview

81. In the base year, the LULUCF sector was the largest source of GHG emissions in Iceland, accounting for net emissions of 2,095.19 Gg CO_2 eq. Grassland (5.C) is reported to cover one-third of Iceland, and is the largest source of CO_2 emissions in Iceland, contributing to 33.2 per cent of base year emissions or 86.6 per cent to net LULUCF GHG emissions. The GHG emissions estimate for the LULUCF sector does not include any CO_2 emissions from deforestation. Net CO_2 emissions and removals from deforestation are reported as "NE", as they are regarded by Iceland as negligible. Therefore, although Article 3, paragraph 7, would apply to Iceland, emissions from deforestation have not been added to other emissions in the calculation of the assigned amount.

82. The ERT acknowledges that Iceland for the first time has reported the LULUCF sector using the revised CRF tables as agreed in decision 13/CP.9. Recalculations have been performed for all years (1990–2003). In addition to forest land (5.A), emissions estimates for the categories grassland (5.C), wetlands (5.D) and other (5.G) are reported. Iceland has not, however, included the LULUCF sector in

the key category assessment for the whole inventory. Neither QA/QC procedures nor a quantitative uncertainty estimation for the sector are provided in the NIR, a qualitative assessment of the possible uncertainties due to some factors is however included in the submission. Following the review a QA/QC plan that covers the LULUCF sector was provided by Iceland. The ERT encourages Iceland to move from a tier 1 to a tier 2 methodology for the key categories and to develop country-specific EFs.

83. The 2006 GHG inventory is generally transparent; however, data for the complete time-series are only available for forest land (5.A), therefore an assessment by the ERT of the sectoral trends was not possible. The ERT recommends that Iceland improve time-series consistency in the estimation of GHG emissions from the LULUCF sector by providing a full time-series for the other categories; cropland (5.B), grassland (5.C), wetland (5.D) and other lands (5.F), in its next submission.

84. Uncertainties (i.e. qualitative) appear to be high. A contributing factor to such levels of uncertainty is that land use and land-use change categories have not yet been defined, reported and documented according to the IPCC good practice guidance for LULUCF. During the in-country review the ERT recommended that Iceland define all LULUCF categories, considering relevant sections of the IPCC good practice guidance for LULUCF, to ensure accurate and consistent identification of land areas. In addition to land cover characteristics the definition should also include country-specific information on the length of time land remains in a converted land use category.

85. During the in-country review Iceland informed the ERT that the development of a countrywide land use and land-use change database to map land uses and define land-use changes is under way. As this database has not been developed exclusively for the estimation of GHG emissions for the LULUCF sector, the ERT recommends that the available data be carefully matched against the land use categories identified by the IPCC good practice guidance for LULUCF for reporting activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT also recommends that Iceland develop country-specific EFs for the key category grasslands.

Key categories

Grassland remaining grassland – CO_2

86. CO_2 emissions from drained peatlands are included in the grasslands category. However, as these areas are peatlands, the ERT recommends that emissions from this source be reported under the category wetlands (5.D).

87. As CO_2 emissions from the drained peatlands are the highest single source of emissions in the LULUCF sector in Iceland, the accurate estimation of CO_2 emissions from this source is a key issue. With regard to AD, the ERT recommends that Iceland provide in its next submission a detailed description on how land is categorized as drained peatlands and how the AD data are obtained. The EF used by Iceland for drained peatlands is the IPCC default value from the IPCC good practice guidance for LULUCF. The ERT considers the application of this EF to be justifiable. Iceland is encouraged to develop country-specific EFs, preferably addressing any within-country variation, which could affect CO_2 emissions estimates from this key category. This also applies to the non-CO_2 emissions estimated for organic soils, a sub-category.

Wetland remaining wetland – CO_2

88. CO_2 emissions from wetlands (5.D) are only estimated for reservoirs, as other areas are considered to be unmanaged. CO_2 emissions are estimated according to the tier 1 method using default EFs. As emissions of CO_2 from reservoirs are identified by the secretariat as a key category by level assessment, the ERT recommends the use of tier 2 methodology, i.e. that Iceland develop and apply country-specific EFs.

Forest land – CO_2

89. Iceland reports that afforestation has taken place since 1990. However, neither the reported AD nor the applied removal factors as reported in the NIR are sufficiently transparent to allow assessment of the quality of the estimated emissions and removals and associated uncertainties. The ERT recommends that Iceland provide more detailed and transparent information on the AD (i.e. change in forest land, 5.A.2) and develop country-specific removal factors to be used for estimating emissions and removals from afforestation and reforestation activities.

90. For forest land (5.A) Iceland applies a country-average removal factor, which is not in line with the general understanding that tree growth is highly dependent on species, site and age. It is expected that Iceland's new forest inventory will provide verified country-specific removal factors and information on any harvesting activities, wildfires or biomass burning. The ERT recommends that Iceland apply these country-specific factors derived from the new forest inventory, and use tier 2 methods for estimating CO_2 emissions from this key category.

9. Waste

Sector overview

91. In the base year, GHG emissions from the waste sector in Iceland contributed 4.2 per cent of total national GHG emissions (141.06 Gg CO_2 eq). Between the base year and 2004, emissions from this sector increased to 172.38 Gg CO_2 eq. (22.2 per cent). GHG emissions from solid waste disposal on land (6.A) are the largest source of emissions in this sector (80.5 per cent), followed by emissions from waste incineration (6.C) (14.1 per cent) and wastewater handling (6.B) (5.4 per cent).

92. Most of the AD for the waste sector are collected by the EFA. Secondary sources include municipalities and large waste companies in Iceland. Actual data before 1990 on generated solid waste and its composition are limited. Historical data for 1950–1994 have been obtained by extrapolation using a gross domestic product (GDP) based method, and the data for 2004 as the reference. Iceland has not reported emissions from industrial wastewater handling. The ERT recommends that Iceland compile AD and provide estimates of emissions for this category from industrial facilities in future submissions.

93. Recalculations have been performed due to the use of the new tier 2 method for estimating CH_4 emissions from solid waste disposal on land. The impact on the base year was to reduce emissions of CH_4 from 114.53 Gg CO_2 eq. to 113.57 Gg CO_2 eq.

94. The ERT notes that Iceland has provided an uncertainty estimate for waste for the first time using a tier 1 approach. The ERT recommends that Iceland discuss the uncertainty estimates for EFs and AD in the table (Annex II in NIR) and provide references and/or expert judgement for justification of these estimates.

95. Transparency of estimates from the waste sector has improved from previous inventory submissions because of the inclusion of descriptions of methods, assumptions and data sources on this sector in the NIR. For its next submission the ERT recommends that Iceland provide in its NIR more detailed references and descriptions of the first order decay (FOD) and the driver (GDP)-based methods, as well as the management practices used for the estimation of CH_4 emissions from solid waste disposal on land.

Key categories

Solid waste disposal on land – CH_4

96. The ERT welcomes the improvements Iceland has made by moving to a tier 2 method (IPCC FOD method) as recommended in the previous review (2005) and providing different default parameters according to the composition and management practices for solid waste disposal on land (SWDL). Iceland provides detailed data for generated municipal and industrial landfilled waste and its composition for 1999–2004, although no description of SWDL management practices are available in Iceland. The ERT encourages Iceland to use country-specific EFs (which rely on expert judgement), rather than using IPCC default EFs. The country-specific EFs should reflect national conditions (temperature, humidity, dry/wet waste, management practice) and should be comparable to other countries with similar conditions.

97. Iceland has recalculated AD for the whole time-series using actual data from 1995 to 2004, and interpolated data for 1950–1994 using a GDP-based method. The ERT recommends that Iceland compare the interpolated data with corresponding data from different data sources such as statistical services in the country, international databases and other countries with similar GDP and conditions.

98. Due to the use of the new tier 2 method the CH_4 emission estimates from this key category were recalculated. The NIR provides data on the emissions before and after recalculations and the differences between them. The recalculations lowered CH_4 emission estimates across the whole time-series, although for 1990 the decrease is minimal (114.53 Gg CO_2 eq. to 113.57 Gg CO_2 eq.). The ERT noted large interannual fluctuations in the CH_4 IEF and encourages Iceland to check these recalculations and the CH_4 recovery rates in its next submission.

Non-key categories

Wastewater handling – CH_4

99. The ERT welcomes the estimates made by Iceland for the first time with regard to wastewater handling (6.B). CH_4 emissions are estimated from domestic and commercial wastewater (6.B.2). The estimates of CH_4 emissions do not show significant changes throughout the time-series as CH_4 emissions are estimated using the IPCC "check" method. The EFs are IPCC default, and the AD are based on the population connected to the wastewater collection system. CH_4 emissions calculated by this method may, however, be overestimated for all the years, as the parameter (FTA[2]) considers the presence of sludge in the wastewater. Sludge, however, is considered to be landfilled and estimated in solid waste disposal (6.A).

100. The ERT recommends that Iceland improve the assessment of this category by collecting AD from wastewater treatment facilities and municipalities and using the IPCC method with the country-specific data according to the decision trees as recommended by the IPCC good practice guidance to estimate CH_4 emissions (for example figures 5.2 and 5.3, IPCC good practice guidance).

Waste incineration – CO_2

101. The trend of CO_2 emissions from waste incineration shows a considerable decrease (–87.0 per cent) from the base year to 2004. Iceland identifies this decrease in waste incineration as being caused by intensified waste recycling practice with energy recovery. CO_2 emissions are estimated using the IPCC method with default EF values, with actual amounts of incinerated waste provided from the one incineration plant in Iceland that does not use energy recovery. The assessment of this category

[2] FTA: the fraction of biochemical oxygen demand in sludge which degrades anaerobically.

requires improvement. The ERT reiterates the recommendation of the previous (2005) review that Iceland derive its own EFs rather than using the IPCC default values in its estimation of incineration-related CO_2 emissions.

102. A suggested approach could be to identify the percentage of solid waste composition per capita. This approach could also be used for identification of the amount of biogenic and non-biogenic waste incinerated. The ERT recommends that Iceland attempt to derive country-specific EFs, taking into consideration the moisture content of the incinerated waste, and note all additional information in the documentation box (CRF table 6.C).

C. Calculation of the assigned amount

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

104. Iceland's base year is 1990 for CO_2, CH_4 and N_2O. The Party has also chosen 1990 as base year for HFCs, PFCs and SF_6. Iceland's quantified emission limitation is 110 per cent, as included in Annex B to the Kyoto Protocol.

105. LULUCF constituted a net source of GHG emissions in 1990. Iceland, however, considers emissions from land-use change (deforestation) as negligible and does not include emissions from this activity in the base year. On this basis emissions from land-use change (deforestation) have not been included in the calculation of the assigned amount.

106. Based on Iceland's base year emissions submitted with the initial report of 3,355.44 Gg CO_2 eq., and its Kyoto Protocol target (110 per cent), Iceland calculated its assigned amount to be 18,454,893 tonnes CO_2 eq. In response to inventory issues identified during the review Iceland submitted a revised estimate of its base year inventory, which resulted in a recalculation of the assigned amount. Based on the revised estimates, Iceland calculates its assigned amount to be 18,523,847 tonnes CO_2 eq. The ERT agrees with this figure.

D. Calculation of the commitment period reserve

107. The calculation of the required level of the commitment period reserve is in accordance with paragraph 6 of the annex to decision 11/CMP.1.

108. Based on its originally calculated assigned amount, 18,454,893 tonnes CO_2 eq., Iceland calculated its commitment period reserve to be 16,609,404 tonnes CO_2 eq. In response to inventory issues identified during the review Iceland submitted revised estimates of its base year inventory (3,367.97 Gg CO_2 eq.), which resulted in a recalculation of the commitment period reserve. Based on the revised estimates, the Party calculates its commitment period reserve to be 16,671,462 tonnes CO_2 eq. The ERT agrees with this figure.

E. National registry

109. Table 5 summarizes the information provided by Iceland on the mandatory reporting elements on the national registry system (as stipulated by decision 15/CMP.1), which describes how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1. Iceland did not provide results of any test procedures as described in paragraph 32 (j) of the annex to decision 15/CMP.1.

110. During the in-country review the ERT was provided with additional and updated information on the national registry of Iceland including information on the host company for the Icelandic registry (Skyrr), and confirmation that the registry set-up and installation is in progress. Iceland also informed the ERT that the upgrade to GRETA v3.0 registry software would incorporate all technical requirements

from the Data Exchange Standards (DES) and registry requirements. The ERT, however, noted that Iceland had not implemented some of the key steps required for establishing the initialization of the registry, including the internal operational test of the registry for network connection. Also information on the registry was not publicly available through the Internet URL <http://co2.ust.is>.

111. The ERT recommended that Iceland designate responsibilities within EFA regarding the administration of the registry, formalize an agreement between the EFA and the host company Skyrr through a signed contract to address the DES for registry systems, and provide a timetable on the implementation of the activities required for the operability of the Icelandic registry, while addressing the necessary steps required to achieve initialization with the ITL.

112. The ERT noted during the review process that the Icelandic registry was at a very early stage of preparation, and that moderate resources, including human resources, had been allocated to the development, operation and maintenance of the national registry system.

113. Following the in-country review, Iceland provided additional information, which included the designation of responsibilities within the EFA for the administration of the registry, an updated timetable for the implementation of the initialization tests, and information that indicated that the registry will be publicly available through the Internet URL <http://co2.ust.is>. The ERT recommended that in order to ensure initialisation of the Icelandic registry that Iceland adhere to the updated timetable provided to the ERT. In response, the Party informed the ERT that a general contract for hosting and servicing the computer system for the EFA was signed with Skyrr in mid-2007, and that a contract for servicing and installing the registry system was under discussion. In addition Iceland submitted its registry readiness questionnaire on 17 December 2007, and identified that connectivity and interoperability testing for the initialization environment were completed during November–December 2007.

114. Following the in-country review, 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 pursuant to decision 16/CP.10 on 3 January 2008.

115. The ERT reiterated the main findings of this report, including that the registry has fulfilled all of its obligations regarding conformity with the 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. Based on the results of the in-country review and the technical assessment, as reported in the IAR, the ERT concluded that Iceland's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 15/CMP.1, noting that registries do not have obligations regarding operational performance or public availability of information prior to the operational phase.

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	Environment and Food Agency, Environmental Supervision Division, Birna Hallsdottir, **birna@ust.is** Sigurdur Finnsson, **sigurdurb@ust.is**
Cooperation with other Parties in a consolidated system		
Names of other Parties with which Iceland 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	
Conformity with data exchange standards (DES)		
Description of how the national registry conforms to the technical DES between registry systems	Yes	Covered in the Independent Assessment Report[a]
Procedures for minimizing and handling of discrepancies		
Description of the procedures employed in the national registry to minimize discrepancies in the transaction of Kyoto Protocol units	Yes	
Description of the steps taken to terminate transactions where a discrepancy is notified and to correct problems in the event of a failure to terminate the transaction	Yes	
Prevention of unauthorized manipulations and operator error		
An overview of security measures employed in the national registry to prevent unauthorized manipulations and to prevent operator error	Yes	
An overview of how these measures are kept up to date	Yes	
User interface of the national registry		
A list of the information publicly accessible by means of the user interface to the national registry	Yes	
The Internet address of the interface to Iceland's national registry	Yes	Internet URL: <http://co2.ust.is>
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	
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.	No	Covered in the IAR

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

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

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

Table 6. Selection of LULUCF parameters

Parameters for forest definition		
Minimum tree cover	10%	
Minimum land area	0.5 ha	
Minimum tree height	2 m	
Elections for Article 3, paragraphs 3 and 4, activities		
Article 3, paragraph 3, activities	**Election**	**Accounting period**
Afforestation and reforestation	Mandatory	Commitment period
Deforestation	Mandatory	Commitment period
Article 3, paragraph 4, activities		
Forest land management	Not elected	Not applicable
Cropland management	Not elected	Not applicable
Grazing land management	Not elected	Not applicable
Revegetation	Elected	Commitment period

117. The elected forest parameter values are within the ranges prescribed in paragraph 1(a) of the annex to decision 16/CMP.1. Iceland did not report to the Food and Agriculture Organization of the United Nations (FAO) an exact forest definition, thus the requirement under 13/CMP.1 to justify the consistency of the elected forest parameters with historically reported values is not applicable for Iceland. Also, Iceland reported that at this stage no consistent forest inventory or consistent land representation has been developed for Iceland.

118. The initial report did not include information on how areas of land subject to LULUCF activities under Article 3, paragraphs 3 and 4, are identified in accordance with decision 16/CMP.1. In addition, Iceland has not provided a comprehensive land use and land-use change area matrix.

119. During the review, the ERT recommended that Iceland, as part of the continued work on the development of the national system, prepare a plan for developing definitions and appropriate methodology (in accordance with decision 16/CMP.1 and IPCC good practice guidance for LULUCF), so as to identify land areas associated with the activities under Article 3, paragraphs 3 and 4, prior to 2010.

120. Iceland, in response to the above recommendation, informed the ERT that the development of a countrywide land use and land-use change database to map land use and define land use changes has commenced, and will be based upon, among others, field surveys by the IFS and existing mapping by the SCSI. As this database has not been developed exclusively for the estimation of GHG emissions for the LULUCF sector, the ERT notes that for the reporting of activities under Article 3, paragraphs 3 and 4, careful matching by Iceland of the available data from appropriately defined land-use categories with those of the IPCC good practice guidance for LULUCF will be required. In addition, as part of the development of the national system, Iceland in its next submission should adequately document the methodology planned to be used to identify the land areas associated with the activities under Article 3, paragraphs 3 and 4.

121. Iceland has elected revegetation under Article 3, paragraph 4, and reported CO_2 removals under revegetation for 2004 in the 2006 GHG NIR. While the reporting of such information is acknowledged by the ERT, it is not necessary under the UNFCCC reporting guidelines. As from 2010, however, the reporting of such supplementary information for Article 3, paragraphs 3 and 4, activities under the Kyoto Protocol will be required. Such supplementary information should describe how land under revegetation and afforestation will be separately reported through clearly defining and identifying land uses, to avoid double counting.

III. Conclusions and recommendations

A. Conclusions

122. The ERT concluded that the information provided by Iceland in its initial report is generally complete and submitted in accordance with the relevant provisions of paragraphs 5, 6, 7 and 8 of the annex to decision 13/CMP.1, section I of the annex to decision 15/CMP.1, and other relevant decisions of the CMP; that the assigned amount pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol has been calculated in accordance with the annex to decision 13/CMP.1 and is consistent with the Party's reviewed and revised inventory estimates; and that the calculation of the required level of the commitment period reserve is in accordance with paragraph 6 of the annex to decision 11/CMP.1, and the LULUCF definitions are within the agreed range.

123. The national system of Iceland as described in the initial report, however, had not been fully prepared in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). Some of the mandatory elements of the national system, such as institutional and procedural arrangements required to maintain the system, were not provided. Following the in-country review Iceland, in response to the ERT's recommendations, submitted further information on the roles and responsibilities of key collaborating entities in the form of binding guidelines and formal agreements. Iceland also provided the mandate for the coordinating team responsible for the national review of the inventory, submitted a QA/QC plan, and appointed a QA/QC manager. The ERT concluded that on the basis of the additional information on the national system provided by Iceland, and the information contained in the initial report, Iceland's national system is in accordance with decision 19/CMP.

124. Iceland's 2006 GHG inventory submitted in conjunction with the initial report is largely complete; it includes a complete set of CRF tables for the years 1990–2004 and the NIR; it is complete in terms of geographical coverage, years and sectors; and it is fairly complete in terms of categories and gases. The inventory is generally accurate and transparent as defined in the UNFCCC reporting guidelines, and broadly consistent with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. In response to the ERT recommendations Iceland submitted revised estimates for a number of categories under the sectors of solvent and other product use and agriculture (see section II.B). The revised estimates resulted in revisions to Iceland's estimate of its base year emissions from 3,355.44 Gg CO_2 eq. as reported originally by Iceland to 3,367.97 Gg CO_2 eq.

125. Based on Iceland's base year emissions 3,367.97 Gg CO_2 eq., which includes the revised emission estimates provided in the solvent and other product use and agriculture sectors, and its Kyoto Protocol target of 110 per cent, Iceland calculates its assigned amount to be 18,523,847 tonnes CO_2 eq. and its commitment period reserve to be 16,671,462 tonnes CO_2 eq. The ERT agrees with these figures.

126. Iceland has selected to account for Article 3, paragraph 3, activities (afforestation, reforestation and deforestation) over the entire commitment period, and has elected the Article 3, paragraph 4, activity revegetation to be accounted over the entire commitment period. The parameters and accounting period selected by Iceland for LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are in accordance with decision 16/CMP.1. Iceland did not report to the FAO any exact forest definition.

127. Iceland has chosen to account for revegetation under Article 3, paragraph 4, activities and has chosen commitment period accounting for Article 3, paragraphs 3 and 4, activities. Iceland in its initial report and following the review did not, however, provide information as required under decision 16/CMP.1 on how its national system will ensure that land areas under Article 3, paragraphs 3 and 4, are identifiable when it submits its national inventories in accordance with Article 7.

128. Iceland has provided most of the information on the national registry system required by the reporting guidelines under Article 7, paragraphs 1 and 2, of the Kyoto Protocol (decision 15/CMP.1). Following the initial review, the ERT was provided with additional and updated information on the national registry. Based on the results of the in-country review and the technical assessment, as reported in the IAR, the ERT concluded that Iceland's national registry is fully compliant with the registry requirements defined in decisions 13/CMP.1 and 5/CMP.1.

B. Recommendations

129. In the course of the review, the ERT formulated a number of recommendations relating to the accuracy, transparency and completeness of Iceland's information presented in the initial report, and the 2006 GHG inventory submission. The key recommendations are that Iceland should:

(a) Implement the QA/QC plan and procedures, and further develop the plan in accordance with the IPCC good practice guidance and pursuant to decision 19/CMP.1. The ERT recommends that this plan be submitted in its next inventory submission for expert review. Furthermore, Iceland should include descriptions of QA/QC procedures and activities in each sector section of the NIR in accordance with the UNFCCC reporting guidelines;

(b) Provide in its next NIR improved information on the institutional arrangements underpinning the national system, including descriptions of the specific roles and responsibilities between organizations involved in inventory planning, preparation and management, and in particular the improvements implemented as a result of this review report. Iceland should also provide information on the coordinating team in its next inventory submission, including agency representation and the mandate of the coordinating team;

(c) Allocate sufficient resources for inventory planning, preparation and management to ensure timely provision of a high-quality inventory, including expertise to develop and implement higher-tier methods and for general improvement and QC of the inventory. The ERT noted that this is of particular importance in the light of the reporting commitments under the Kyoto Protocol;

(d) Archive all key information for the preparation, planning and management of the national inventory at a single location and nominate an archive manager who has exclusive access and administrative rights. In addition, it should prepare a procedural manual for the management and maintenance of the archiving system; and ensure that the archiving of the supplementary information related to Article 3, paragraphs 3 and 4, of the Kyoto Protocol is carried out in a similar way. Information on the archiving system should be included in its next submission;

(e) Improve completeness by addressing the categories currently reported as "NE" by estimating the missing emissions when AD or methodologies are available;

(f) Improve transparency of estimates by providing more precise descriptions and documentation of methods and more detailed information about AD and EF recalculations, particularly for all key categories, in its next NIR. In addition the ERT also recommends that Iceland improve the documentation of expert judgements and references to literature sources;

(g) Improve the inventory by: including LULUCF in the key category analysis; ensuring time-series consistency (e.g. in the LULUCF sector); enhancing transparency (methods and EFs) and completeness of the inventory; and improving uncertainty analysis in its next submission;

(h) Demonstrate and report in its next submission under the Kyoto Protocol the capacity of Iceland's national system to ensure that land areas under Article 3, paragraphs 3 and 4, are identifiable when the Party submits its national inventories in accordance with Article 7.

C. Questions of implementation

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

Annex I

Documents and information used during the review

A. Reference documents

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

IPCC. Good practice guidance for land use, land-use change and forestry, 2003. Available at: <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>.

IPCC/OECD/IEA. Revised 1996 IPCC Guidelines for national greenhouse gas inventories, volumes 1–3, 1997. Available at: <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

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UNFCCC secretariat. Iceland: Independent assessment report of the national registry of Iceland. Reg_IAR_IS_2007_1. Available at: <www.unfccc.int>.

B. Additional information provided by the Party

Iceland's response to "Potential Problems and Further Questions" from the ERT formulated in the course of the 2007 in-country review of Iceland's Initial Report under the Kyoto Protocol and 2006 Inventory Submission, Ministry for the Environment, Office of Sustainable Development and International Affairs Skuggasund, Reykjavik, Iceland, 3 August 2007.

Act no. 65/2007 on the emission of greenhouse gases, passed by the Icelandic legislature in March 2007 (English translation).

Agreement between Agricultural University and Icelandic Forest Service, 2007 (Icelandic).

Assigned amount and commitment period reserve, calculation; 11 September 2007.

Binding Guidelines between the National Energy Authority and the Ministry for the Environment, July 2007 (Icelandic).

Global Forest Resource Assessment, Food and Agriculture Organization of the United Nations, <http://www.fao.org/forestry/webview/media?mediaId=8859&geoId=127>.

Iceland's 2006 inventory submission, versions,1.2, 2.1 and 2.2.

Iceland's QA/QC plan, December 2007.

Icelandic Livestock Breeds, The Farmers Association of Iceland in cooperation with the Agricultural Genetic Resources Committee and the Nordic Gene Bank for Domestic Animals, Reykjavik 2004.

Iceland's response to the ERT on the Draft Initial Review Report-Report of the review of the initial report of Iceland. Version 16 November for comments by Party, 13 December 2007.

International Energy Agency, IEA statistics, <http://www.iea.org/Textbase/stats/index.asp>.

Mandate of the coordinating Team, 2007 (English).

Annex II

Acronyms and abbreviations

AD	activity data
AUI	Agriculture University of Iceland
CaO	lime
CH_4	methane
CMP	the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq.	carbon dioxide equivalent
CRF	common reporting format
EF	emission factor
EFA	Environment and Food Agency
ERT	expert review team
FAO	Food and Agriculture Organization of the United Nations
FOD	first order decay
GDP	gross domestic product
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
HFCs	hydrofluorocarbons
IAF	Icelandic Association of Farmers
IAR	independent assessment report
IFS	Icelandic Forest Service
IPCC	Intergovernmental Panel on Climate Change
ÍSOR	Iceland GeoSurvey
ITL	international transaction log
LULUCF	land use, land-use change and forestry
Mt	million tones
NA	not applicable
NCV	net calorific value
NE	not estimated
NEA	National Energy Authority
NIR	national inventory report
NO	not occurring
N_2O	nitrous oxide
PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
SCSI	Soil Conservation Service of Iceland
SF_6	sulphur hexafluoride
SI	Statistics Iceland
UNFCCC	United Nations Framework Convention on Climate Change

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